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# RETAILER RESOURCES AND THE USE OF INFOMEDIARIES

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*Information about prospective customers (prospects) is an important input into the sales process. Specialized online sites known as infomediaries provide organizations with the opportunity to purchase prospect information directly. In this research, we examine the role of firms' resources in driving both the investment in prospect information and the sales resulting from these investments. Specifically, we identify information management resources (i.e., an information system for managing leads), electronic commerce resources, and dedicated human resources as important in influencing both the level of investment and resulting sales. We test our model using a detailed survey of auto retailers conducted by a leading market research organization.*

*Keywords: Referral infomediary, auto retailing, electronic commerce investment, information processing.*

# 1 INTRODUCTION

The purchase of information about prospective customers (*prospects*) is an important part of the sales process, especially as it relates to both personal sales and direct marketing. With the growth of information systems and the Internet, this market for customer information has grown immensely. Service providers in wide variety of areas can capture and market their customer information to interested partners, often with detailed information about individual preferences and behaviours. In addition, specialized companies known as *infomediaries* (Hagel III and Rayport, 1997) have emerged to play an expanded role in brokering prospect information in product categories such as automobiles, insurance, and real estate—i.e., where the purchase decisions consumers face are complex and frequently require direct interactions with salespeople. As a result, understanding how retailers use these markets for prospect information to augment their sales process is likely to be of interest both to researchers and practitioners.

Prior research has investigated the changes to the sales process that occurs as consumers use infomediaries to locate retailers. In particular, findings suggest that the specific characteristics of the customers and infomediaries involved influence shopping and purchase related outcomes. For customers, information needs and information found through infomediaries interact to influence offline search, satisfaction, and online referral based purchase (Kuruzovich, Viswanathan, Agarwal, Gosain and Weitzman, 2007). For infomediaries, the type of information provided (price or quality) results in a natural web based mechanism of price discrimination (Chen, Iyer and Padmanabhan, 2002; Viswanathan, Kuruzovich, Gosain and Agarwal, 2007). While these findings begin to provide both theory and empirical evidence to help understand referral mediated transactions, little is known about the characteristics of the retailers which help them to succeed in this process. In other words, there is a need to bring both theory and empirical evidence to investigate what factors enable retailers to best generate value from the emergence of infomediaries.

In this research, we examine how complementary resources influence both the investment in and resulting sales from net-enabled business processes, as in the theoretical framework shown in Figure 1. Anchored in the resource based view of the firm (RBV) and the IT value literature, this research provides a process level analysis of value and investment for infomediary mediated transactions. The overall model, found in Figure 2, points to the dual role of retailer resources which influence the amount of investment and the ultimate value generated. Overall, this research makes two key contributions. First, we identify complementary resources—specifically, information management resources (i.e., an information system for managing leads), electronic commerce resources, and dedicated human resources—lead to both greater investment in and greater benefits from infomediaries. Second, we identify the important issue of endogeneity, in which the resources identified influence both the extent of the investment in referrals and the resulting sales benefits. Together these findings bring a retailer based understanding of the use of online infomediaries to augment a traditional sales process.

# 2 LITERATURE REVIEW

In this research, we focus on key issues related to the organizational resources which explain organizational success in utilizing online infomediaries. In this section we review significant findings for the RBV and explore how it has been used in understanding the role of IT in creating value for organizations.

## 2.1 The Resource Based View of the Firm and IT Value

Originating in the field of strategic management (Barney 1986; 1991; Penrose 1959; Wernerfelt 1984), the RBV of the firm has become a critical lens through which researchers have examined the drivers of firm performance and competitive advantage. The RBV suggests that firms compete on the basis of VRIN resources—those that are valuable, rare, inimitable, and non-substitutable (Barney 1991; Connor 1991). Possession of VRIN resources can lead to a temporary competitive advantage and positively influence performance, as shown through empirical studies in a variety of domains (Bharadwaj, 2000; Dutta, Narasimhan and Rajiv, 2005; Srivastava, Fahey and Christensen, 2001).

