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Sección de Organización de Empresas de Getafe
Universidad Carlos III de Madrid
Calle Madrid, 123
28903 Getafe (Spain)
Fax (34) 91 624 5707

THE INTERNET: STRATEGY AND BOUNDARIES OF THE FIRM

Zulima Fernández¹ and María J. Nieto²

Abstract

Many advantages have been ascribed to the Internet. Although it lacks the necessary elements to be regarded as a strategic resource, the Internet seems to be a useful tool to provide support for business strategies.

In this work we discuss how the Internet can be used to support the development of capabilities and define firm boundaries.

Using a sample of Spanish firms, empirically analysed, we find positive relationships between the use of the Internet and product differentiation, as well as the introduction of organizational changes. In addition, we present evidence that the Internet reduces both internal coordination costs and transaction costs as a result of the positive relationships found between the use of the Internet, the degree of vertical integration and the establishment of technological agreements with suppliers and customers.

Keywords: Internet technology, competitive strategy, technological cooperation, firm's boundaries, matched-sample comparison group methodology.

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¹Management & Strategy Division, Universidad Carlos III, C/ Madrid 126- Getafe, 28903-Spain;
Email: zulima@emp.uc3m.es

²Management & Strategy Division, Universidad Carlos III, C/ Madrid 126- Getafe, 28903-Spain;
E-mail: mnieto@emp.uc3m.es

Introduction

Over the last few years there has been much debate over the impact of information technologies (IT) –most notably the Internet– on the creation of competitive advantages in firms. The Internet is not only believed to offer excellent business opportunities, it also modifies the rules of competition for established businesses (Samplers, 1998; Amit and Zott, 2001).

The impact of IT on firms and their performance has been widely treated in the literature. Brynjolfsson and Hitt (1996, 1997, 2000); Malone (1997) and Dewan and Min (1997) have studied how IT positively affects productivity. On the other hand, several research works on the relationship between IT and firm profitability have presented inconclusive findings (Harris and Katz, 1991; Brynjolfsson and Hitt, 1996).

Although some studies (Lucas, 1993; Wilson, 1993; Hitt and Brynjolfsson, 1996; Strassman, 1997) have underlined the methodological limitations of those previous research, it should be noted that IT might not offer competitive advantages per se. These technologies are widely used and accessible to all firms, therefore they are not likely to create sustainable advantages which cannot be easily imitated by competitors.

IT adding value to the firm is not the same as IT being a source of sustained competitive advantage (Mata et al., 1995, 488). Frequently, Internet applications address activities that are necessary but not decisive in competition, such as informing customers, processing transactions, and procuring inputs. Critical resources remain intact (Porter, 2001). As Clemons and Row (1991) argue, IT can create sustainable competitive advantages as long as they complement and harness strategic resources; this hypothesis has been empirically demonstrated by Powell and Dent-Micallef (1997), Bharadwaj (2000) and Tippins and Sohi (2003).

Also the Internet has the potential to change information-processing, communication and collaboration patterns as well as to coordinate activities in ways that previous IT have not allowed (Brynjolfsson et al., 1994; Afuah and Tucci, 2000). As a result, new opportunities emerge for companies to redesign their value chain so as to maximise competitive advantages.

The objective of this work is twofold: a) to analyse how the Internet supports the company's competitive strategy and b) to explore the reconfiguration of business activities resulting from the use of the Internet. A matched-sample comparison group methodology has been used for this purpose. The two subsamples of firms are selected from a large survey of Spanish manufacturing SMEs for year 2001.

The rest of the paper is organised as follows. