

Market Orientation, e-Business Adoption and Competitive Advantage: A Partial Least Squares Model

Siva Muthaly & Ranjit Voola
University of Newcastle

Robert Rugimbana
Griffith University

Abstract

Adoption of e-business, its antecedents and consequences are of importance to marketing theorists and practitioners. Founded on the Resource Based View, this paper hypothesises that reactive and proactive market orientation, conceptualised as capabilities, positively effect e-business adoption and competitive advantage. By applying the partial least squares technique, this paper empirically validates these hypotheses. The findings suggest that the firms intending to adopt e-business should ideally develop capabilities such as reactive market orientation and proactive market orientation. Implications for the vendor firms include segmenting their potential clients based on these capabilities when developing a strategy to market e-business technologies.

Key Words: Innovation, Resource Based View, Market Orientation

Introduction

Adoption of innovations is a key area of research in the marketing literature (eg. Gatignon & Roberston, 1989; Srinivasan et al., 2002). This interest in adoption of innovations is due to its proposed influence on financial performance, competitive advantage (CA), its effect on reducing the time to market and increasing market share (eg. Porter, 2001; Moorman & Slotegraaf, 1999). Understanding adoption of innovation is important for the vendor firm as it allows for successful introduction of an innovation to the marketplace (Heide & Weiss, 1995). The adopting firm, on the other hand, needs to understand how to effectively adopt the innovation to provide value to the customers (Voola *et al*, 2003) and gain a CA (Frambach & Schillewaert, 2002). This paper views adoption of innovation as the adoption of an internally generated or purchased device, system, policy, program, process, product or service that is new to the adopting firm (Daft, 1982). An innovation that has generated a great deal of interest in recent years is that of e-business. However, despite the plethora of issues raised in the popular business, rigorous theoretical studies are lacking in the study of e-business (Wu, *et al*, 2003).

In the marketing literature, e-business adoption (EBA) has been studied from a capabilities and institutional driven perspective. For example, Grewal, Comer & Mehta (2001), suggested that motivations such as efficiency and legitimacy, learning ability predicted firm participation in business to business electronic markets. Additionally, Srinivasan, *et al*, (2002), suggested that a firm capability; technological opportunism affects EBA and in a comprehensive model of EBA, Wu, *et al* (2003) found that top management emphasis, firm learning ability, customer orientation, customer power and normative pressures had significant affect on EBA. However, there are several gaps in the literature a) market

orientation has not been clearly suggested as an antecedent to EBA b) market orientation has not been conceptualised as two distinct constructs; reactive market orientation (RMO) and proactive market orientation (PMO), in understanding its relationship with EBA and c) the Resource Based View has been rarely applied as a theoretical foundation in understanding adoption of innovations in the marketing literature (for exception see Srinivasan *et al*, 2002). Consequently, this paper applies the Resource Based View, which emphasises the role of firm capabilities and suggests that the differences in e-business adoption can be explained by the differences in capabilities. Specifically, the structural model hypothesised argues that the capabilities of reactive market orientation and pro-active market orientation are positively related to the adoption of e-business and competitive advantage and e-business is positively related to competitive advantage. In essence this paper empirically validates part of the model conceptualised by Voola (2003). It is structured as follows; firstly, a brief review of Resource Based View is undertaken, secondly, the hypothesised model is developed, followed by the methodology, findings and implications of this research.

Resource Based View

The Resource Based View has come into prominence as evidence increasingly highlights the relative importance of firm effects over industry effects (Porter 1980) in explaining CA (Eriksen and Knudsen, 2003; Spanos *et al*, 2004). The Resource Based View argues that the differences in CA within firms, in the same industry, are due the capabilities that are internal to the firm (Wernerfelt 1984; Barney 1991). Capabilities are defined as assets that cannot be observed (therefore intangible) cannot be valued and are traded only as part of its entire unit (Makadok 2001). However, not all firm capabilities lead to competitive advantage. Those capabilities that are valuable, rare, and imperfectly imitable and those capabilities that do not have any strategically equivalent substitutes are more likely to be a source of competitive advantage (Barney, 1991). Additionally, it is increasingly becoming difficult to obtain CA based on tangible assets alone. Therefore, it is important for firms to develop capabilities that are intangible and therefore difficult to imitate (Day 1994; Montealegre 2002).