The RBV provides a useful framework for IS researchers to understand the strategic value of IT and its influence on firm performance. It also provides a way in which researchers can understand organizational functions which may complement new types of technologies (Melville, Kraemer and Gurbaxani, 2004). Using the RBV, researchers can characterize how specific technology-related capabilities influence firm outcomes, adding greater detail to the value creation process. In addition, as the RBV has been applied to numerous areas of organizational research, it provides a vehicle through which to compare the magnitude of the effects from IT to the effects from other organizational phenomena and a theoretical foundation through which to conduct cross-disciplinary research (Wade and Hulland, 2004).

For empirical studies investigating IT and utilizing the RBV, difficulties in measurement have caused theoretical questions of what constitutes resources and capabilities to be addressed directly alongside empirical questions of how to measure them. Several researchers have utilized overall reputation as indicated by an Information Week list of IT innovation leaders as a measure of IT capabilities (Bharadwaj, 2000; Santhanam and Hartono, 2003). This type of measurement has the advantage of being externally developed by a panel of industry experts. However, the use of a binary variable to represent IT capabilities does not allow for the analysis of incremental capabilities, is not consistent with the multidimensional capabilities specified by the RBV (Santhanam and Hartono, 2003), and thus may provide limited insight into the specific mechanisms through which IT capabilities may influence organizational performance.

As an alternative, numerous studies have measured responses from key informants within organizations through a survey methodology. For example, Armstrong and Sambamurthy (1999) found that CIO capabilities and IT infrastructure each lead to IT assimilation. Ray et al. (2005) found that managerial IT knowledge and service climate positively influence customer outcomes. An advantage of this technique is that it enables the measurement of constructs not accessible through objective measures. While the key informant survey methodology has been extensively used throughout organizational research, objections to this methodology are that measures typically reflect the opinion of one individual and ignore the possibility that IT-related capabilities may occur throughout various parts of the firm.

An alternative to survey measures is the use of metrics related to IT functionalities, or specific system features/functions that organizations develop. Although IT related capabilities are the constructs of theoretical interest, IT functionalities are argued to be enabled by and thus reflective of underlying capabilities. This approach has been used to measure capabilities related to electronic commerce (Zhu and Kraemer, 2002) and net-enabled business processes (Barua et al. 2004). The use of metrics or IT functionalities has the advantage that they are objective measures which typically can be determined either through survey methodology or through direct observation—i.e., from examining public press releases and websites.

We measure specific IT functionalities and investments using the key informant description of organizational resources, thus combining aspects of both the key informant and the metric based approaches. By obtaining information from key informants we are able to understand more detailed aspects of the organizations information processing resources as well as their

relationship with referral infomediaries. In focusing primarily on metric style information on retailer operations we retain an objective view of infomediary mediated business processes.

As this research provides a process level investigation how firm resources influence the value generated from referral investments, we base our overall theoretical model on the framework developed by Melville, Kraemer, and Gurbaxani (2004). Their framework indicates that IT resources and complementary organizational resources combine to influence business process performance. In examining the performance of referral investments, this research provides us with a relevant theoretically grounded starting point.

### **3 HYPOTHESES**

In our study, we examine the relationship among the organizations information processing resources, investment in referrals, and referral sales. We first identify the important role of Internet sales and referral investment. We then discuss the role of IT and complementary organizational resources. For each of the hypotheses, we argue first the direct relationship between firm resources and referral sales and then argue the relationship between firm resources and referral investment.

#### **3.1 Internet Sales**

Understanding the ways through which information technologies influence the performance of organizations is one the key themes of IS research. While numerous organizational studies have identified those factors influencing overall business performance (e.g., Brynjolfsson and Hitt, 1996; Zhu and Kraemer, 2002; Zhu and Kraemer, 2005), there are several advantages to studying the performance of the Internet channel—i.e., referral sales—separately from overall organizational performance. This incorporation of business process specific outcomes has been a key theme within the IT value literature (e.g., Melville et al., 2004; Mukhopadhyay and Kekre, 2002; Mukhopadhyay and Kekre, 1995). In an industry such as auto retailing, many of the existing business processes have been significantly altered by the presence of the Internet. Measuring referral sales directly gives us a way to understand and examine empirically those factors which enable organizations to be successful as they incorporate a new model of sales provided by infomediaries. Measuring overall organizational performance, while important, may not reveal the detailed process level factors which enable organizations to succeed in utilizing new channels. In essence, examining process level performance enables us to determine how a given organization has been able to utilize the referral infomediaries as a way to grow overall sales.

