

Creating Competitive Advantage using the Internet: Evidence from New Zealand Primary Sector Industries

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Abstract

1. Introduction

2. Background

2.1 Information Technology, Marketing And The Internet

2.2 Competitive Advantage

2.3 Information Technology And Business Processes

3. Propositions

4. Research Approach

5. The Case Industries

6. Results

7. Conclusion

References

Footnotes

Abstract

The study investigates the relationship between Internet strategy development and competitive advantage. Four theory-based propositions based on the work of Porter and Millar (1985) and others are examined in relation to four primary sector multinationals. These propositions examine the relationship between an industry's Internet strategy and the integration of this strategy into the industry's marketing infrastructure to support the development of competitive advantage. The authors suggest that the value system, and the leverage of information and networking technologies to reconfigure value system relationships is becoming strategically significant to these primary sector multinationals.

1. Introduction

In the recent literature it has been suggested that information and networking technologies are creating a new marketing paradigm (Hoffman and Novak 1995, 1996, McKenna 1991, 1995, Peppers and Rogers 1993, Pine et al. 1995). Peppers and Rogers (1993) describe this new paradigm as 'one-to-one marketing', where greater emphasis is being placed on individuality and customisation. The Internet, as an interactive medium, offers the capability to support this emerging business ethos more completely than traditional communication media (Hoffman and Novak 1995, 1996, Strangelove 1995). Empirical surveys show that the majority of businesses using the Internet have a passive presence, suggesting that strategic business use of the World Wide Web is still in its infancy (Cockburn and Wilson 1996, Thompson and Kaul 1995). Moreover, business models which evaluate ways in which organisations can use the Internet to create competitive advantage, are still evolving.

The principal objective of the research reported here is to illuminate the potential competitive advantages that might be realised by primary sector industries through implementing an Internet strategy, and to find evidence, which supports or rejects four theory-based propositions. These theory-based propositions are derived primarily from the work of Porter and Millar (1985), and the more recent work of Malone et al (1987, 1993), Benjamin and Wigand (1995a, b), Cronin (1993), Sarker et al (1995), Steinfield et al (1995), Thompson and Kaul (1995), Bloch et al (1996) and Rayport and Sviokla (1994, 1995).

We specifically examine the potential value of integrating an Internet strategy into an organisation's value system, as described by Porter (1985), and how the development of that strategy might create competitive advantage for the organisation. The paper is divided into four parts. The first outlines a historical background to the Internet in order to highlight the growing significance of this technology to business. The potential value to be realised through the application of information technology into the value system is also discussed. Four propositions are then presented from this conceptual grounding. The third section discusses the research approach used in the investigation; the final section presents key findings and concluding remarks. Implications for future research are also discussed. For reasons of confidentiality and ease of exposition, the four case studies are disguised.

2. Background

2.1 Information Technology, Marketing and the Internet

One of the most fundamental impacts of the information technology (IT) revolution on businesses has been the way that economic value is created and extracted (Rayport & Sviokla, 1994). In the modern marketplace, information has become both a product and a service, and in turn information about products and services has become decoupled from the product or service itself. Concurrently, the plummeting cost of storing and accessing information in digital form has allowed marketers to hold and process detailed information on customers in a manner not possible before. Between 1970 and 1990 the cost of holding a customer's name, address and purchase history on line has fallen by a factor of a thousand (Blattberg & Deighton, 1991). IT is now used to automatically manage the communication process between corporations and customers, facilitating a 're-discovery' of the marketing concept and the emergence of relationship marketing (Blattberg and Glazer, 1994; Hoffman and Novak, 1996; Slater and Narver, 1995).

In this context, IT is becoming strategically significant to a business's value system in for both interconnectivity and interactivity (Bradley, 1993; Cronin, 1993; Porter and Millar, 1985). In striving for competitive advantage, business utilisation of IT is increasingly a strategic necessity (Bradley, 1993). The Internet promises to revolutionise the dynamics of international commerce and alter the nature of communications between producers and consumers. While some have undoubtedly been driven into Internet development through the age-old means of fear, uncertainty and doubt (eg. K. Phillips, quoted in Griffiths, 1996), the exponential growth of the Internet has been driven largely by corporate connections and development of corporate World Wide Web sites (Sterne, 1995).