Hypotheses Development

Market orientation in essence is the processing of and responding to customer and competitor information (Narver & Slater 1990), a *reactive market orientation* or responding to the expressed needs of the customers (Narver, Slater & MacLachlan 2000). Narver *et al* (2000) argue that this conceptualisation of market orientation has resulted in criticisms of the benefits of RMO. They include; confounding firms processes (Macdonald 1995), hindering a firm from being innovative (Berthon, Hulbert & Pitt 1999), and losing leadership in the market because it listens too much to their customers (Christensen & Bower 1996). Consequently, Narver *et al* (2000 p.7) introduce the concept of PMO, defining it as ‘the attempt to understand and satisfy customer’s latent needs and provide discriminate validity, convergent validity and construct validity between this construct and RMO’.

RMO is an intangible management culture that is related to the firm responses to consumers’ needs and wants (Narver & Slater 1990) and is proposed to be a source of firm CA (Varela & Rio 2003). Proponents of RBV suggest that intangible capabilities lead to CA due to the casually ambiguous nature of their relationship with CA. For example, Pelham (1997) argues that the relationship between RMO and performance is casually ambiguous. Additionally,

because of the difficulty in developing a market oriented firm makes RMO rare and the tacit management skills that are necessary to develop market oriented culture, makes it inimitable. However, Narver *et al* (2000) argue that in recent times RMO has received greater attention with many firms having invested in becoming market oriented. Therefore, although the culture of RMO may be hard to replicate, they may be eventually imitated. Therefore, RMO is no longer considered sufficient for the development of CA (Jaworski & Kohli 1996) with PMO now seen as a key source of CA (Narver *et al* 2000). They find that PMO is related positively to profitability and as superior performance follows from a position of CA (Day & Wensley 1988), PMO is posited to lead to CA. However, as prior evidence suggests both RMO and PMO are related to CA, the following hypotheses are proposed.

H1) Reactive market orientation is positively related to competitive advantage.

H2) Pro-active market orientation is positively related to competitive advantage.

Several research have conceptualised a positive relationship between EBA and CA (Porter, 2001; Lumpkin and Dess, 2004) and provided empirically evidence for this relationship (Wu *et al* 2003), consequently, the following hypothesis is proposed.

H3) E-business adoption is positively related to competitive advantage.

Due to the ambiguous support for the argument that RMO has a direct effect on performance, marketing studies have examined different mechanisms by which RMO affects performance. One fruitful area of research is the relationship between RMO and innovation, primarily because of the concern that they might neutralize each other as firms attempt to gain superior performance. This caution is based on the type of learning required to develop a CA. Baker & Sinkula (1999) argue that RMO is primarily facilitates adaptive (single-loop) learning, which may limit a firm's learning to only the expressed needs of its customers (Hamel & Prahalad 1994). However, several studies have found that there is a positive relationship between RMO and innovation (eg. Gatignon & Xuereb 1997; Han *et al* 1998). Additionally, Hurley & Hult (1998) found support for the proposition that RMO is an antecedent for capacity to innovate, including ability to *adopt* innovations. In the specific context of e-business, Wu *et al*, (2003) found that customer orientation positively affect EBA. Based on the prior apprehension of the relationship between RMO and innovation, Narver *et al* (2000) propose and empirically support that PMO is related to innovation. They found that a PMO adds to the explanatory power of RMO, suggesting that innovation is affected by both reactive and pro-active MOs.

H4) Reactive market orientation is positively related to e-business.

H5) Pro-active market orientation is positively related to e-business.