#### **3.2 Referral Investment**

Investments in referrals provide retailers with an ongoing input into the sales business process. These relationships are typically exclusive for a given geographic area, with retailers agreeing to either a fixed fee or a per lead fee paid to the infomediary. While initially the retailer may not know the volume or quality of leads, they can access infomediary quality over time and decide whether to continue the relationship. With exposure to the results of the investment on sales, the retailer decides whether to continue or end the relationship. This results in a situation in which the referrals is consumed as part of a process in which the retailer is integral to the ultimate value generated from the referral, as in the purchase of a service.

We argue that retailers with greater complementary resources will exhibit a higher level of investment in referrals. For each of the identified resources we will reiterate the logic, but here we argue the overall relationship generally. Infomediaries are differentiated in the quality of leads that they offer. Similarly, retailers are differentiated in their ability to generate value from leads. Infomediaries are aware of the quality of referrals that they

provide and price their information product appropriately. Once a relationship is established and leads are provided, resources within the organization are necessary in order to generate value from the investment. We complementary resources generate value through improved efficiency in the transaction and possessing of information. More efficient management of information is likely to improve the value from the information based referral investments. Thus, retailers with these resources will be less likely to find relationships with infomediaries to be unprofitable. In other words, high levels of information processing resources will shift the point at which the marginal dollar invested in referral yields a negative return.

In identifying this relationship, we build on the Melville et al. (2004) framework in specifying the importance of complementary resources in influencing the investment in and resulting sales from net-enabled business processes involving infomediaries, as shown in Figure 1. Prior research by Chen et al. (2002) has examined optimal contracting conditions for online infomediaries. One assumption of this work is that retailers are equal in their ability to generate value from infomediaries, which is not likely to be the case. The management and conversion of infomediary customers is likely to require a different set of skills from the traditional retail sales process. As a result, those organizational resources which positively influence a firm's ability to capture value from infomediaries will influence the degree to which they invest in and obtain value from infomediaries.

### **3.3 Information Management Resources**

Information management resources are expected to influence the referral sales through improved work processes and management of referral information. Prior research suggests that the performance of firms in the information intensive insurance industry is linked to the intensity of IT investment (Harris and Katz, 1991). It is likely that the ability of these firms to adequately manage information processing activities is a key aspect of this performance benefit. In the context of auto retailing, individuals may use referrals to both transact as well as to obtain more information to be used in the negotiation process. As this results in retailers having to manage a large number of prospects electronic information, IT based information management systems improve workflow processes by ensuring that customer status and interactions are captured. Specialized *lead management systems* (LMS) or *customer relationship management* (CRM) systems have been developed by numerous vendors to provide retailers with an easy way of managing information flows. Therefore, we suggest:

*H1a: Information management resources will be positively related to referral sales.*

The positive relationship between information management resources and sales is likely to shift the point at which the marginal dollar invested in referrals becomes negative, increasing the overall investment in referrals.

*H1b: Information management resources will be positively related to referral investment.*

### **3.4 Electronic Commerce Resources**

IT based electronic commerce resources are expected to influence referral sales through the facilitation of information transfer in and out of the organization. Referrals purchased by the retailer further require the additional corresponding information search and transaction taken by the customer. In using a referral infomediary, a prospect is demonstrating a preference to interact electronically with the retailer. To the extent that the retailer can demonstrate the electronic commerce resources which remove uncertainty (provide information) and facilitating transactions, it is likely to influence sales.

*H2a: Electronic commerce resources will be positively related to referral sales.*

The positive relationship between electronic commerce resources and sales is likely to shift the point at which the marginal dollar invested in referrals becomes negative, increasing the overall investment in referrals.