Moreover, although published surveys (e.g., Cockburn and Wilson, 1996; Cronin et al., 1994; Lim and Abell, 1996; Stevens, 1996; Thompson and Kaul, 1995) have provided valuable descriptive and demographic information concerning current business use of the World Wide Web, they have provided limited insight into the strategic significance of a company's Internet presence. In particular, they have not evaluated how a company's use of the Internet links into the company's overall objectives and strategic direction. There are many potential benefits that companies can realise through being involved with the Internet, yet the most important consideration for any business deciding to go online is how these opportunities will potentially create value for that business. The creation of value is central to both competitive strategy and competitive advantage (Porter, 1985).

2.2 Competitive Advantage

At its most fundamental level, competitive advantage is a measure of the value that a firm is able to create and transfer to its customers. Essentially, a firm can create value for its customers in one of three ways:

1. by providing their products and/or services at a lower price than its competitors;
2. by differentiating its products and/or services from competitors through the provision of unique benefits which offset a premium price;
3. through a combination of both a low price and differentiation strategy which is focused on a particular market or segment (Porter, 1985).

Porter (1985) maintains that a firm consists of a set of '*discrete activities*' that in combination make up a '*value chain*'. The value chain, in turn, is embedded within an overall '*value system*', which incorporates the value chains of a firm's suppliers, channels **1**, and buyers **2**. The purpose of Porter's value chain framework is to map out each of the strategic activities and linkages between the value-creating activities of a business's operations, so to analyse their impact on the firm's overall cost structure. The key to competitive advantage is argued to lie in the optimisation and co-ordination of linkages between business activities in a way, which reduces transaction costs **3**, and/or enhances differentiation. In either case, the strategic use of IT can play a significant role in establishing a firm's competitive position by transforming the way value activities are performed and the nature of the linkages among them (Bradley, 1993; Porter, 1985; Porter and Millar, 1985; Venkatraman, 1994).

2.3 Information Technology and Business Processes

A number of researchers have presented a series of propositions which prognosticate the effect that IT will have on a firm and the way value activities are performed (Malone *et al.*, 1987; Malone and Rockart, 1993; Steinfield *et al.*, 1995; Benjamin and Wigand, 1995a, 1995b; Sarkar *et al.*, 1995; Cronin, 1993; Thompson and Kaul, 1995; Rayport and Sviokla, 1994, 1995; Normann and Ramírez, 1993). These impacts fall into three areas as detailed below: (i) alteration of industry structure, (ii) creation of competitive advantage and (iii) spawning of new businesses (Porter and Millar, 1985).

Alternation of industry structure

Porter and Millar (1985) suggest that information technology will render rivalry between competitors more intense, yet also create additional opportunities to develop competitive advantage such as the creation of new business interrelationships within the value system, the expansion of industry scope, and the increased ability to co-ordinate value activities regionally, nationally, and globally. Malone *et al.* (1987, 1993) also note that by reducing the costs of coordination through the application of networked information technologies, the resulting tighter integration of the value system will lead to the development of both electronic markets and hierarchies.

These authors refer to three possible effects: first, an *electronic communication effect* whereby IT will allow for a greater amount of information to be communicated in the same amount of time (or the same amount in less time) thus reducing the costs of communication; second, an *electronic brokerage effect* whereby IT electronically connects potential buyers and sellers; third, an *electronic integration effect* whereby IT enables each of the activities within the value system to interface together to exchange information potentially reducing transaction, quality and relationship costs.

While many authors agree that the electronic communication effect proposed by Malone *et al.*, (1987) will be created by networking technology, there is dissension as to whether the electronic brokerage effect will affect the number of linkages in a value system. At the extreme some argue that disintermediation (removal of intermediary organisations from the value system) will be commonplace (Benjamin and Wigand, 1995a,b) **4** while others suggest that IT will entrench existing intermediary relationships and may in fact encourage a new generation of intermediaries that only exist in cyberspace - *cybermediaries* (e.g. Sarkar *et al.*, 1995; Bloch *et al.*, 1996).

Creation of competitive advantage

Porter and Millar (1985) suggest that IT will create competitive advantage by providing companies with new ways to outperform their competitors. IT can have a powerful effect on the cost structure of a business, can increase opportunities for differentiation, and can alter a firm's competitive scope. Cronin (1993), specifically examining the impact of the Internet in relation to this proposition, contends that there are a number of competitive advantages to be realised at each stage of the value system. These include process inputs from suppliers (upstream value), internal operations (value chain), and customer relations (downstream value). Process inputs relate to those transactions between value system components that support the movement and exchange of goods and services through each of their necessary value creation processes, which includes, pricing and ordering, delivery and tracking, and product support (Cronin, 1993). The empirical work of Thompson and Kaul (1995) however, suggests that companies are not considering the competitive advantages implicit in these process input and communication activities. The findings of these researchers show that Internet strategy development is being largely driven by the organisation's sales strategy.

Spawning new businesses

Porter and Millar (1985) note that IT will enable organisations to process much larger quantities of information, which may provide opportunities for the sale, or alternative application of that information. Rayport and Sviokla (1994, 1995) maintain that companies should employ the information created from each of the linkages within the value system, and use it to create new value-added marketplace

products and services. An example may be the development of directory services and search services such as are prevalent on the Internet. The benefits to be realised through such a strategy include increased economies of scale, increased competitive scope and opportunities for new customer relationships (Rayport and Sviokla 1995).

Porter (1985) maintains that there are four dimensions to competitive scope which can be reconfigured to have an effect on competitive advantage and the value chain: first, segment scope which refers to the range of products and/or services produced and customers served; second, vertical scope which refers to the extent to which activities are performed in-house rather than by independent firms; third, geographic scope which describes the range of regions, countries, or groups of countries in which a firm competes with a coordinated strategy; fourth, industry scope which describes the range of related industries in which the firm competes with a coordinated strategy. Porter (1985) notes that the relationship between competitive scope and the value chain provides the basis for defining an organisation's relevant boundaries. Organisations must weigh the benefits of disintermediation or intermediation by comparing the strength of interrelationships in serving related segments, geographic areas, or industries to the differences in the value chains best suited to serving them separately.

3. Propositions

The work of Benjamin and Wigand (1995a, b), Cronin (1993), Malone *et al.*, (1987, 1993), Porter and Millar (1985), Sarker *et al.* (1995), Steinfeld *et al.*, (1995), Rayport and Sviokla (1994, 1995) and Thompson and Kaul (1995) provided a basic theoretical grounding for evaluating the impact of Internet strategy development on the value system of four primary sector industries in New Zealand. The theory was operationalised into four propositions:

1. Organisations will choose those transactions which best economise on co-ordination costs and employ networks to reduce transaction costs between linkages within the value system. The utilisation of a ubiquitous network structure such as the Internet, will affect industry structure in one of two ways: a) the Electronic Brokerage Effect, b) the Electronic Integration Effect.
2. The role of intermediaries between the producer and the consumer will be affected in one of two ways: a) through a process of disintermediation, the role of many intermediaries will become less important, or less critical to the overall value system, b) market mechanisms will create a greater need for intermediaries, both physical world intermediaries, and virtual world 'cybermediaries'.
3. The Internet is not the direct sales tool that companies envisage. Competitive advantage is more likely to be realised through utilising the Internet: a) as a process input tool which relates to inputs from suppliers (upstream value), and inputs from channels and buyers (downstream value), for example pricing, ordering, delivery and tracking, and b) as an internal business communications tool, and as an external customer interface.
4. The Internet will spawn whole new businesses such as cybermediaries and will alter an organisation's competitive scope.

4. Research Approach

We developed case studies of Internet strategy development in four organisations in New Zealand's primary sector. Given the exploratory nature of the research propositions, a qualitative, multiple-case study approach was deemed the most appropriate research method with which to test the propositions. The research followed the methodology recommended by Yin (1993, 1994) for constructing cross-sectional case studies capable of investigating specific propositions. Our interview process used two waves of semi-structured in-depth interviews to develop and confirm the organisation's Internet strategy.

The sample group was drawn from a group of industries that contribute significantly to New Zealand's foreign exchange earnings. Agriculture accounts for 60 percent of New Zealand's merchandise exports, and 13 percent of GDP when production, input supply, processing and marketing are included (ACIL, 1992). Given the importance of the primary sector to New Zealand's economy, and based on the industry's requisite need to develop new competitive advantages (Crocombe *et al.*, 1991), it was deemed appropriate to select this industry to examine the research propositions. Producer Boards 5 were chosen as the case study sample group. The testing of the four propositions lent itself to data collection in the following areas.

- The relationship between the industry and its suppliers, channels and buyers.
- The coordinating mechanism between the industry and its suppliers, channels and buyers.
- The potential change in the processes of information exchange resulting from the industry's Internet strategy.
- The openness of the network design (the ease in which additional suppliers and buyers can join the industry's value system).
- The current competitive environment of the industry, its competitive strategy and perceived competitive position.

5. The Case Industries

Interviews were conducted with at least two respondents within each Producer Board. Each of the respondents was a senior representative from either the Marketing or Information Systems Group. Case Industry A involved one of New Zealand's most recently developed non-traditional export industries and contributes approximately 0.2% to total merchandise export earnings (Enderwick and Akoorie, 1996). Case Industry B involved one of New Zealand's most important horticultural export earners, accounting for approximately 2% of New Zealand's total export trade (Statistics New Zealand, 1996). Case Industries C and D involved two of New Zealand's traditional export industries, the former contributing 20% to total merchandise trade receipts making it the country's largest single exporter, the latter contributing

approximately 6.5% to total merchandise export earnings (Statistics New Zealand, 1996).

Although the case studies are only briefly outlined in this paper, they are fully documented in Ashill et al (1997) and the complete versions can be obtained from the authors.

6. Results

The results pertaining to all four propositions are illustrated in Table 1 and are reported below. For reasons of confidentiality, the marketing strategies of each Producer Board are not discussed.

All four industries examined were characterised, to varying degrees, by vertically integrated structures. This was particularly true for case industry B and C, both of which were represented by a statutory Board that controls in-market structures within a number of export markets. Although case industries A and D were not characterised by the same monopoly export structure, the principal role of their representative marketing organisations was to help develop export markets and co-ordinate trade partnerships on behalf of the industry producers. Thus, each of the industries were supported by an organisation that develops generic, industry-led marketing programs to help New Zealand's primary sector producers gain the economies of scale needed to compete more effectively within the international marketplace.

Table 1 : Case Study Findings

	PRODUCER BOARD A	PRODUCER BOARD B	PRODUCER BOARD C	PRODUCER BOARD D
P1 Electronic Brokerage/ Electronic Integration	Electronic Integration	Electronic Integration	Electronic Integration	Electronic Integration
P2 Intermediation/ Disintermediation	No evidence of additional Intermediation	No evidence of additional Intermediation	No evidence of additional Intermediation	No evidence of additional Intermediation
P3 Creating Competitive Advantage	No evidence of Disintermediation	Disintermediation evidenced within the North American market only	No evidence of Disintermediation	No evidence of Disintermediation
* Use as a Direct Sales Tool	No	Yes	No	No
* Use as a Process Input Tool	No	No	No	No
* Use as an information sharing/communications tool	Yes	Yes	Yes	Yes
P4 Affect on Competitive Scope				
* Industry Scope	Enhanced	Altered	Altered	Enhanced
* Vertical Scope	Enhanced	Enhanced	No Affect	No Affect
* Segment Scope	No Effect	No Effect	No Affect	No Affect
* Geographic Scope	Enhanced	Enhanced	No Affect	No Affect

All four case industries have also undertaken generic branding, positioning, and differentiation strategies to move their respective products away from direct commodity market competition. The differentiation strategies focus on the establishment of integrated value systems such that each Producer Board can provide better product and service support, and can adapt more readily to individual market requirements. The adoption of a market-orientated philosophy in all four industries is focused on the establishment of trade relationships with the most dominant members of the value system, for example supermarkets (case industries A, B and C), and retailers and manufacturers (case industry D).

In support of these marketing strategies, the case study findings confirmed that each industry was undertaking Internet development to enhance its ability to disseminate and exchange information (the Electronic Integration Effect) rather than electronically connect potential customers and suppliers (the Electronic Brokerage Effect). The findings for all four case industries showed that the Internet is being primarily used to support:

- Information exchange within the internal network (value chain).
- Information provision and exchange within the wider marketing network (value system).
- The provision of branding and industry specific information to increase the level of industry and brand awareness in international markets.