Methodology & Findings

As the topic of interest in this study is of a strategic nature, the key informant approach was utilized to obtain information from senior managers. The mail survey was comprised of pre-existing scales ie. RMO & PMO (Narver, Slater & Maclachlan, 2000), EBA, conceptualized as comprising of communication, internal administration, procurement and order taking, dimensions (Wu *et al*, 2003) and CA, adapted from (Jap, 1999). One thousand four hundred surveys were sent to organisations listed on the Aus-trade Website. Out of the one thousand four hundred surveys, 281 were returned due to incorrect addresses. Seventy respondents e-mailed or telephoned to suggest that they were unable to complete the data due to various

reasons, including lack of time, not being permitted due to company policy and some of the firms had not yet adopted e-business. Twenty six surveys were omitted as approximately 20% of the items were unanswered (Hair *et al*, 1998). Therefore, the actual surveys amounted to 1023 with a final response rate of 18.5%. The results from the procedure suggested by Armstrong & Overton (1977) found that non-response bias was not a significant problem. Confirmatory factor analysis was initially employed to test for uni-dimensionality as the items have been adopted from existing scales (Ping, 2004). Confirmatory factor analysis resulted in deleting 11 items. This paper reports those fit indices as recommended by Sharma *et al*, (2004) for each of the constructs. The fit indices and reliabilities for the modified models are as follows; RMO (TLI .978; RNI .985; RMSEA .067; Alpha .92), PMO, (TLI .996; CFI .998; RMSEA .067; Alpha .92) EBA, (TLI .915; RNI .927; RMSEA .075; Alpha .929) and CA (TLI 1.00; RNI 1.00; RMSEA .000; Alpha .866). Composite measures were then calculated for testing the hypotheses. However, prior to testing the hypotheses, discriminant analysis was conducted to demonstrate the discriminant validity between RMO and PMO. As the correlation between two composite constructs of RMO and PMO (.720) was not higher than their respective reliabilities (RMO .92; PMO .92), discriminant validity is illustrated (Gaski, 1984). Due to the high correlation between these constructs, this paper adopts the view of Narver, Slater and McLachlan (2000) who suggest that these constructs are related but distinct.

Partial least square (PLS) is considered to be a valid approach for testing multiple relationships. Furthermore, PLS is increasingly being used to understand various organisational phenomenons in the marketing literature (eg. White *et al*, 2003; O'Cass & Julian, 2003). As PLS is founded on soft modeling philosophy by Falk & Miller (1992), multiple indices are used to evaluate the model as opposed to one fix index. These fit indices include; r-squared, average variance explained, averaged variance accounted for (AVA), regressions weights and loadings (eg. O'Cass, 2000). Additionally, as the conceptual model is one-tailed, the critical ratios, determined by the bootstrap method are as follows; 1.645 is significant at the .05 level, 2.326 is significant at the 0.01 level, and 3.090 is significant at the 0.001 level. The construct of overall EBA was conceptualized as a reflective measurement model. The loadings from Figure 1 and critical ratios obtained from bootstrapping were used to understand this construct. As illustrated in Figure 1, the loadings for the following are communication (.940), internal administration (.671), order taking (.697) and procurement (.793). The critical ratios are all significant at the .001 level.

