DECISION SCIENCES INSTITUTE
Digital Strategy Repertoire and Competitive Performance in Online Retailing

(Full Paper Submission)

Bhavik K. Pathak
Indiana University South Bend
bkpathak@iusb.edu

Murali Chari
Rensselaer Polytechnic Institute
Charim2@rpi.edu

Sarv Devaraj
University of Notre Dame
sdevaraj@nd.edu

ABSTRACT

We draw on two strategic management theories on competitive strategy to develop hypotheses relating digital strategy repertoires and competitive performance for firms in the Internet retail sector. The strategic repertoires in terms of both digital systems enabled product-market strategy and digital systems sourcing strategy are examined and data of top online retailers are analyzed. We find that online retailers can improve their performance by adopting complexity driven deployment of their digital strategy repertoires. We also find that differentiating digital strategy repertoires from the norms can improve the competitive performance of online retailers.

KEYWORDS: Electronic Commerce, Digital Strategy Repertoire, Online Retailing, IT Sourcing, Internet Strategy

INTRODUCTION

The impact of digital systems on competition and firm strategies is an important topic in recent information systems literature (Bakos, et al., 2005; Bharadwaj, El Sawy, Pavlou & Venkatraman, 2013; Brynjolfsson & Smith, 2000; Jeffers, Muahanna, & Nault, 2008; Overby, Bharadwaj, & Sambamurthy, 2006; Sambamurthy, Bharadwaj, & Grover, 2003). The role of digital systems in redrawing industry boundaries and realigning industry structures has also been the subject of a growing stream of literature in strategic management, where the emphasis has been on identifying firm strategies that drive competitive performance in the wake of the increasingly digital economy (Chesbrough & Teece, 2002; Hagel & Singer, 1999; Porter, 2001; Tapscott, 2001). We draw on two different theories of competitive strategy to examine and identify firms’ digital strategy repertoires that drive competitive performance. We use the Internet retail sector as the context for our study since digital systems including the Internet are at the core of business and competition in the sector. In addition, with estimated sales of $304.9 billion in 2014 and annual growth rates of 15.4% according to the US Department of Commerce, the Internet retail sector is an economically significant context. Finally, the context is also interesting because of the presence of firms with different resource profiles including firms that compete only in the Internet retail sector and those that also compete in the traditional brick and mortar retail sector.
In the highly competitive online retail segment, the firms have deployed various product-market initiatives including personalization, customer reviews, multi-media product information, and social network integration to enhance customer experience, reduce transaction costs, and assist in making purchase decisions. Internet retailers also require a complex digital systems infrastructure and sourcing of the information technology is an important strategic decision that they need to make. In this paper, using two theories from the strategy literature, we analyze how product-market initiatives and sourcing strategies affect competitive performance of firms in the online retail sector. Our results show that online retailers should utilize complex sourcing and product-market repertoires to outperform their rivals both within their product categories (e.g. office supply retailers, electronics retailers) and their channel-based competitors (e.g. pure play, click and mortar). In addition they need to deviate from the industry and channel norms in sourcing their digital systems to improve their competitive performance.

The rest of the paper is organized as follows. We review the two theories of competitive strategy in section 2, develop our hypotheses in section 3, describe our data and measures in section 4, present our analytical methods and results in section 5, and discuss our findings and their implications in section 6.

