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Lih-Bin Oh

National University of Singapore, ohlb@comp.nus.edu.sg

Hock-Hai TEO

National University of Singapore, teohh@comp.nus.edu.sg

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Creating E-Business Value Through Retail Channel Integration: A Resource-based Perspective of Hybrid Commerce

Lih-Bin Oh

Department of Information Systems
National University of Singapore
Singapore
ohlb@comp.nus.edu.sg

Hock-Hai Teo

Department of Information Systems
National University of Singapore
Singapore
teo hh@comp.nus.edu.sg

ABSTRACT

The study of synergies arising from integrating physical and virtual retail channels is an area of increasing interest. Despite the much touted advantages of an integrated retail channel, there are very few successful hybrid commerce firms till date. This research attempts to understand how hybrid commerce e-business value can be measured, and how channel integration creates this value through three dimensions of information richness, spatial reach and offerings range. A structural model is formulated to empirically test the hypotheses using survey data collected from hybrid commerce firms. Results provide insights into the creation and measurement of hybrid commerce firm value.

Keywords

hybrid commerce, retail channel integration, business value of IT, resource-based view

INTRODUCTION

According to The Economist (2004), one-fifth of U.S. consumers who shop at a major departmental store have researched their purchase online. Half of the 60 million European consumers bought products offline after having investigated prices and details online. Hybrid consumers are also found to be more valuable and loyal to retailers than single channel consumers. As competition intensified, traditional retailers are aggressively deploying e-commerce initiatives and rapidly building their cross-channel capabilities (Zhu 2004). Given that there are relative advantages and disadvantages to retailing in the physical and virtual realms, channel integration thus allows retailers to create value for both the consumers and the firm. Various known as click-and-mortar, brick-and-click or hybrid commerce, the combination of the physical and virtual channels is widely regarded to be the viable business model in this new digital economy (Steinfeld et al. 2002; Prasarnphanich and Gillenson 2003).

Increasingly, established brick-and-mortar retailers are extending their reach to the marketplace while “pure-clicks” stores are establishing physical presence either through setting up their own stores or establishing strategic alliances (Prasarnphanich and Gillenson 2003). However, there are currently very few successful hybrid commerce firms. The exemplary ones include Sears, Office Depot, Circuit City, and Best Buy. Given the intuitive benefits of hybrid commerce and the attention given by the popular press over the past few years, the slow transformation to hybrid commerce is perplexing. Since hybrid commerce success hinges on an integrated information system (IS) to provide seamless information access across both channels, we believe that one of the major impediments is that retailers fail to perceive value in integration given the sheer complexity of organizational redesign and investments required for information technology (IT) infrastructure.

The extant research has neither articulated the central issues nor has it advanced theoretical understandings that address the unique challenges of hybrid commerce. Hence, this study sets out to identify how an integrated retail channel can lead to enhanced e-business value for hybrid firms. Specifically, using a resource-based view (RBV) lens, we construct metrics that can be used to measure the extent of retail channel integration and e-business value for hybrid commerce firms. A structural model will be tested with survey data to explain how e-business value can be derived through these hybrid processes.

THEORETICAL FOUNDATIONS

Resource-Based View Theory of Firm and Complementarity of Resources

Strategy researchers have applied RBV theory of firm to analyze the competitive advantage implications of IT and to assess empirically the complementarities between IT and other firm resources (Melville et al. 2004). The RBV theory suggests that the possession of valuable, rare, inimitable and non-substitutable resources would enable firms to achieve competitive advantage (Barney 1991). Wade and Hulland (2004) suggest that applying the RBV perspective to IS research is useful in identifying key drivers of superior business performance. They further highlight that studies on how resources are developed, integrated within the firm, and released have been limited and strongly contend that focusing on resource complementarity will uncover an enhanced role for IS in sustained firm competitiveness.

In this study, hybrid commerce firms are viewed as possessing two distinct sets of resources – offline physical store resources, and online Website resources. The complementarity between online and offline resources is the unique strategic advantage possess by hybrid firms (Amit and Zott 2001). Cross-channel synergies can be tapped through common infrastructures, operations, marketing, customers, and other complementary assets to enhance the business value for both resources (Steinfield et al. 2002; Zhu 2004).

Channel Integration as a Dynamic Capability

The RBV has been extended with the dynamic capabilities perspective to address the realities of high-velocity markets and rapid technological change. Dynamic capabilities are defined as a firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments (Teece et al. 1997). It permit firms to combine flexibly different IT and business resources to simulate competitive actions through innovations in products, services, and channels (Sambamurthy et al. 2003). Daniel and Wilson (2003) identify channel integration as a possible dynamic capability that firms could choose to develop. Channel integration can be viewed as a change-oriented dynamic capability that helps firms reconfigure their resources to meet evolving customer demand and competitor strategies. Multi-channel retailers can integrate their online and offline resources to address the volatilities of the rapidly changing retailing industry operating in a dynamic and hypercompetitive environment (Sambamurthy et al. 2003).

RESEARCH FRAMEWORK

Conceptualization of Hybrid Commerce Firm Value

E-commerce firms can derive value through efficiency, lock-in, and novelty (Amit and Zott 2001). Similarly, Zhuang and Lederer (2003) identified back-end efficiency, inventory management, cost reduction and customer service as benefits of e-commerce retailing. In the context of hybrid commerce, Steinfield et al. (2002) proposed cost savings, differentiation through value-added services and market extension among the benefits arising from retail channel integration. Hence, by synthesizing prior literature on e-commerce benefits and the additional advantages due to integration with the physical stores, we conceptualize hybrid firm value to be measurable over the three aspects that lead to value creation: increasing efficiency by decreasing costs, increasing customer retention by offering enhanced differentiated consumer value and attracting new customers through expanded capacity of innovativeness:

Impact on Retail Channel Costs – Retail channel costs include costs associated with delivery, inventory, marketing, and customer service (Steinfield et al. 2002). With an integrated retail channel, inventory costs can be reduced by cutting down on the stock holdings in physical outlets, while offering full product range through the Internet channel. Using the Internet as a complementary channel offloads some work of in-store staff to customers, hence saving on labor costs. Distribution costs are reduced when customers pick up and return products at the physical store. Marketing costs are also slashed when promotions are done electronically.

Impact on Differentiated Consumer Value – The measurement of consumer value is of primary interest in net-enablement initiatives (Wheeler 2002). Consumer value is a result of value propositions created through a firm's configuration of resources which may include the product/service itself, the channel(s) through which it is delivered, and the post-sale interactions via support or warranty (Keeney 1999; Wheeler 2002). Co-creating value by co-opting consumers in the value creation process is advocated as a new source of competitive advantage (Prahalad and Ramaswamy 2004; Sambamurthy et al. 2003). Hybrid retail firms have advantages over single-channel retailers in enhancing consumer value through value co-creation. With enhanced information richness, flexibility in geographical reach and a wide range of options provided to

consumers to perform a certain degree of self-service for order fulfillment and customer service processes, the firm can differentiate itself to provide consumers with enhanced value.

Impact on Innovative Capabilities – The value creation potential of innovations can be in the form of new products/services, new methods of distribution or marketing, tapping of new markets, or re-structuring transactions (Amit and Zott 2001). The access to dual channel resources offers an unprecedented opportunity to create *new* combination of product/service offerings and bundles. The increased quality of information about customers and inventory gathered allow the firm to launch a variety of novel business processes which is impossible for a single-channel business. By innovating in the way business is done, firms can gain additional market share, leading to competitive advantage.

The proposed research model is shown in Figure 1.

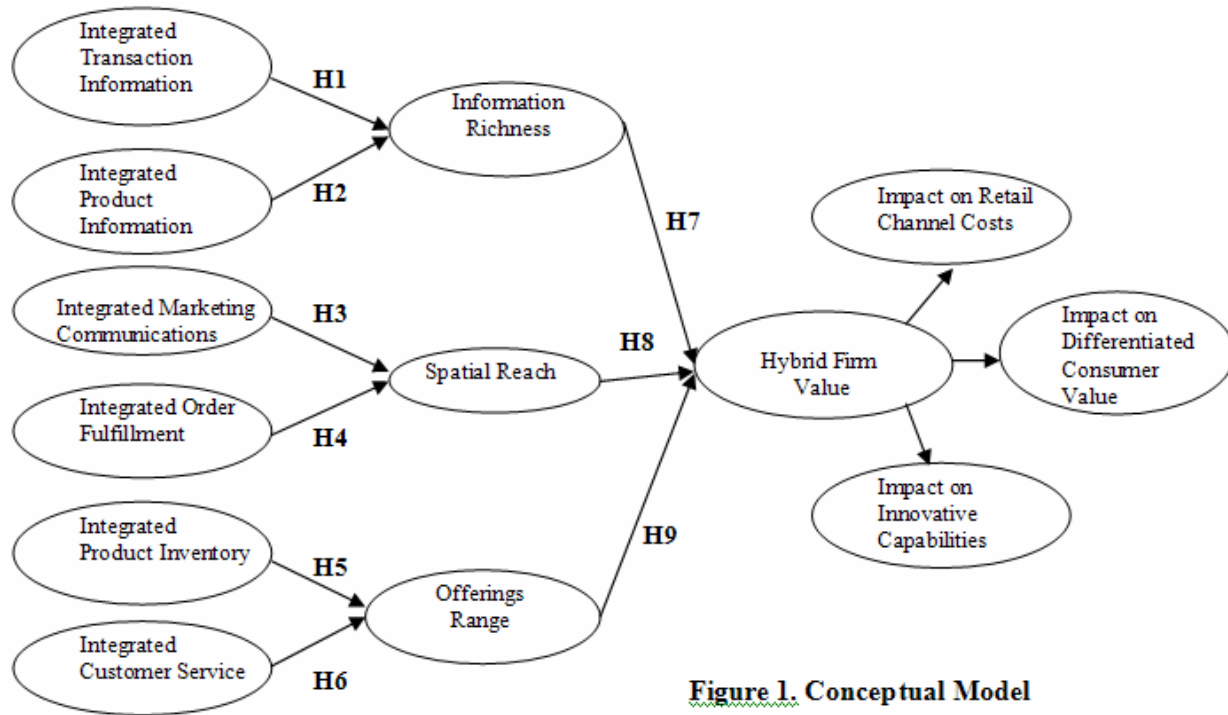


Figure 1. Conceptual Model

Research Hypotheses

Six integrated retail processes for hybrid commerce are identified based on a review of extant hybrid commerce literature (Goersch 2002, Prasarnphanich and Gillenson 2003, Steinfield et al. 2002). These integrated processes are further conceptualized as antecedents for drivers of hybrid firm value along the dimensions of information richness, spatial reach and offerings range (Evans and Wurster 1999, Sambamurthy et al. 2003, Wells and Gobeli 2003).

Antecedents of Information Richness

Information richness is related to the depth and detail of the information that the firm gives the customer or collects about the customer (Evans and Wurster 1999). It measures the quality of information collected about transactions, transparency of that information to other processes and systems, and the ability to use that information to reengineer business processes that match customers’ needs (Sambamurthy et al. 2003; Wells and Gobeli 2003). Information richness can be attained through two processes: integrated transaction information and integrated product information.

Integrated transaction information involves collecting customers’ online and offline transaction information, managing this integrated information, and making it available across multiple channels. This would allow the retailer to provide customers with many value-added services like pre-purchase conveniences, advanced orders, and virtual access to account information (Steinfield et al. 2002). Customized Web pages could also allow customers to review their previous purchases and be provided with suggestions for future purchases (Prasarnphanich and Gillenson 2003). Integrated transaction information

should increase the richness of the information available and the quality of the services that can be provided based on this information.

H1: Higher degree of integrated transaction information will lead to a higher degree of information richness.

Integrated product information involves ensuring the consistency of product and inventory information in both retail channels. This can be achieved by integrating product catalogs and ensuring that information related to product descriptions, price and stock availability is consistent in both channels. An integrated product cataloging system can allow customers to use product information published in paper-based media to locate and order products online (Saeed et al. 2003). Integrated product information would also lead to a transparent flow of information between the processes, and this should increase the degree of richness.

H2: Higher degree of integrated product information will lead to a higher degree of information richness.

Antecedents of Spatial Reach

Spatial reach relates to access and connection and refers to how many customers a firm can serve and put customers in touch with products and services (Evans and Wurster 1999; Wells and Gobeli 2003). It can be attained through two processes: integrated marketing communications and integrated order fulfillment.