Figure 1: Model with PLS Results

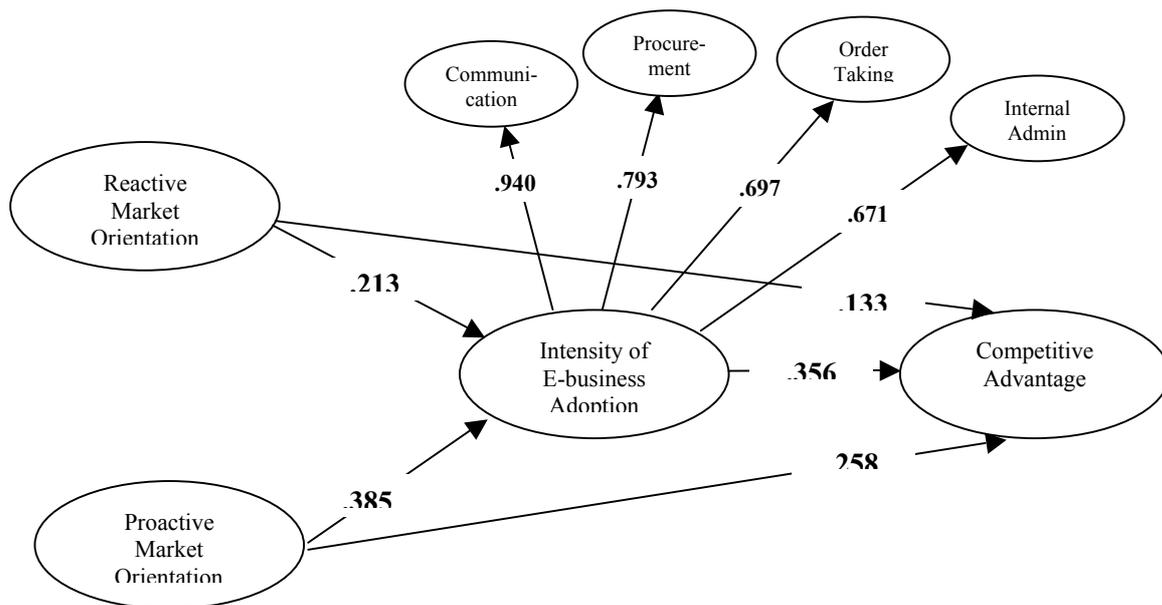


Table 1 summarises the hypothesis results (H1-H5) and identifies the coefficients, AVA, R-squared and critical ratios. Figure 1, diagrammatically represents these results. The AVA for the endogenous variables was .357 and as recommended by Falk & Miller (1982) the R-Squared were greater than the cut-off value of .01. This being the case, the next step was to identify the variance in an endogenous variable explained by that individual path, 0.015 (1.5%) being the recommended cut-off point (Falk & Miller 1982). The results suggest that that all the hypothesized paths are significant as evidenced by variance due to path (>0.015) and critical ratios (>1.645)

Table 1: PLS results for the theoretical model

Equation	Predicted variable	Predictor Variable	Hypothesis	Path	Variance due to path	R-Sq	Critical Ratio
1	E-business	Reactive Market Orientation	H1	.213	.104		2.538***
		Proactive Market Orientation	H2	.385	.207	.311	4.879****
Competitive Advantage							
2	Advantage	E-business	H3	.356	.199		5.971****
		Reactive Market Orientation	H4	.133	.065		1.650**
		Proactive Market Orientation	H5	.258	.140	.404	2.599***
AVA						.357	

(**** = p < 0.001, *** = p < 0.010, ** = p < 0.050)

Conclusions and Implications

The PLS findings collectively provide evidence for the theoretical framework. The theoretical constructs function as hypothesised and explain a significant variation in e-business adoption and competitive advantage. In general, marketing literature has conceptualized market orientation as reactive in nature, however, following Narver, Slater and McLachlan's (2000) argument, this paper, conceptualized market orientation as being reactive and proactive in nature and provided discriminant validity to suggest that they are related but distinct constructs. The findings show that both reactive and proactive market orientation influence the adoption of e-business. This is largely consistent with the marketing literature that relates market orientation to innovation (Gatignon & Xuereb 1997; Han *et al* 1998), although the relationship between market orientation and e-business has not been emphasised. Consistent with the Resource Based View, reactive and proactive market orientation appear to have characteristics that allow capabilities to be a source of competitive advantage (Barney, 1991) and account for variation in e-business adoption. This is similar to Srinivasan *et al's* (2002) finding that the construct of "technological opportunism" explains variation in e-business adoption. Therefore, by applying the Resource Based View to adoption of innovation, this paper, attempts to fill an important gap in marketing theory and provide insight into a core challenge in marketing practice.

The theoretical framework examined in this paper presents managers an insight into adoption of e-business and provides a viable path for building competitive advantage. The findings suggest that the firms intending to adopt e-business should ideally develop capabilities such as reactive market orientation and proactive market orientation. The intangible nature of these capabilities produces casual ambiguity in the relationship between these capabilities, e-business adoption and competitive advantage, which then creates barriers to imitation. It is important to note here that building capabilities that are a source of competitive advantage is an expensive exercise (Teece, Pisano and Shuen, 1990). For marketers of e-business solutions, a marketing strategy which segments its potential clients on these capabilities may be useful, as these capabilities explain variation in e-business adoption. Marketing and Resource Based View literature suggests that there are various capabilities that may influence adoption of e-business including; organisational learning, and strategic flexibility. Empirically testing the relationships between these capabilities and e-business adoption may provide a holistic understanding of e-business adoption from a Resource Based View.

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