LITERATURE REVIEW

Competitive or business strategy refers to the set of initiatives that a firm deploys to achieve superior competitive performance (Miller & Toulouse, 1998; Porter, 1996). A firm’s repertoire of strategic initiatives is therefore at the heart of competitive strategy. A critical choice facing managers in developing strategy is whether the strategic initiatives should focus on a relatively narrow range or a broad range of domains. For example, firms may choose to focus their initiatives on achieving a low cost position, or focus their initiatives in marketing or customer service, or focus on a combination of these or other domains. Strategy researchers have observed that focusing initiatives on a relatively narrow range of domains, a practice referred to as strategic repertoire simplicity, rather than spread initiatives across a broad spectrum of domains, which we refer to as strategic repertoire complexity, can often be efficient and effective for economic as well as cognitive reasons (Miller & Chen, 1996; Miller & Toulouse, 1998). First, a simple repertoire gives firms a chance to concentrate on what they do best (Miller & Toulouse, 1998). Second, it gives firms an opportunity to develop core competencies that provide them an edge over competitors (Prahalad & Hamel, 1990). Third, since trade-offs, or choosing what to do at the exclusion of other activities, is essential for competitive advantage (i.e., one cannot choose to fulfill every need of every customer well without losing to competitors who focus on a subset of customers and/or their needs), simple repertoires rather than broad based ones are more likely to lead to superior performance (Porter, 1996). Fourth, it is cognitively more economical for managers to focus competitive efforts on fewer domains (Miller & Toulouse, 1998). Finally, implementing a simpler strategic repertoire economizes on the effort required to forge a ‘fit’ across various activities of the firm, since the coordination and integration demands placed by initiatives in a narrow set of domains are more likely to be consistent rather than conflicting (Miller & Chen, 1996; Porter, 1996; Waterman Jr, 1982).

While the above reasons make strategic repertoire simplicity an appealing alternative, the benefits of pursuing a simple strategic repertoire accrue mainly in stable industries, where managers can know in advance, with reasonable certainty, the effectiveness of various initiatives (Miller & Chen, 1996). In more dynamic and growing industries, pursuit of a simple strategic repertoire risks failing “Ashby’s law of requisite variety,” which is the idea that a firm’s strategic repertoire may not be sufficiently diverse to meet the range of potential customers and
their needs (Ferrier & Lyon, 2004; Miller, 1993). This is because, in dynamic and growing markets, potential customers, their needs, and effective ways of appealing to them, are constantly evolving (Miller & Chen, 1996). Consequently, firms must explore and experiment with a broad range of initiatives, put differently, pursue a complex strategic repertoire, so that market feedback from implementing the broad range of initiatives can be used to ensure that their strategies are relevant and rewarding (Miller & Chen, 1996). In addition, firms that carry out a broader range of initiatives are in general perceived as more capable and less predictable, and consequently are more likely to succeed competitively (Ferrier, Smith, & Grimm, 1999). In summary, the relationship between strategic repertoire simplicity and firm performance would depend on the industry context.

Besides strategic repertoire simplicity, another strategic management theory has evolved around the question of whether strategic repertoires that conform to, or deviate from, the industry norm drive superior competitive performance (Deephouse, 1999; Miller & Chen, 1995). Some theorists have argued that as firms succeed using a strategy, other firms imitate these strategies and this dynamic creates certain standard ways of competing and a cognitive consensus among managers about strategies that lead to success in the industry, or “industry recipes” (Deephouse, 1999; Spender, 1989). These standard ways of competing gain legitimacy among various participants in the industry, including investors and customers, and firms straying from these standard ways of competing face legitimacy challenges and associated performance disadvantages (Deephouse, 1999; Dimaggio & Powell, 1983). Performance disadvantages arise from legitimacy challenges because potential exchange partners do not understand or accept the firm’s strategy as rational and hence will either withhold participation or charge a premium for the exchange (Deephouse, 1999). Other theorists have argued the opposite position that firms should seek to build strategic repertoires that are different from competitors as imitation essentially ensures a lack of competitive distinction and hence provides no advantage over competition (Porter, 1996). On the input side, since resources available to firms in an industry is rather finite at any point in time, a firm competing with a different strategy faces less competition for the specific resources that underlie its strategy while firms competing with similar strategies compete with each other for the same pool of resources (Deephouse, 1999). On the output side, firms competing with similar or the same strategic repertoires offer no particular reason for customers to choose one firm over another to do business with, while a firm with a distinctive strategic repertoire does (Porter, 1996). Theorists seeking to reconcile these differing points of view suggest that the choice to conform or not may depend on the industry context since legitimacy challenges are likely to vary predictably across industries (Miller & Chen, 1995). In summary, balancing the demands for distinctiveness and legitimacy simultaneously, with particular attention to the strength of each in the industry is likely to enhance competitive performance (Deephouse, 1999; Miller & Chen, 1995).

