Abstract

The ability of using technology to integrate activities across multiple channels makes a retail firm available to operate its online and offline channels effectively so that it can improve its market performance and enhance its relationship with customers. This study researches the impacts of using technology by retail companies to integrate functional channels and departments to sell products and provide service to customers. The research model argues the retail multichannel integration should enhance its supply chain integration and cross channel operation competence, as well as a well integrated supply chain makes the retail company cross-channel operation performance better. It is also proposed that the organization structure would moderate the effects of multichannel integration on supply chain integration and cross-channel operation competence.

Key words: multichannel integration, online and offline channel, supply chain integration, cross-channel operation competence, organizational structure, customer service evaluation

1. Introduction

Retail industry has traditionally been divided into store and non-store retailers, or in other words, online and offline retailers. The market environment of retail industry has changed dramatically in the past decade. Market share of e-business is increasing and the shopping behavior of customers is changing, which shows more and more people would like to use Internet shopping. And, the competition among the traditional retailers is getting more serious. Since the multi-national retailers expand all over the world, the competition among them is not just limited in their domestic markets. For example, in Chinese market, the competition is among the US retailers (e.g. Wal-Mart), French retailer (e.g. Carrefour), Korean retailers (e.g. Lotte Mart, Emart), other countries’ retailers and Chinese domestic retailers.

In order to survive in the serious competitive retail environment, almost all of the traditional retail companies adopt multichannel strategy to open their online channel. Multichannel retailing is the set of activities involved in selling merchandise or services to consumers through more than one channel (Levy and Weitz, 2009). This definition distinguishes multichannel retailing from multimedia marketing that
typically involves the use of multiple channels to simply communicate with customers. While prior work examines multichannel marketing in general is just so called multimedia (e.g., Neslin et al. 2006; Neslin and Shankar 2009). The multichannel business model is gaining prominence because the integration of retail processes across multiple channels allows retailers to benefit from the strengths of each channel and offer consumers multiple touch points and innovative services (Noble et al., 2009; Smith-Daniels, 2007; Wallace et al., 2004). It seems that multichannel strategy is also the optimal choice for retail firms. But why don’t all retail firm adopt multichannel strategy, or what’s the reason that some companies failed in their multichannel strategy?

There are much research about the internal integration, supply chain integration and customer integration of manufacture companies through using Information Technology (e.g., Koufteros et al., 2005; Swink et al., 2007). For a retail firm, because the categories, number and natural features of products it sells are much more complex than manufactures, its multichannel strategy is different from a manufacturer company and it’s more difficult to manage multichannel than manufactures. And, there are several constraints for expending to multichannel (John W. Irvin,c Tarun Kushwaha,d, 2009) and challenges in crafting multichannel strategies (Jie Zhang,a Paul W. Farris,b,2010). That’s the reasons why some companies hesitate or do not adopt multichannel. However, from some research about multichannel retail companies and interviews with their managers, there are several opportunities for retail companies to utilize their resource to realize synergies across multichannel.

1.1 Research objective
This research mainly studies the effects of using technology resources in retail channel integration. The next section describes the theoretical underpinnings of the research, the research model, and the hypotheses.

1.2 Research context
The research context will be set as retail companies, such as supermarket, hypermarket, retail outlet, department store, whose business model is multichannel. It means they not only have the physical store but also manage website as online channel at the same time.

Literature Review

2. Theoretic Model and Research Hypotheses
2.1 Comparison between online and offline shopping

Online shopping involves no travel, product carrying or restrictions on shopping hours, offering greater accessibility, convenience and time saving. But online shopping does not permit physical examination of the products (feel, touch, sample and trial), interpersonal communication or instant gratification, and often incurs shipping and handling costs. In contrast, offline shopping allows physical examination of the products, interpersonal communication and instant gratification, but involves high travel costs and search costs, and often has restrictions on shopping hours, especially in countries with strong labor laws.