Integrated marketing communications is the promotion and marketing of one channel by the other channel, to encourage customers of one to use the other and increase awareness of both channels (Goersch 2002). The physical store can be used as an advertising medium for the Website, through brochures, receipts, carrying bags, posters and in-store promotions. Similarly, the Website can provide information about the locations of the physical stores and announcements of in-store events (Steinfeld et al. 2002). With integrated marketing communications, spillover effects are also increased as advertisements and promotions in each channel draw attention to the other. Integrated marketing communications also include consistency in branding (Goersch 2002). By integrating marketing communications and ensuring consistency in branding across channels, retailers should be able to increase the reach of their store.

H3: Higher degree of integrated marketing communications will lead to a higher degree of spatial reach.

Integrated order fulfillment is the retailer's ability to offer logistical support at one channel for products bought in another channel. Integrated order fulfillment includes allowing customers to use the online channel to order products and pick them up at local physical outlets, allowing gift coupons issued by the store to be redeemed either online or offline and allowing customers to return goods ordered online at the physical store (Saeed et al. 2003). By providing complementary logistical support for both channels, the order and pick-up options provided to customers are increased which in turn will extend the reach of the store.

H4: Higher degree of integrated order fulfillment will lead to a higher degree of spatial reach.

Antecedents of Offerings Range

Offerings range is the number and variety of products or services a firm can provide to its customers (Wells and Gobeli 2003). Value propositions offered by firms can include both primary products and support services (Keeney 1999). Therefore, in addition to the breadth of products, we also consider the variety of support services offered. Offerings range can be attained through two processes: integrated product inventory and integrated customer service.

Integrated product inventory is the assortment of products offered to customers in both channels. It includes utilizing either the online channel to sell products that previously could not be sold using the physical channel or utilizing the physical stores to sell products that could not be sold online. By providing online information about products available in the physical store, the retailer could encourage customers to use the online store to search for products available in the physical store through an integrated database (Prasarnphanich and Gillenson 2003). Internet kiosk in physical stores can provide access to online store inventory. The firm will be able to increase its offerings range by increasing its integrated product inventory.

H5: Higher degree of integrated product inventory will lead to a higher degree of offerings range.

Integrated customer service is the provision of customer service support in one channel for the products bought in another channel. It can include providing support at the physical store for problems related to the online purchases (Steinfeld et al. 2002). It also includes an integrated communication channel where the online store provides after-sales services such as email support for products bought in physical stores as well as real-time live chat, where online customers have access to in-store customer service assistants (Amit and Zott 2001). Regardless of the channel the customer chooses to interact with the

store, information would be available to handle queries and provide customer service (Saeed et al. 2003). The online store could also allow customers to track repair schedules of products bought from the physical store (Wells and Gobeli 2003). By providing integrated customer service, the firm will increase the breadth and variety of support services offered.

H6: Higher degree of integrated customer service will lead to a higher degree of offerings range.

Richness, Reach, and Range as Drivers of Hybrid Commerce Firm Value

When both channels are harmonized effectively, the increased information richness and extended spatial reach will allow potential cost savings, particularly involving labor, inventory and delivery costs (Steinfeld et al. 2002). Logistical, marketing and customer service costs are transferred to consumers for self-services activities such as looking up product information online, utilizing online technical assistance and performing in-store self-collection. Increased information richness allows the firm to exploit customization of its products/services to more accurately meet customer needs and build powerful relationships with them (Evans and Wurster 1999; Wells and Gobeli 2003). By increasing spatial reach, firms can co-opt more customers into their value stream activities to increase value provided to the customers (Pralhad and Ramaswamy 2004). Extending the offerings range further gives rise to many innovative mechanisms. By increasing the breadth of support services, the firm can revamp its customer service strategy and use its integrated customer service channel for promotion and marketing. Therefore, channel integration, through an increase in richness, reach, and range should lead to an increase in value for hybrid firms.

H7: Higher degree of information richness will lead to a higher level of hybrid firm value.

H8: Higher degree of spatial reach will lead to a higher level of hybrid firm value.

H9: Higher degree of offerings range will lead to a higher level of hybrid firm value.

RESEARCH METHOD

Operationalization of Constructs

A comprehensive literature review and discussions with practitioners and IS faculty members were conducted to develop sample survey items. This was followed by pretesting and revisions to the questionnaire. In this study, constructs were modeled as either reflective or formative (Chin 1998). Well-understood constructs, which have measurement scales that reflect the underlying construct, were modeled as reflective, while indicators that as a group jointly determine the conceptual and empirical meaning of the latent construct were modeled as formative (Jarvis et al. 2003).

The instruments to measure the six areas of integration were conceptualized as formative constructs and developed based on review of recent prior work in hybrid commerce (Goersch 2002, Prasarnphanich and Gillenson 2003, Steinfeld et al. 2002). It measures the extent of retail channel integration in various retailing activities. The scales for reflective constructs of richness, reach, and range were developed following the theoretical conceptualizations of Evans and Wurster (2001), Sambamurthy et al. (2003), and Wells and Gobeli (2003). Perceived hybrid firm value was operationalized as a multidimensional second-order construct, representing an integrative measure of the level of impact along the three formative dimensions. In second-order factor models, the construct is not directly connected to any measured item, but is modeled as causally impacting a number of first-order constructs (e.g. Zhu et al. 2004).

Sample Population

The current study draws its sample population from hybrid retailing firms in Singapore. Our sample was drawn from three sources: *Singapore Retailers Association (SRA)* member list; *Singapore 1000*, a database of the largest enterprises in Singapore; and *GreenBook*, a listing of consumer, commercial, and industrial enterprises. We randomly selected a total of 350 retail firms that operate at least one physical retail store and also an online Website. The survey was administered to the top-level or middle-level management executive of each company in July 2004. The respondent had the option of returning the survey through mail or filling up the online version.

34 mail packages were returned as undelivered. Out of 63 responses received, 13 questionnaires were discarded due to incomplete data, reducing the usable sample to 50 with a response rate of 15.8%. This response rate is considered reasonable (Zhuang and Lederer 2003) considering that the survey was unsolicited and involved participation of senior management. The resultant sample size is also comparable to other e-commerce organizational surveys (e.g. Chatterjee et al. 2002).

Non-response bias was assessed by verifying that early and late respondents did not significantly differ in their demographic characteristics and responses on principal constructs (Armstrong and Overton 1977). Existence of any common method bias was also examined (Podsakoff et al. 2003). We found no significant biases in our dataset. The characteristics of the sample are shown in Table 1.

	Category	Percentage
Respondent Position	Top-level Management	48%
	Middle-level Management	38%
	Executives	14%
Retail Sector	Apparel/Sports/Personal Accessories	38%
	Electronic Appliances/Computers/Digital Media	32%
	Services (Financial/Healthcare/Travel/Restaurant)	12%
	Groceries/Medical/Household Products	8%
	Furniture/Home Furnishings	6%
	Books/Stationery/Office Equipment	4%
Firm Size	<50	32%
	50–500	28%
	>500	34%
	Unspecified	6%

Table 1. Sample Characteristics

Data Analysis AND RESULTS

Partial Least Square Analysis

Partial Least Square (PLS), a structural equation modeling technique was used to assess our model. PLS was chosen as our model comprises of both formative and reflective constructs and relatively small sample size (Chin and Gopal 1995). Our sample size of 50 meets the PLS requirement of ten times the number of indicators in the most complex formative construct. In the two-stage PLS testing, the measurement model was first examined to assess the reliability and validity of measures and then followed by evaluation of the structural model.

Measurement Model Evaluation

The measurement model is evaluated by examining discriminant validity and convergent validity. For all our constructs, the square root of the variance shared between a construct and its measures was greater than the correlations between the construct and any other constructs in the model. Hence, the criteria for discriminant validity is satisfied (Fornell and Larcker 1981). All items displayed significant standard loadings above 0.707; composite reliabilities of all constructs are above the minimum value of 0.7. The average variance extracted (AVE) for the constructs are all above 50%. As presented in Table 2, these evaluations provided evidence for convergent validity.

PLS does not directly support second-order constructs; therefore the three dimensions of perceived hybrid firm value are represented by average scores of the measurement items following Zhu et al. (2004). As shown in Table 3, the paths from the second-order construct to the three first-order factors are significant and of acceptable magnitude, greater than the suggested cutoff of 0.7 (Chin 1998). Therefore, on both theoretical and empirical grounds, the conceptualization of hybrid firm value as a higher-order, multidimensional construct seems justified.