**HYPOTHESES**

We conceptualize digital strategy repertoire in two ways. First, following extant literature, we conceptualize digital strategy repertoire as the set of digital-systems enabled product market initiatives that are deployed to obtain competitive advantage (Ferrier & Lyon, 2004; Ferrier et al., 1999; Miller & Chen, 1996). Second, extending beyond product market initiatives, since digital systems constitute the basic infrastructure undergirding business and competition in our context, and since there are differences in how Internet retailers source these systems, we conceptualize the number of unique sources that a firm uses for its digital systems as an additional digital strategy repertoire construct. Consistent with the conceptualization of strategic
reertoire simplicity in extant research, we consider pursuit of strategic initiatives in a relatively narrow (broad) domain and utilizing a narrow (broad) range of sources as constituting a simple (complex) strategic repertoire (Miller & Chen, 1996; Ferrier & Lyon, 2004). Hereafter we refer to the first of the digital strategy repertoires as product-market strategy repertoire and the second as sourcing strategy repertoire. We draw on each of the two strategic management theories reviewed above and develop hypotheses related to each of the two types of digital systems strategy repertoires. In the context of the Internet retailers, extant research discusses the important role of product-market strategy repertoires including advanced search (Shim, Eastlick, Lotz, & Warrington 2001), affiliate programs (Hoffman and Novak 2000), in-store pickup (Burke 2002), personalization, recommendations, and customer reviews (Kumar and Benbasat 2006; Pathak, Gopal, Garfinkel, Venkatesan & Yin 2010) and social networks (Harris and Charles 2011). The digital systems sourcing strategy literature in information technology sourcing has critically evaluated the pros and cons of the trade-off of the simplicity offered by handful of suppliers and complexity associated with the intensive multisourcing strategies (Levina and Su 2008). We begin with the strategic repertoire simplicity/complexity theory based hypotheses first and then turn to the strategic repertoire conformity/deviation theory based hypotheses.

Product-Market Strategy Repertoire Simplicity/Complexity

Firms have increasingly started integrating information technology in their products, services, and processes to gain competitive advantage. The Internet retail sector is among the fastest growing sectors in the economy registering annual growth rates in excess of 20%. In addition, digital systems, in particular the Internet and related technologies, has lowered entry-barriers increasing entry into the industry (Porter, 2001). Unlike in stable contexts, a simple strategic repertoire is unlikely to yield performance benefits in this fast growing sector since potential customers, their needs, and effective ways of appealing to them are likely to be evolving constantly (Miller & Chen, 1996). Because of the emerging nature of the sector, as suggested by Miller and Chen (1996), “simple and narrow repertoires that are on target this year almost certainly will become outdated in the next. Firms that compete mostly on the basis of price, for example, may soon become irrelevant when new rivals attract customers with better service.” Moreover, because a broader range of product-market initiatives is “most likely to contain actions that attract customers in emerging niches,” pursuing a more complex strategic repertoire is likely to provide the market feedback necessary to ensure that the firm’s strategic repertoire is relevant and effective (Miller & Chen, 1996). Research on Internet retailing also shows that while shopping online, consumers prefer a wide range of product-market features including detailed product information, shopping aids, clicks and mortar integration, and a broad range of customer service features (Burke 2002). Based on the above arguments we state our first hypothesis.

\[ H1: \text{Product market strategy repertoire simplicity (complexity) has a negative (positive) relationship with competitive performance for Internet retail firms} \]