A higher convenience orientation, a lower risk aversion, and a lower service orientation were statistically significant shopping motives to purchase a product through the online channel. The desire for service, rather than risk aversion, could potentially cannibalize customers away from the online channel (Tobias Kollmann, Andreas Kuckertz, Ina Kayser, 2012). The on-line and off-line image will positively impact the customers’ online purchasing intention and behavior. This point is the most advantage of traditional off-line retailers to adopt multichannel strategy and open online channel, comparing with pure Internet shopping companies. Based on the existing images of retailers, their Internet shopping business will attract quite amount of Internet shopping customers (Tibert Verhagen, Willemijn van Dolen, 2009)

2.2 Multichannel Strategy

Most tradition retailers have implemented the multichannel strategy to start their online shopping business (Jesse W.J. Weltevredena, Ron A. Boschmab, 2008). The opportunities of e-commerce enable companies to gain operational efficiency,
personalization, and information. The benefit brought through e-commerce, or online channel, is the driver for companies to adopt e-commerce. This action also will have influence on the existing organization structure of companies (Kuo-chung Changa, Joyce Jacksona, Varun Grover, 2003). Through adoption of multichannel strategy to start online business, technologies might support customer integration and supplier integration in the supply chain, which in turn might impact operating performance (Sarv Devaraj, Lee Krajewski, Jerry C. Wei, 2007). Customers who shop across multiple channels from a firm are a greater source of revenue to the firm, are more loyal and more active than other customers (Kumar & Venkatesan, 2005; Neslin & Shankar, 2009; Wallace, Giese, & Johnson, 2004).

Traditional retailer has a well-established brand identity and a network of physical stores on which they could draw to establish their presence online. They have advantages over virtual retailers when adopting online business. The Internet appears to be more of a facilitating technology enabling traditional store-based retailers to complement their store offering with online channels, to improve their operational efficiency, and to enhance the benefits provided to customers. The market for store-based retailers is typically limited to the local trading areas of their stores. Thus, adding non-store channels (e.g. Internet, catalogs, mobile phones) enables retailers with limited locations to exploit economies of scope by expanding their markets without building additional stores (Mollenkopf et al., 2007).

The multi-channel strategy may result in three possible benefits for retailers: more customers at a retailer’s physical stores, more knowledge about customers, and improved customer relationship/loyalty. The more sophisticated the multichannel strategy, the higher the probability that retailers perceive to have become more competitive (Jesse W.J. Weltevreden, Ron A. Boschma, 2007).

2.3 Retail multichannel integration ability through using technology

Recent industry survey found that the majority of the current multichannel retailers have capabilities and systems that are separated, which results in disjointed marketing and operations across retail channels (Cunnane, 2011). Multichannel retailing is challenging because it requires retailers to have functional integration across areas such as marketing, inventory, order fulfillment, and product returns so that the operations and logistical efforts are streamlined with the front and end activities (Mollenkopf et al., 2007). It involves the extensive use of information technologies (ITs) to digitize and integrate resources and operations from physical and online retail channels.

Integrating marketing and operations is a challenge in any business, since there is a
natural tension between these two functional areas (Bozarth and Berry, 1997). Different technology is one of the most critical resources in service firms (Froehle et al., 2000; Sheehan, 2006). Information technology can be used to improve operational and strategic coordination (Sanders, 2008). For example, e-purchase system can be used to improve retailer’s purchase ability and efficiency. Inventory management system is antecedent of keeping the online and offline channel consistent. IT is especially important for multichannel operations management because the share ability of information is necessary for business process integration (Basu and Blanning, 2003). Therefore, it is significant for multichannel retailers to use IT effectively in integrating their activities across the functional areas so that the consistency and flow of information regarding customers, orders, and inventory can be ensured (Cappiello et al., 2003; Markus, 2000; Vickery et al., 2003).

Technology-using retail multichannel integration capability is defined as a firm’s ability to use technology in integrating their cross-functional channel resources and operations in their service delivery system (Lih-Bin Ol. etc, 2012). It is argued that capability-building processes are significant (Makadok, 2001). In competitive environments, the ability to integrate resources into bundles of competences is especially important (Eisenhardt and Martin, 2000; Sanchez, 2004; Sirmon et al., 2007; Teece et al., 1997; Teece, 2007) because they are difficult to imitate and confer firms with superior performance (Coates and McDermott, 2002). By integrating their operations across channels, retail firms can increase the difficulty of imitation because of the interconnectedness of integrated resources. Consequently, competitors would find it more difficult to isolate and identify the factors of success (King, 2007; Lavie, 2006; Pil and Cohen, 2006).