*H2b: Electronic Commerce resources will be negatively related to referral investment.*

### **3.5 Dedicated Human Resources**

Dedicated human resources are expected to positively relate to referral sales. Incentives for commissioned sales people are such that the income incentives are likely to drive behaviours whether they are desired by the organization or not (Basu, Lal, Srinivasan and Staelin, 1985). Thus, whether a company has made extensive investment in prospect information, individuals are likely to act in such a way that maximizes individual income. In this case, if salespeople are expected to handle customers entering the dealership along with referrals, they are likely to spread their time on the individuals they perceive to offer the best return. Given the increased information uncertainty and lower profit associated with the Internet channel (Morton, Zettelmeyer and Silva-Risso, 2001), it is likely that referrals may not be preferable. This may be further influenced by individual preferences, as individuals not hired specifically with technology based skills may selectively prefer non-electronic interactions. In contrast, incentives and skills of dedicated human resources are aligned to make the most of referral investments. As a result, we hypothesize:

*H3a: Dedicated human resources will be positively related to referral sales.*

Like prior hypotheses, the positive relationship between dedicated human resources and sales is likely to shift the point at which the marginal dollar invested in referrals becomes negative, increasing the overall investment in referrals.

*H3b: Dedicated human resources will be positively related to referral investment.*

## **4 DATA , ANALYSIS, AND RESULTS**

### **4.1 Data**

The data for this study is drawn from a 2003 study of infomediaries conducted by a leading market research organization. The organization contacted dealerships and asked them to participate in a 30-minute online survey detailing aspects of their use of the online channel. From the initial email to approximately 18,000 retailers, 1,144 retailers completed the survey. The average monthly vehicles sales for the organizations responding to the survey was 105. This was higher than the average dealership sales reported during this timeframe, which was equal to 59 vehicles per year (NADA, 2004). As the survey was primarily targeted at organizations use of the Internet, it is possible that larger organizations with established Internet operations may have been more likely to complete the survey. In addition, as the survey was conducted online, smaller firms may not have had the connectivity to be reached by the market research organization. Among the respondents, 466 were missing profit level information. Additional listwise deletion of missing variables yielded 678 usable responses. While the response rate is low, the sample size is overall very large and represents nearly 4% of the total population of dealerships. In addition, it is estimated that based on past experiences of the market research organization, approximately 20% of the contact emails were not valid. Adjusting the number of organizations contacted downward by 20% results in an overall response rate for valid contacts of 8%.

As a measure of information management resources, the respondents indicated whether they had implemented a lead management system. Within the referral process, a lead management system plays a critical role of information and workflow management. Electronic commerce resources were measured by *information* and *transaction* focused indicators of the types of

systems firms had implemented. Informational capabilities were measured through four binary indicators of specific information-related functionality, such as “Lists all photos on websites.” Similarly, transactional capabilities were measured through four binary indicators related to purchasing or furthering the purchase process online, such as “Price quote request form.” For the measure of dedicated human resources the retailer indicated whether they had dedicated individuals to handle Internet-generated leads within the organization. Specifically, the retailer was asked “Are leads distributed to specific sales people who don’t take regular floor traffic?”

In order to determine referral investment and referral sales, managers were asked to indicate the investment, leads, and sales for up to six infomediaries. This question was asked iteratively, where the respondent entered the values for each infomediary and then had the opportunity to adjust his/her response after seeing the totals.

## 4.2 Analysis

The analysis involved the full system of equations predicting both referral investment and referral sales. Information management (*im*), electronic commerce resources (*ec*), and dedicated human resources (*dhr*), influence investment (*inv*) and sales (*sales*). Size related controls including the total monthly sales (*size*) and the number of manufacturer carried (*oem*) were included in both equations. Additional variables related to the type of vehicles sold (domestic, basic import, or luxury import,  $d_i$ ) and the Internet profit per vehicle (*prof*) were used as instruments for referral investment. The full system of equations examined is shown in equations 1 and 2:

$$inv = \gamma_0(im) + \gamma_1(dhr) + \gamma_2(ec) + \gamma_3(size) + \gamma_4(oem) + \gamma_{5-7}d_i + \gamma_8prof \quad (1)$$

$$sales = \gamma_9(inv) + \gamma_{10}(im) + \gamma_{11}(dhr) + \gamma_{12}(ec) + \gamma_{13}(size) + \gamma_{14}(oem) \quad (2)$$

OLS assumptions may be violated due to the presence of endogeneity between the referral investment and sale price. The analysis of equations 1 and 2 is done using three stage least squares (3SLS) estimation. The 3SLS systems estimator combines 2SLS and SUR methods and accounts for the endogenous relationships between the equations while controlling for potential correlation among the error terms (Lahiri and Schmidt, 1978).