Sourcing Strategy Repertoire Simplicity/Complexity

Internet retailers require an elaborate digital systems infrastructure. It includes hardware, software, telecommunications, data extraction-storage-transformation-retrieval, and analytical tools [Weill and Vitale (2002)]. Such IT infrastructure includes both front-end ecommerce capability and back-end IT infrastructure. Proper integration of such IT infrastructure is necessary to achieve success in the Internet retail industry.
Since digital systems are the core infrastructure of Internet retail firms, diversifying the sources for these systems will reduce the risk associated with depending on any one source (Currie, 1998; Quinn & Hillmer, 1995). Diversifying the sourcing of digital systems can also foster rapid innovation and create new opportunities since involving multiple sources nurtures an alliance of suppliers who compete to provide innovative solutions to the firm (Currie & Willcocks, 1998; Levina and Su 2008). A multi-sourcing strategy also allows firms to strategically supplement their in-house systems with selected IT system functionalities from the most capable and efficient sources (Gottfredson, Puryear, & Phillips, 2005; Lacity & Willcocks, 1998). Moreover, as many of the digital systems used are relatively new and evolving, a single ‘best-of-breed’ solution for each application area may not yet be available, and this also enhances the advantages of multi-sourcing (Quinn & Hillmer, 1995). A simple sourcing strategy repertoire, on the other hand, invites dependency on one or a few sources, fails to nurture and benefit from competition among suppliers and from strategically supplementing IT system functionalities, and may leave the firm locked into solutions that may not be best in class.

For these reasons, we expect that digital systems sourcing is also an aspect of strategy where a more complex repertoire will be associated with better competitive performance.

**H2: Sourcing strategy repertoire simplicity (complexity) has a negative (positive) relationship with competitive performance for Internet retail firms**

### Conformity/Deviation of Product-Market Strategy Repertoire

The process of isomorphism that results in ‘accepted’ ways of competing, and the associated legitimacy challenges faced by non-conforming firms, are fueled by stability and continuity of contact among competitors (Miller & Chen, 1995). Consequently, ‘accepted’ ways of competing or ‘norms’ are less likely to have emerged in young industries with low entry barriers such as those in the Internet retail sector, where competitors have not been in contact with each other for long. When industry ‘norms’ are weak at best, deviating from the norms is not likely to carry the performance disadvantages associated with legitimacy challenges. In addition, as observed by Miller & Chen (1995:257):

> Managers are apt to depart from traditional ways of doing things during periods of expansion—when the growth of an industry or the emergence of new markets encourage unorthodox means of capturing additional business. During periods of rapid growth firms experiment with a variety of techniques to appeal to the burgeoning army of potential customers.

As firms try different strategies, they are likely to reap the performance benefits associated with pursuing distinctive strategies (Porter, 1996). The above arguments suggest that the average mix of product market strategies in the industry may not represent the accepted ‘norm,’ deviating from which would incur a performance penalty. To the contrary, deviation can enhance differentiation and consequently result in greater performance.

**H3: Deviation from industry norm in product-market strategy repertoire has a positive relationship with competitive performance for Internet retail firms**

### Conformity/Deviation of Sourcing Strategy Repertoire

Many of the arguments made with respect to deviating from product-market strategy repertoire also apply to sourcing strategy repertoire. Specifically, due to the lack of stable and continuity
of contact between competitors over a long time, accepted norms for sourcing strategy are not likely to have emerged within the industry (Miller & Chen, 1995). Also, in their drive to capture a large share of a growing market, Internet retailers may seek an edge by sourcing their digital systems from new and different vendors who compete with established vendors by offering unique capabilities and features in their systems.

The lack of performance penalties to deviating from industry norms that are weak at best, and the performance advantages associated with pursuing a strategy that is differentiated and distinct from the industry norm (Porter, 1996), suggests the following.