There was no evidence to suggest that any of the industry-led Internet strategies and developments were resulting in more intermediation (more intermediaries or cybermediaries being added to the value system) or disintermediation (less intermediaries in the value system) within any of the respective case industries (Proposition 2). Rather, the findings confirmed that each Producer Board was utilising the Internet to support and enhance their existing marketing infrastructures. In all four case industries, Internet strategies were developed, supported and maintained by either the Producer Board itself, or an existing intermediary. Disintermediation was evident in case industry B with producers starting to bypass traditional intermediaries and sell direct to consumers in the international market of North America; however, further questioning of respondents found that the sale of produce direct from the producer to the consumer was experimental only, and would not be maintained at the expense of existing trade relationships.

The cross-industry analysis in relation to proposition 3 confirmed that the Internet was primarily being used to support and enhance the internal marketing network (value chain), to externally support branding information, and to enhance customer/organisation communications through the provision of a feedback link (an internal and external information support and communications medium). In Case Industry A for example, this finding was confirmed by the existence of a 1000 person Listserv (electronic mailing list), the media support of the web site, the increased awareness of the 'product' within the North American market, and the integration of 'marketspace' and 'marketplace' promotional efforts (Rayport and Sviokla, 1994, 1995). Utilising the Internet as an information sharing and communications tool to globally connect disparate organisational branches and subsidiaries reduced time and distance barriers, and this provided an opportunity to process information more quickly through interactive collaboration and maintain a tighter integration of the discrete activities within the value chain.

There was no evidence to suggest that the Internet was being used as a direct sales medium with which to create competitive advantage as suggested by Thompson and Kaul (1995) or that Producer Boards were developing Internet strategies which would directly support their value system process inputs. These findings were replicated across all four case industries. In Case Industry B for example, the case analysis showed that retailers held a very powerful position with respect to bargaining power indicating that the Board would have to adapt to the retailers' information systems for process input purposes.

The significance of utilising the Internet as a communications medium internally is that it can easily be extended and adapted to support and meet the requirements of the wider marketing network. The internal network provides the 'learning architecture', which Slater and Narver (1995) maintain 'satisfies the requirements for competitive advantage', because it positions an organisation to be able to better respond to its broader marketing environment. More recently, Quelch and Klein (1996) argue that the creation of internal networks to facilitate communications and transactions, may be the Internet's principal value for multi-national corporations.

The second most replicated finding in support of proposition 3 was that three of the four case industries were using the Internet for external information provision and branding support on a WWW site, coupled with a customer/consumer feedback link (e-mail). This finding is consistent with the research undertaken by Cockburn and Wilson (1996) and Stevens (1995), that suggest that the majority of companies on the WWW have a 'passive presence'. Thompson and Kaul (1995) maintain that a presence on the Internet can be considered a strategic asset, as it supports the development of market awareness, company credibility, and provides a firm with an opportunity to offer product service and support through customer/firm interactivity. The significance of Internet interactivity is that it gives an organisation the opportunity to start 'real time' dialogues with its customers (McKenna, 1995, Pine *et al.*, 1995).

The cross-industry analysis in relation to proposition 4 suggested that Internet strategy development was having an effect on competitive scope in different ways. Industry scope was the dimension of competitive scope most affected. In case industries A and D industry scope was enhanced rather than altered. This can be explained in terms of each Producer Board utilising the Internet to strategically support their existing information infrastructures in order to extend competitive boundaries. In both cases, the Internet was being utilised to help co-ordinate and integrate both upstream and downstream value to co-operatively create value for customers and consumers.

The findings for the Case Industries B and C suggested that Internet strategy development has altered industry scope. In one case (case industry B), the Producer Board utilised the Internet to form the foundation of its electronic marketing infrastructure. The Internet supported the industry's move away from a 'trader mentality' towards a market-orientated philosophy, where access to and the exchange of information now plays a strategically significant role. The Board's use of the Internet has helped to broaden industry scope in terms of the services and support that the Board is now able to offer its customers. In the second case (case industry C), not having a presence on the

Internet was potentially a competitive threat to the Board, as misinformation was being publicised about the organisation and the industry's products in general. The board's industry scope was altered as a result of its realisation that it had to develop an external information strategy to reduce the transaction costs related to opportunism (Williamson 1975).