Synergy multichannel strategy is very critical for a retail company, since there are strong linkages between the website and the physical outlets. For example, cross-promotions, products ordered online can be paid for, delivered and returned to physical outlets, full inventory is available online while the physical outlets have a smaller inventory (Jesse W.J. Weltevreden, Ron A. Boschma, 2007)

2.4 Supply chain integration

The integration of multichannel of a retail company includes two perspectives, the vertical integration and horizontal integration. The first one is the vertical supply chain integration, which means improve the collaboration along the supply chain, including supplier management, inventory management and logistics delivery management (Nada R. Sanders, 2007). While the second perspective of integration is horizontal integration between online and offline channels.

Research on the impact of information technology in operations management has also
been primarily concentrated in manufacturing supply chain integration (e.g., Devaraj et al., 2007; Swink and Nair, 2007). Many manufacturers have incorporated the Internet into their multichannel strategy and devoted considerable resources to building the online channel. The multi-channel strategies give companies an opportunity to obtain additional revenue from their existing customers who purchase from their other channels (e.g., Koufteros et al., 2005; Swink et al., 2007). Similar studies of retail firms are lacking. Research on the impact of IT in operations management has also been primarily concentrated in manufacturing supply chain integration (e.g., Devaraj et al., 2007; Swink and Nair, 2007). Several unique aspects of the retailing business make multichannel operations more complex and challenging. If a traditional retail firm adopts multichannel strategy to open online channel, it has to deal with a large number of vendors, and be responsible for the logistic process of selling and delivering products to their end users (Metters and Walton 2007; Agatz, Fleischmann, and van Nunen 2008).

Information technology (IT) plays a critical role in supply chain management (SCM) activities (Kearns and Lederer, 2003), as it permits the sharing of large amounts of information between supply chain partners. Not surprising, studies on the overall use of IT have found it to improve inter-organizational coordination (Co et al., 1998; Small, 1999; McAfee, 2002). In turn, inter-organizational coordination has been shown to have a positive impact on select firm performance measures, such as customer service, lead-time, and production costs (Vickery et al., 2003; Stank et al). The multichannel management system will benefit the existing supply chain of traditional retailers, including improvement of the information management system, suppliers and customers management system, inventory reduction and so on (Christoph Zott, Raphael Amit, Jon Donlevy, 2000).

The improvements in coordination among supply chain partners through the use of IT are well documented (Frohlich, 2002; Balakrishnan and Geunes, 2004). The use of IT has permitted strong customer and supplier coordination for inventory planning, demand forecasting, order scheduling, and customer relation- ship management (Feeny, 2001). A number of past studies have evaluated the relationship between IT use and organizational coordination. Burgess (1998) was one of the first to identify IT as a critical component of logistics strategy, noting that IT can provide integration between supply chain firms and, as a result, can improve customer service and lower costs. A study by Stoeken (2000) showed that IT has a direct impact on coordination and leads to supply chain innovation. Within the field of operations management (OM) research on the impact of IT use on coordination has evolved from the study of overall buyer–supplier coordination (Vickery et al., 2003) to specific areas of coordination, ranging from the role of IT on lean/JIT integration (Ward and Zhou, 2006) to the impact on joint decision-making process time (Gailbraith, 1973; Huber, 1982; Dennis, 1996).
The integration of retailer’s supply chain is defined that a retail firm use technology to integrate elements of its supply chain, including suppliers integration, inventory integration, logistics delivery integration management and so on (Sarv Devaraj, Lee Krajewski, Jerry C. Wei, 2007). It is much different for a retail to manage a single channel or multichannel, the supply chain system of the retail company changed totally (Nada R. Sanders, 2008). For example, the logistic system, if the retail company just has physical stores, the logistics is inbound logistics system between suppliers and retailer. But if the retail operates its online channel, the logistics system needs to extend outbound to delivery products to individual customers. The transportation models and frequency between suppliers and retailers are very different from that between retail and customers. And also the inventory system has to change according to the needs of multichannel operation.

H1: A higher level of integration across multiple retail channels with the use of technology has positive impact on its supply chain integration.