**H4:** Deviation from industry norm in sourcing strategy repertoire has a positive relationship with competitive performance for Internet retail firms

**DATA AND MEASURES**

**Data**

We chose the Internet retail sector as the context for our study since digital systems are critical to business and competition in this sector and Internet retailers rely heavily on digital systems enabled strategic initiatives for competitive performance. We use data from the 2013 edition of the Internet Retailer’s ‘Internet Retailer Top 500 Guide’ for our study as it provides comprehensive information and has been the source of data for a number of prior studies (Ayanso and Mokaya 2013; McWilliams 2012; Mollenkopf, Rabonvich, Laseter, and Boyer 2007). Industry publications, in general, have been an important source of data for many studies both in information systems research (Bharadwaj, Bharadwaj, & Konsynski, 1999; Chari, Devaraj, & David, 2008), and in research on strategic repertoires (Miller & Chen, 1996; Miller & Chen, 1994). With total sales of $216.17 billion in 2012, the top 500 retailers account for more than 90% of all Internet retail sales.

**Measures**

**Dependent variable**

We measure competitive performance, our dependent variable, as the market share of the retailer. We use the classification of the Internet Retailer which classifies the Internet retail sector into fifteen markets ( Apparel, Books/Music/Video, Computer and Electronics, Flowers and Gifts, Food and Drug, Hardware and Home Improvement, Health and Beauty, Household and Home Furnishings, Jewelry, Mass Merchant, Office Supplies, Specialty, Sporting Goods, Toys and Hobbies, and Automotive) and provides information identifying the market where each retailer competes.

Market share of retailer i, $MS_i$, is calculated as the ratio of retailer i’s sales to total sales of all k retailers in retailer i’s’ market j:

$$MS_i = \frac{Sales_i}{\sum_{k \in j} Sales_k}$$

**Product-market strategy repertoire simplicity/complexity**
We measure product market strategy repertoire using the number and types of digital systems enabled product-market initiatives deployed as features in the firms’ retail websites (Miller & Chen, 1996). Internet Retailer provides a list of these product market initiatives deployed by each firm and we also crosschecked a subset of data items for a sample of firms using our own independent content analysis of websites of firms. Using this data we compute two measures of product-market strategy repertoire simplicity/complexity. First, we use the total number of product-market initiatives deployed by the firm as our ‘range index’ of product-market repertoire simplicity/complexity (Miller & Chen, 1996). Larger (smaller) values on this range index indicate that the firm deploys a wider range of initiatives and hence implies greater product-market strategy repertoire complexity (simplicity). To facilitate interpretation of results, we label this measure RI-PMSRC- ‘Range index of product market strategy repertoire complexity’. Second, following Ferrier and Lyon (2004), we use the product-market initiatives to calculate a Herfindahl index of product-market simplicity/complexity. Specifically, following Ferrier and Lyon (1999), we classified the product-market initiatives into four unique types of product-market initiative categories: products, pricing, marketing, and service. To ensure coding reliability, the study’s authors classified the initiatives independently, and then compared the classifications to check inter-coder reliability. Correspondence between the classifications was very high, and the few differences were resolved following directions outlined in Perreault and Leigh (1989). We then compute the Herfindahl index of simplicity/complexity, which reflects the extent to which a firm’s product market strategy repertoire is focused within a narrow/broad range of product market initiative categories/domains (Ferrier & Lyon, 2004; Ferrier et al., 1999). Specifically, the Herfindahl index of product-market strategy repertoire simplicity/complexity for retailer i is calculated as:

$$\sum_{t=1}^{4} \left( \frac{I_{it}}{TI} \right)^2$$

Where $I_{it}$ is the proportion of retailer i’s initiatives in category t to its total number of product-market initiatives ($T_I$). Values on the measure can range from 0.25 to 1, with higher (lower) values indicating greater product-market strategy repertoire simplicity (complexity). We label this measure HI-PMSRS- ‘Herfindahl index of product-market strategy repertoire Product-market strategy repertoire simplicity’.