In two case industries (case industry A and B), both vertical and geographic scope were enhanced (rather than altered) as a result of Internet utilisation. In this, it is significant to note that this finding pertains to the two Producer Boards, which have been utilising the Internet as a marketing tool for the longest period.

The extension of competitive boundaries is particularly relevant to global competitors, as it helps them co-ordinate and integrate both upstream and downstream value to co-operatively create value for customers and consumers. The creation of value has become much denser as customers readily have access to more information, and therefore have extended choice. As a result, organisations are having to make use of information strategically to meet the 'new logic of value' (Normann and Ramírez, 1993), hence, they are having to reconfigure their organisational boundaries and competitive scope. Venkatraman (1994) suggests that IT and networked-based co-ordination provides a fundamental base for the reconfiguration of business processes, and hence broadens an organisation's competitive scope. The case industry findings presented here suggest that each of the Producer Boards is utilising the Internet to support this new logic of value.

7. Conclusion

This paper has examined the relationship between industry-led Internet strategies and developments and the potential effect on the competitive advantages realised by that industry. The researchers chose a sample group of industries that were representative of New Zealand's most important export industry, the primary sector. This sample choice placed limitations on the research, such as i) the researchers had to assume that each of the main representative industry organisations did in fact have an Internet strategy, and ii) it was likely that if they did, that they would each be at different stages of strategy development. However, the research has identified some significant findings, which suggest that New Zealand's primary sector is utilising the Internet as a marketing tool to support the development of competitive advantage. The case findings confirm that Internet strategy is being implemented to enhance existing marketing strategies and infrastructures.

The case study method in the research has limitations. As with any qualitative study there is a risk of selective reporting and limited validity, reliability, and generalisability. However, case study methods have been defended by authors such as Yin (1981, 1989) and Gummesson (1988). We sought to enhance the reliability and generalisability of our findings specific to the primary sector in New Zealand by choosing four different organisations to study, and we undertook a form of validity checking by confirming the credibility and accuracy of our results with our interview subjects.

Given that this research was exploratory in nature using a case study approach, the analysis has significant explanatory power but it cannot finally prove nor disprove the propositions. The study does however, raise many areas for future work. Electronic commerce on the Internet is 'still very much in its embryonic stage' (Cockburn and Wilson, 1996), the findings presented here very much reflect primary sector organisations moving along an experiential learning curve.

While the research was exploratory in nature, the findings are significant given that each of the proposition findings is consistent across all four case industries. Each of the four industries are integrating the Internet strategically into their existing marketing frameworks, and as such the Internet is supporting the promotion of closer value system relationships and thus co-operative advantage in the creation of customer value. This in turn suggests that consideration of the entire value system, and the leverage of information and networking technologies to reconfigure value system relationships, is becoming strategically significant to New Zealand's primary sector organisations.

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Footnotes

1 - A marketing or distribution channel is comprised of a set of interdependent institutions and agencies involved with the task of moving anything of value from its point of production to points of consumption (Stern, El-Ansary, and Brown 1989). This includes activities such as sales, transport and distribution.

2 - Note that some authors (e.g. Normann & Ramirez 1993) argue that Porter's value system model presents an overly simplistic perspective on the linkages between different firms. They propose that a value system model infers a linear set of activities, whereas an organisation can be more accurately described as existing in a 'value constellation' of firms.

3 - Transaction costs are those costs incurred from the coordination, monitoring, and execution of transactions between buyers and sellers, as well as those transactions incurred between the discrete activities internal to the firm

4 - Note that many authors, including Benjamin and Wigand (1995a), use 'value chain' interchangeably with 'value system'. An evaluation of each of the author's discussion shows that their use of value chain implicitly refers to the Porter (1985) definition of a value system.

5 - Producer Boards are the national coordinating bodies that perform regulatory and control functions, commercial activities (including purchase, processing, storage and marketing of products); and leadership and servicing activities (including marketing and development strategies) on behalf of the industry's producers (Woods 1988).