Construct and Item	Item Loading***	Composite Reliability	AVE
<i>Information Richness</i>			
RICHNESS1	0.8531	0.8063	0.5141
RICHNESS2	0.9040		
RICHNESS3	0.8961		
RICHNESS4	0.7143		
<i>Spatial Reach</i>			
REACH1	0.8851	0.8225	0.6076
REACH2	0.8673		
REACH3	0.9028		
<i>Offerings Range</i>			
RANGE1	0.9614	0.9057	0.7631
RANGE2	0.9543		
RANGE3	0.8848		

Note: *** all items are significant at the p<0.001 level

Table 2. Psychometric Properties of the Measurement Model for Reflective Constructs

Second-Order Construct	First-Order Constructs	Factor Loading***	t-stat	Composite Reliability
<i>Hybrid Firm Value</i>	Impact on Retail Channel Costs	0.7304	7.9109	0.8175
	Impact on Differentiated Consumer Value	0.7806	9.9329	
	Impact on Innovative Capabilities	0.8095	17.0221	

Note: ***all items are significant at the p<0.001 level

Table 3. Psychometric Properties of Hybrid Firm Value

Formative constructs require a different interpretation in the measurement model. When the latent variable is viewed as an effect rather than a cause of the item responses, examinations of correlations or internal consistency become irrelevant (Chin 1998). Formative indicators need not have high internal consistency such as Cronbach’s alpha. For formative indicators, rather than examining loadings, one examines the weights. Majority of the items for our formative constructs are of substantial weight and are significant at p<0.05.

Structural Model Evaluation

With assurance of good psychometric properties in the measurement model, we examined the structural model to assess the explanatory power and the significance of the paths. PLS does not generate an overall goodness-of-fit index, so the primary assessment of validity is by examining R² and the structural paths. A boot-strapping procedure was used to estimate the significance of the path coefficients. Results of the PLS analysis are presented in Figure 2.