Sourcing strategy repertoire simplicity/complexity

Our measure of digital systems sourcing strategy is based on the number of unique sources that a firm uses for its digital systems. Internet Retailer provides data on the sources of digital systems deployed by Internet retailers. Sources can include in-house development, external vendor(s), or a combination of in-house development and external vendor(s). Data is provided for a maximum of sixteen systems utilized in the Internet retail sector. Similar to Miller & Chen’s (1996) range index of strategic repertoire, we calculate our measure of sourcing strategy repertoire simplicity/complexity as:

$$\sum_{l=1}^{S_i} U_{il}$$

Where $U_{il}$ is firm i’s number of unique sources for its digital system l and $S_i$ is the number of digital systems deployed by firm i. Larger (smaller) values on the measure indicate the use of a broader range of sources for digital systems, and therefore a more complex (simple) sourcing strategy repertoire. To facilitate interpretation of results, we label this measure SSRC -Sourcing strategy repertoire complexity.
Deviation from industry product-market strategy

There are fifteen markets in which Internet retail firms compete as industries and in total there are 38 product-market initiatives that they deploy. We consider those initiatives that are deployed by more than 50% of firms in a given industry as the norms of that industry. Subsequently, for each firm in that industry we calculate the proportion of the set of industry norm initiatives not used by that firm and the proportion of the set of non-industry norm initiatives used by that firm. The deviation from industry product-market strategy, $\text{DevPMSR}$, is measured by adding these two proportions. Larger values on the measure indicate greater deviation from industry norm in product-market strategy.

Deviation from industry sourcing strategy

We measure deviation from industry sourcing strategy as follows.

$$
\text{Deviation from industry sourcing strategy}_{i, i | j} = \text{ABS} \left[ \frac{\text{SSRC}_i - \text{SSRC}_{ij}}{\text{SD}(\text{SSRC}_{ij})} \right]
$$

Where, $\text{SSRC}_i$ represents the 'sourcing strategy repertoire complexity' value for firm $i$, and $\text{SSRC}_{ij}$ and $\text{SD}(\text{SSRC}_i)$ are respectively the mean and standard deviation of the 'sourcing strategy repertoire complexity' values for firms in firm $i$'s industry $j$. We label deviation from sourcing strategy repertoire complexity as $\text{DevSSRC}$. Larger values on the measure indicate greater deviation from industry norm in sourcing strategy.

Control variables

To examine relationships of interest with greater fidelity, we control for a number of other influences on our dependent variable. Specifically, we control for the number of websites (nWebsites) operated by the retailer, firm age (age), and the percent of visitors to the retailer’s website who make a purchase (conversion).

Many firms in our sample use more than one website for their retailing operations. For example Sears Holding Corporation operates both Sears.com and Landsend.com. Operating more websites may increase market share if such efforts bring in more customers, much as opening stores in many locations does for traditional retailers. We control for the age of the firm since older firms may have gained experience and economies of scale and therefore have greater market shares. A higher conversion rate may drive market share as a greater fraction of visitors are converted into purchasing customers.

In addition to the above, we also control for the industry, or the market in which the firm competes, and the retailer type to which the firm belongs, using binary dummy variables for each of the fifteen markets/industries and each of the four retailer types.

ANALYTICAL METHODS AND RESULTS

We test our hypotheses using regression models of the following general form.

$$
\text{Market Share} = b_0 + b_1 \ast \text{RI-PMSRC} + b_2 \ast \text{HI-PMSRS} + b_3 \ast \text{SSRC} + b_4 \ast \text{DevPMSR} + b_5 \ast \text{DevSSRC} + b_6 \ast \text{(control variables)} + e
$$
Ordinary least squares methods are inappropriate for our analysis because our dependent variable is bound between 0 and 1. We therefore use Tobit regression analysis, which accounts for the double censoring of the response variable, to estimate our models (Greene, 1993). Since correlation between the sets of variables measuring sourcing strategy repertoire sim, deviation from industry norm, and deviation from retailer type norm are high, we run three variations of the above model, one with each of the three sets of theoretical variables in our analysis rather than one model with all of the variables, to avoid multicollinearity problems.