In cases in which simultaneous models are used, it is important to discuss the choice of instrumental variables. Instrumental variables enable the system of equations to meet the necessary rank and order conditions, and good instrumental variables are both exogenous to the set of dependant variables and relevant. The instrumental variables used in the referral investment equation specify characteristics with are likely to influence the amount of profit per vehicle (and thus the willingness of the retailer to invest in referral infomediaries) but not the sales. Specifically, we use the retailer specified profit per vehicle and whether the retail falls into the category of domestic, basic import, or luxury import.

## 4.3 Results

The results suggest support for the majority of the hypothesized relationships, and the overall model had an  $R^2$  of 0.246. Supporting H1a/b, information management resources were found to be positively related to both referral investment and referral sales. We found that electronic commerce resources were not related to referral investment (not-supporting H2a) but was related to sales (supporting H2B). Supporting H3a/b, dedicated human resources were positively related to the level of referral investment and referral sales.



## **5 DISCUSSION, LIMITATIONS, AND CONCLUSIONS**

### **5.1 Discussion**

Specific firm capabilities are a critical component of understanding how organizations effectively utilize net enabled business processes, such as those provided by online infomediaries. While numerous studies have recognized the macro level value created by IT investments, few studies have been able to identify specific mechanisms through which this occurs. Using a framework based on the RBV and IT value literature, we are able to show how the specific organizational resources enable a more effective business process. These results have implications both for theory and for practice.

One theoretical implication of this is related to the endogenous relationship between firm resources, investment, and the resulting sales. Firm information processing resources provide the means through which organizations can more effectively apply investments, leading to more investments and higher sales. The implications of this endogeneity should be considered for markets for IT based services in which organizations have the opportunity to invest, observe outcomes, and adjust investments appropriately.

For practitioners, these results suggest that the referral infomediaries may be able to obtain greater value from their information products by providing services and training which improve information management processes of retailers. For example, Autobytel, one of the largest referral infomediaries in auto retailing, has begun to also offer an integrated lead management system. These findings suggest that in offering this system they are providing an important component which helps to ensure the continued value of their information product. It further suggests that offering free information processing services along with the referral investment may be one potential evolution of the infomediary business models.

### **5.2 Limitations**

A limitation of this research is that it takes place in a single industry and therefore may not be generalizable to other contexts. While this is a limitation of this work, the use of metrics and the effects from detailed organizational characteristics related to technology may only be detectable in single-industry studies, as industry-level effects may overshadow organizational-level effects for many types of technology impacts (Hawawini, Subramanian and Verdin, 2003). As a result, future research should confirm the role of the identified relationships in other industries.

A second potential limitation of this work is that the measures were collected using a single survey and thus were susceptible to common method bias. This is somewhat mitigated by the objective nature of the performance measures, and a Harmon's single factor test indicated that less than 25% of the variance was explained by any single factor. However, future work should consider utilizing outcome measures captured by a third party source.

### **5.3 Conclusions**

The Internet and the emergence of online infomediaries have dramatically influenced both the operations and outcomes of retailers in a variety of industries. This research provides a process level examination in firm investment in referrals and the resulting sales. Using an extensive dataset capturing firm resources, we show how information management resources (i.e., an information system for managing leads), electronic commerce resources, and dedicated human resources each lead to favourable returns from referral investments.

	Variable	Mean	Std	1	2	3	4	5	6	7	8	9	10
1	Dedicated Human Resources	0.44	0.50										
2	Lead Management System	0.64	0.48	0.28									
3	EC Capabilities	2.16	1.00	0.20	0.20								
4	Dealership Size	105.37	92.02	0.25	0.24	0.17							
5	# Brands Carried	2.34	3.19	-0.03	-0.01	-0.06	0.03						
6	Basic Import	0.21	0.41	0.07	0.08	0.04	0.10	-0.22					
7	Domestic	0.50	0.50	-0.09	-0.15	-0.02	-0.22	-0.11	-0.52				
8	Luxury Import	0.10	0.30	0.02	0.03	-0.10	-0.05	-0.10	-0.17	-0.33			
9	Internet Vehicle Profit	0.96	0.68	0.12	0.08	0.03	0.17	0.02	-0.11	-0.11	0.24		
10	Referral Investment	1,615.74	1,613.52	0.23	0.21	0.07	0.22	-0.02	0.12	-0.18	0.06	0.14	
11	Referral Sales	12.22	14.96	0.25	0.18	0.20	0.50	-0.01	0.14	-0.19	-0.03	0.11	0.25