2.5 Retail cross-channel operation competence

Based on organizational learning theories, I propose that these capabilities influence firm competence. Service firms can develop competences either by making process changes to their service delivery system or by adding a new service to their current mix (Menor and Roth, 2007). Resource integration enables firms to develop competence by using tangible resources to deepen relationships with existing customers (Hoque et al., 2006). Synergies from channel integration can reduce e-fulfillment costs through the sharing of infrastructure and resources. The reason for the overwhelming preference for multi-channel integration is that it enables synergies between channels, which benefit customers. These benefits in turn improve retailers’ customer acquisition, extension, and retention capabilities. It appears therefore that the advantages of multi-channel integration under most circumstances outweigh the benefits of channel separation as well as the difficulties of channel integration (cf. Gulati & Garino [2000]). As the proportion of multichannel shoppers is still increasing, retailers have the opportunity to satisfy the needs of these customers by realizing potential synergies within a well-integrated multichannel system, e.g. by providing a ‘seamless’ process of switching from one channel to another, according to their customers’ preferences and needs in purchase processes (McGoldrick and Collins 2007).

Retail cross-channel operation competence is defined as the ability of a retailer to offer service through its multiple channels. The horizontal integration level of retail multichannel is directly reflected in the retail cross-channel operation competence.
And the retail cross-channel operation competence reflects in the freedom and ease for customer to switch between online and offline channels of a company. For example, customers can make order on the retail company’s website and go to the physics store to pay and get the products. Or customer can return the products ordered on line when they feel dissatisfied.

Consistency of the multichannel is the core competitive part of this strategy. Enabling customers to utilize multiple channels for their shopping activities leads to the benefits of increased convenience and control as well as reduced risk. This requires that the major product categories are available online and offline. Products should also be priced consistently, including promotional discounts. Consistency should even extend to customer support and policies. For example, warranties and product return policies should be adopted. Absence of consistency destroys the customers’ association of channels and limits their channel choices. Without consistency in product selection, pricing, support and policies, retailers might not only lose the opportunities to satisfy customer but also confuse or even irritate customers.

The retail firm’s cross-channel operation competence is mainly defined as four dimensions:

2.5.1 Integrated logistics system:
It is relevant to a retailer’s ability to offer in-store product pick-up and return as well as informational services, such as online information on store inventories. According to research by Jupiter Media Metrix in 2001, 83% of U.S. online buyers preferred to return online purchases at physical stores and 59% would like to order products online but pick them up from offline stores.

2.5.2 Integrated transaction information system:
Collecting customers’ online and offline transaction information, managing this integrated information, and making it available across multiple channels (Kalakota and Robinson, 2004). Integrated transaction information increases the richness of the information available and the quality of services that can be provided (Payne and Frow, 2004). It allows the retailer to provide many value-added services such as personalized Web pages. It also enables customers to review their previous purchases and provides them with suggestions that can reduce the effort of future purchases (Straub and Watson, 2001).

2.5.3 Integrated information access system:
Providing customers with access to information available in one channel from another channel. For example, the Website can allow customers to search for products available in the physical store through an integrated database (Bendoly et al., 2005). Likewise, information at the physical store can help customers search for product
information, availability, and the store location of products from the Website (Gulati and Garino, 2000). Information on real-time inventory can be made available online so that customers will not make wasted trips to the store when the product is not in stock (Prasarnphanich and Gillenson, 2003).

2.5.4 Integrated order fulfillment system:
It means offering support for customers to choose their preferred channel and complete their purchases. It includes allowing customers to use the online channel to order products and then pick them up at nearest physical stores and providing for gift coupons to be redeemed either online or offline (Wallace et al., 2004). Consumers can also choose to pay for their online purchases at the retailer’s physical stores. An integrated product cataloging system can allow customers to place online orders quickly based on catalog numbers (Saeed et al., 2003).

In conclusion, higher levels of retail channel integration occur when a retail firm can implement more of the above system. Our research model proposes that the degree of channel integration will impact the development of competences in retail firms.

As a result of retail multichannel integration, the cooperation and coordination among several parts of the retail firm increase. The online and offline channels are not working separately but operate as a well-integrated system.

**H2: A higher degree of integration across multiple retail channels with the use of Technology will increase the ability of retail firms to provide service through synergy cross multi-channel efficiently.**

The performance benefits of coordination can also be seen in practice, with most successful firms having tight coordination with their supply chain partners, enabling real-time information sharing and well coordinated movement of inventories. The result are products that are delivered quickly and reliably when and where they are needed, high responsiveness to short lead times, the elimination of the bullwhip effect, and improved firm performance (Lee et al., 1997). More comprehensive work on organizational benefits suggests supply chain integration, especially the information sharing and logistics delivery system integration, improve the retail firms cross-channel operation ability (Barua et al., 1995; Mukhopadyay and Kerke, 2002).