We run the models on our sample of 435 firms for which data on all variables of interest is available. Tables 1 and 2 show results of the Tobit regression analyses. We first estimate a model with just the control variables and results shown under Model 1 of Table 1 indicates that all our control variables including age, number of websites, and conversion are significant.

<table>
<thead>
<tr>
<th>Table 1: Tobit Regression Results: Hypotheses 1 and 2*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variable: Market Share</strong></td>
</tr>
<tr>
<td><strong>Model 1</strong></td>
</tr>
<tr>
<td><strong>Coefficient</strong></td>
</tr>
<tr>
<td>Constant</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>nWebsites</td>
</tr>
<tr>
<td>Conversion</td>
</tr>
<tr>
<td>Industry dummies</td>
</tr>
<tr>
<td>Retailer type dummies</td>
</tr>
<tr>
<td>SSRC</td>
</tr>
<tr>
<td>HI-PMSRS</td>
</tr>
<tr>
<td>RI-PMSRC</td>
</tr>
<tr>
<td><strong>Log likelihood</strong></td>
</tr>
</tbody>
</table>

N=435. ***p<0.001, **p<0.01, *p<0.05, +p<0.10  
* All results rounded to two decimal places.

Fourteen dummy variables representing ‘industries’ leaving out the fifteenth industry ‘Flowers’ and three dummy variables representing retailer types leaving out the fourth retailer type ‘Catalog’ were included in all models. Results are not included in the interest of brevity.

Digital Strategy Repertoire Simplicity /Complexity

Hypothesis 1 expects that more complex product market strategy repertoires are associated with better competitive performance, while hypothesis 2 expects the same for sourcing strategy repertoires. To test these hypotheses, we add the strategic repertoire simplicity/complexity variables to the control variables in Model 1 as shown in Table 1. Model 2a and Model 2b include the product market strategy repertoire simplicity/complexity variables HI-PMSRS and RI-PMSRC respectively, along with the sourcing strategy repertoire complexity variable SSRC. The significant negative coefficient for the herfindahld index of product market strategy repertoire simplicity (HI-PMSRS), and the significant positive coefficient for the range index of product
market strategy repertoire complexity (*RI-PMSRC*), support hypothesis 1. The positive and significant coefficient for the sourcing strategy repertoire complexity variable (*SSRC*) indicates that hypothesis 2 is also supported.

**Conformity/Deviation of Digital Strategy Repertoire (Industry)**

Hypotheses 3 and 4 propose that deviations from industry norms in product market and sourcing digital strategy repertoires respectively are positively associated with competitive performance of Internet retail firms. As shown in Model 3a of Table 2, we add the deviation from product market strategy variable, *DevPMSR* along with the deviation from the sourcing strategy variable, *DevSSRC* to Model 1. Results show that the coefficient of *DevPMSR* is significant. The positive relationship expected by hypothesis 3 between the deviation from product market initiatives and competitive performance is therefore supported. In both Models 3a and 3b, coefficient of *DevSSRC* is significant and positive supporting hypothesis 4.

**Table 2: Tobit Regression Results: Hypotheses 3 and 4**

<table>
<thead>
<tr>
<th>Dependent Variable: Market Share</th>
<th>Model 1</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.03</td>
<td>-0.07**</td>
</tr>
<tr>
<td>Age</td>
<td>0.00***</td>
<td>0.00***</td>
</tr>
<tr>
<td>nWebsites</td>
<td>0.00***</td>
<td>0.00***</td>
</tr>
<tr>
<td>Conversion</td>
<td>0.54***</td>
<td>0.51***</td>
</tr>
<tr>
<td>Industry dummies</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>Retailer type dummies</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>DevSSRC</td>
<td></td>
<td>0.02**</td>
</tr>
<tr>
<td>DevPMSR</td>
<td></td>
<td>0.03+</td>
</tr>
</tbody>
</table>

Log likelihood 538.62 545.31

N=435. ***p<0.001, **p<0.01, *p<0.05, +p<0.10

**DISCUSSION AND CONCLUSION**

In this study, we sought to identify digital strategy repertoires that drive competitive performance in the Internet retail sector. Our results show that various aspects of firms’ digital strategy repertoires, specifically product-market strategy repertoire complexity, sourcing strategy repertoire complexity, deviating from the industry norm for sourcing strategy repertoire, and deviating from the retailer type norm for sourcing strategy repertoire enhances their competitive performance.