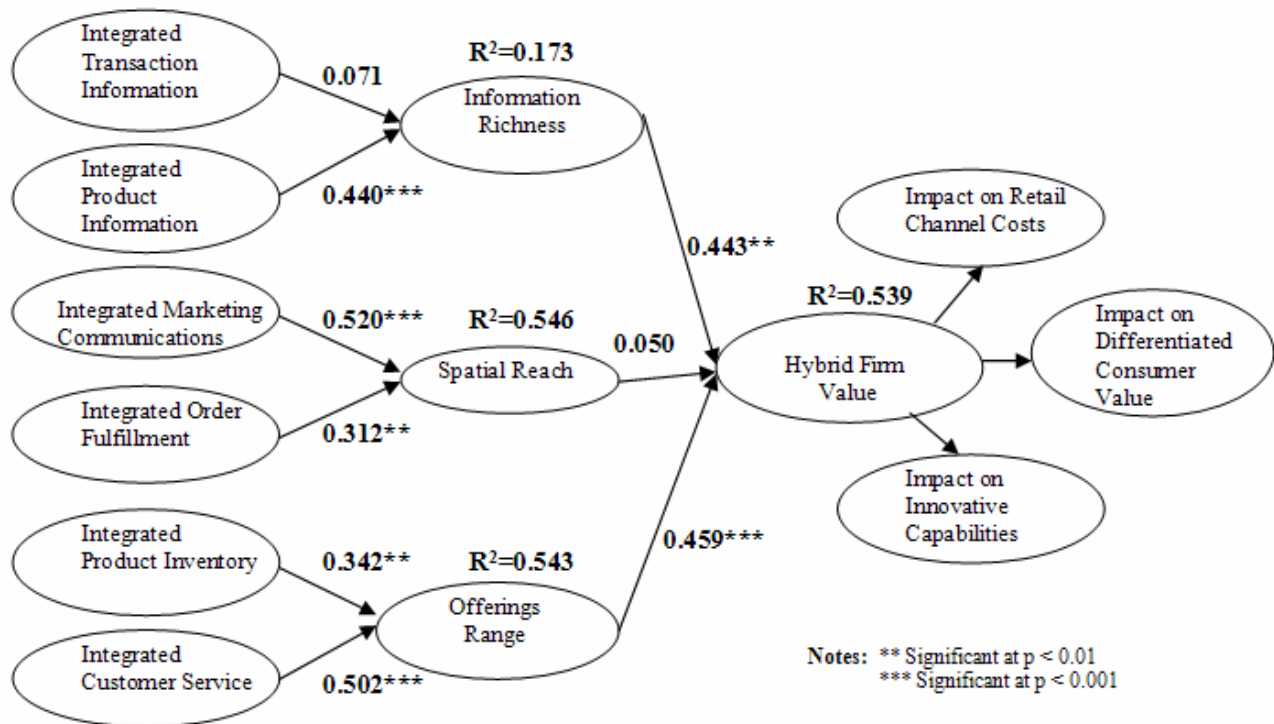


Figure 2. PLS Results of Structural Model

The explanatory power of the structural model was determined based on the amount of variance in the endogenous constructs for which the model could account. 17.3% of variance in the information richness was accounted for. Results reveal that integrated transaction information (H1) was not a significant predictor of richness. This could be due to the fact that retailers do not view integrated transaction information as a very important determinant impacting their information richness. They may have perceived that integrating transaction information leads to more benefits for the customer, but these benefits do not directly increase information richness for themselves. It was however found that by increasing the level of integrated product information, information richness can be enhanced (H2). Approximately 54.6% of the variance in the spatial reach was accounted for by the variables in the model. Results show that both integrated marketing communications (H3) and integrated order fulfillment (H4) were significant predictors of reach. Based on path coefficients, we see that increasing integrated marketing communications has a greater impact on the spatial reach of the store, compared to providing integrated order fulfillment. Integrated product inventory is a significant predictor of range (H5), but comparatively, improving integrated customer service (H6) will have a greater impact on the range of the store. Both processes collectively explained 54.3% of variance in offerings range.

Finally, 53.9% of the variance of hybrid commerce firm value was accounted for by all the constructs. Richness (H7) and range (H9) are significant predictors of firm value but reach (H8) was not significant. This could be due to several reasons pertaining to the dataset. As the survey was conducted in small country with advanced public transportation system, geographic reach is not a very significant factor and hence it might not have a strong influence in enhancing firm value. Increasing reach may actually increase the costs with little payoffs for the surveyed retailers.

DISCUSSION OF IMPLICATIONS

Before discussing the implications of our research, some limitations must be acknowledged. Firstly, subjective perceptual data was used to measure the constructs due to the unavailability of objective measures and nascent stage of hybrid commerce implementation for most firms. However, perceptual measures of firm performance were found to correlate strongly with objective measures (Tallon et al. 2000). Secondly, the survey conducted in Singapore may not be completely representative of the strategic value of hybrid commerce. Therefore, the results could be limited in its generalizability on

certain aspects. Lastly, since channel integration is viewed as a dynamic capability, instead of drawing conclusions solely from a cross-sectional survey, longitudinal studies using complementary methodologies could uncover further insights.

Notwithstanding these limitations, the substantial findings from this exploratory study provide numerous implications for research and practice. Firstly, this study explains the effects of channel integration by applying the resource-based view to an emerging information systems research problem, it sets the stage for future research in this domain. Secondly, by providing a comprehensive framework for understanding how the benefits of a hybrid firm can be measured, this research can serve as a catalyst to encourage more empirical studies on hybrid commerce. Finally, retail channel integration studies till date have been carried out either in the United States or Europe. This study fills the gap by generating new insights through exploring an emerging Asian market. Additional studies based on our research framework should be conducted in other Asia-Pacific regions to revalidate our findings. Future research should also strive to examine channel integration across a larger sample size and over wider range of product/service sectors so as to enrich our understanding of the hybrid commerce strategies suitable for different sectors.

This research also offers many managerial implications for hybrid commerce firms. Firstly, it provides some empirical evidence that retail channel integration does lead to an increase in firm value. By focusing on the six processes of channel integration, retailers can increase their information richness, spatial reach, and offerings range. Through effective management of their integrated retail channel, retailers can benefit in terms of reducing costs, enhancing consumer value, and increasing their innovative capabilities. However, retailers should be mindful that the optimal hybrid commerce strategies for each firm are contingent upon various factors such as product types, organizational and country factors.

CONCLUDING REMARKS

Through a theoretically-based conceptual framework, this research provides a systematic empirical investigation of the value creation process of hybrid commerce. It extends an explanation of how hybrid firm can enhance information richness, expand spatial reach and broaden its offering range through the synergies arising from integrating cross-channel resources. This exploratory study can serve as an invaluable roadmap for future work in the hybrid commerce arena to better understand the complexities of successfully exploiting resources and capabilities to enhance net-enabled organizations' competitiveness.

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