**H3: The integration of retail’s supply chain has positive impact on its cross-channel operation competence.**

2.6 Organization structure

The organization structure of the retail firm moderates the effect of integration. Since
the integration between different channels requires the firm to be centralized, while from the perspective of individual channel, the decentralized construct will be benefit for each channel management.

The advantages of a decentralized organizational structure include: 1) greater focus and more flexibility in response to the unique competitive situations in each channel; 2) allowing each channel to adjust its retail mix to serve different market segments; and 3) helping attract and retain executives with experience in a particular channel (Gulati and Garino 2000). But the decentralized structure has also caused increasing problems while retailers strive to create cross-channel synergies and consumers expect a seamless experience in a multichannel retail environment. It creates duplicate teams and thus inefficiency in the business processes, causes internal conflicts across channels, and often leads to inconsistent customer experiences due to lack of coordination in merchandising activities across channels. According to a study by Gartner Inc., 76% of multichannel retailers do not fully coordinate brand marketing, and 74% of them do not fully coordinate promotions planning across channels (InternetRetailer.com 2006).

And also, the online and offline channels naturally need two different and separately supply chains. Even the integration between the online and offline supply chain will bring benefits to the retailer not only from the efficiency of facilities use perspective but also the scale of economics. But the complex and difficulties during the process of integration is very obvious. A recent industry study finds that even though many retailers with independent structures have seen tremendous growth and profitable returns, over time, the lack of integration has resulted in inefficiency and customer confusion, and that cross-channel success will be most likely when it becomes a top-down mandate (Shop.org and J.C. Williams Group 2008).

**H4a: The effects of Technology-using retail channel integration on cross-channel operation competence will be moderated by retail’s organization structure.**

**H4b: The effects of Technology-using retail channel integration on supply chain integration will be moderated by retail’s organization structure.**

2.7 Customer evaluation of multichannel service

Customers’ perceived service quality of an offline channel would have a positive impact on their perceived service quality of the firm’s online channel. Customers’ perceived cross-channel integrated service between the offline channel and the extended online channel has a positive impact on their perceived service quality of the extended online channel. Customers’ perceived service quality of the extended online channel will have a positive influence on their intention to use extended online
channel (Shuiqing Yang, Yaobin Lu, Ling Zhao, Sumeet Gupta, 2011). Customers who shop across multiple channels from a firm are more loyal and more active than other customers (Kumar & Venkatesan, 2005; Neslin & Shankar, 2009).

H5: the retail cross-channel operation competence will impact customers’ evaluation of retail multichannel integration positively.

3. Research methods

3.1. Data collection
The unit of our analysis is a retail firm with both physical store(s) and a Website. I chose to use a survey approach instead of a field study based on interviews because much exploratory research has already been performed using a qualitative approach (e.g., Bahn and Fischer, 2003; Steinfield et al., 2002). Besides, existing research on multichannel retailing has focused mainly on conceptual frameworks (e.g., Neslin et al., 2006; Steinfield, 2002), consumer survey (e.g., Konus et al., 2008), Website content analysis (e.g., Muller-Lankenau et al., 2006), and analytical modeling (e.g., Venkatesan et al., 2007). Because empirical studies using surveys are scarce, I seek to enhance the generalizability of the evidence by conducting a large-scale survey.

3.2. Measurement of constructs

3.2.1. Integration capabilities

3.2.2. Firm competences

3.2.3. Supply chain integration

3.2.4. Retail company organizational structure
Reference:


Daniel Goersch, (2000), Multi-channel integration and its implications for retail web sites, ECIS 2002 • June 6–8, Gdańsk, Poland


Jyh-Hong Ding, Ping-Shun Chen & Jr Jung Lyu (2011): Evolutionary strategy to apply information and communication technology: a case study in the apparel industry, Production Planning & Control: The Management of Operations, 22:3, 282-297


Raffaella Cagliano, Federico Caniato, Gianluca Spina, (2003), "E-business strategy: How companies are shaping their supply chain through the Internet", International Journal of Operations & Production Management, Vol. 23 Iss: 10 pp. 1142 - 1162