**Digital Strategy Repertoire Simplicity /Complexity**

Our result for product-market strategy simplicity/complexity shows that pursuing more product-market related features may help in improving the competitive performance of the online retailer. Such features should be diversified on a broad range of domains. Since pursuing a simple strategic repertoire is cognitively economical (Miller & Toulouse, 1998), and also economizes on organizational effort required for implementation (Miller & Chen, 1996; Porter, 1996; Waterman...
Jr, 1982), a simple product-market strategy repertoire is relatively easier to pursue and consequently managers may be tempted to do so. Our finding suggests that managers should avoid the tendency to gravitate toward simple repertoires, or they risk losing market share.

Our results for sourcing strategy repertoire shows that pursuing a strategy that relies on a broader rather than a narrower range of unique sources for digital systems enhances market share. Relying on a broader range of sources for digital systems is much more challenging since such a strategy requires organizations to develop competencies in coordination, integration, negotiation, and contract management (Currie 1998). Our results suggest that Internet retailers should view organizational investment in developing these competencies as an organizational priority, echoing recent work that has highlighted sourcing related competencies as a critical success factor for firms (Gottfredson et al., 2005; Levina and Su 2008).

**Conformity/Deviation of Digital Strategy Repertoire (Industry)**

Contrary to our hypothesis, results for deviation from industry norm in digital strategies shows that deviating from industry norms in product-market strategy does not have significant impact on the competitive performance of online retail firms. One of the possible reasons for this result is that while our data looks into whether certain product-market initiatives have been deployed or not, it overlooks how effectively such initiatives are implemented. Regardless of this limitation, our results indicate that online retailers cannot improve their competitive performance merely by implementing more product-market initiatives or diversifying such initiatives in more domains than the industry average. It is interesting to note here that while deviating from product-market initiatives has not much impact on the competitive performance, deviating from the industry norms in the sourcing strategy repertoire can enhance the market share of the online retailers. It is possible that the differentials in the effectiveness of the implementation of the product-market initiatives could be captured by the deviations in the sourcing strategy. These findings suggest that managers of Internet retail firms should differentiate their sourcing strategies from industry norm in order to get the competitive advantage.

In addition to the implications of our study for managers, identified above in discussing our results, our study also carries a number of implications for research. In contrast to extant research on strategic repertoires which has examined strategic repertoires as unitary and pertaining to a firm’s product-market strategy, given the importance of digital systems in our context, we examined strategic repertoires in terms of both digital systems enabled product-market strategy as well as digital systems sourcing strategy. Our finding that both types of strategic repertoires affect competitive performance suggests that there may be other aspects of firms’ strategic repertoires that may be important in other contexts. Further work identifying these other strategic repertoires can enhance and enrich our understanding of the relationship between strategic repertoires and competitive performance. Also, our study demonstrates the applicability of traditional strategic management theories for identifying effective strategies in digital markets, as argued by Porter (2001). The identification of sourcing strategy repertoire as an additional aspect of strategic repertoire affecting competitive performance in Internet retailing also highlights the unique characteristics of digital markets that provide opportunities for testing and expanding traditional theories of competitive strategy (Tapscott, 2001). These findings indicate that further application of strategic management theories to digital markets and competition can be a fruitful endeavor for scholarship in both information systems and strategic management.
REFERENCES


Zhu, K. 2004. The complementarity of information technology infrastructure and e-commerce