*Table 1. Summary Statistics and Correlation Table*

	<b>ln(Referral Investment)</b>	<b>ln(Referral Sales)</b>
<b>Intercept</b>	6.820(0.162)	-4.805(1.494)
<b>ln(Referral Investment)</b>		0.835***(0.211)
<b>Lead Management System</b>	0.293**(0.095)	0.356***(0.091)
<b>EC Capabilities</b>	-0.011(0.044)	0.130**(0.042)
<b>Dedicated Human Resources</b>	0.278**(0.088)	0.246**(0.084)
<b>Dealership Size</b>	0.001(0.000)	0.002***(0.001)
<b># Brands Carried</b>	-0.019(0.021)	-0.021(0.019)
<b>Basic Import</b>	0.127(0.110)	
<b>Domestic</b>	-0.241*(0.095)	
<b>Luxury Import</b>	-0.181(0.137)	
<b>Internet Vehicle Profit</b>	0.163**(0.059)	
<b>R<sup>2</sup> (3SLS Model)</b>	0.246	

Table 2. 3SLS Results of Model Analysis

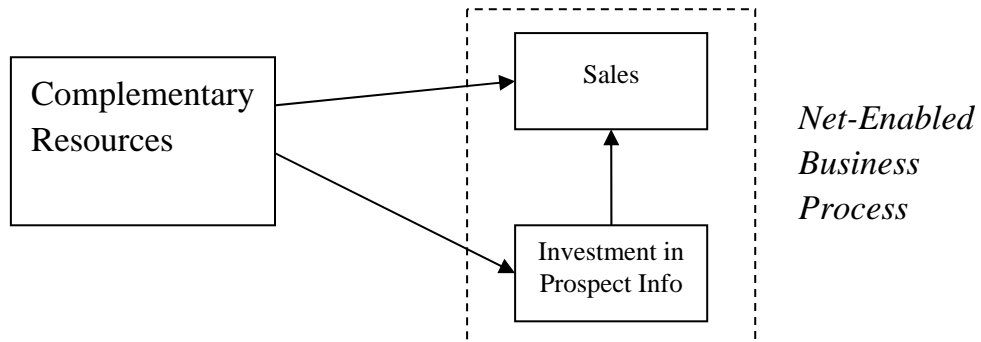


Figure 1 Research Framework

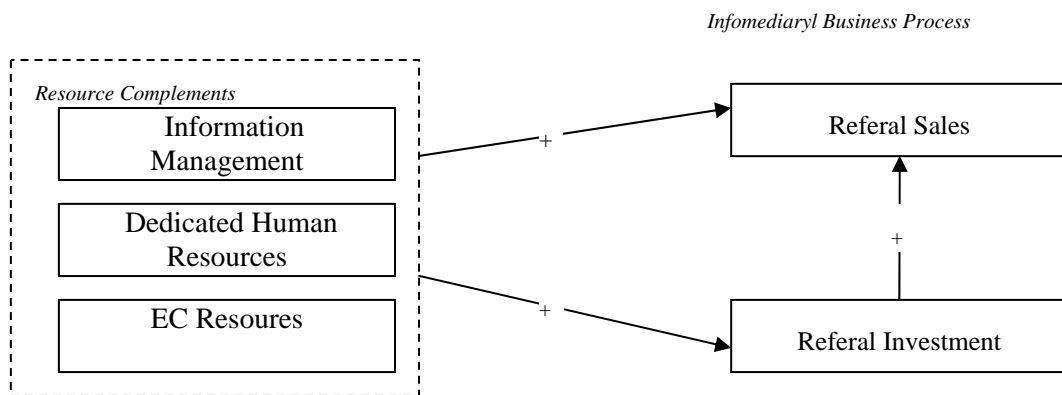


Figure 2: Internet Referral Business Value Generation Process

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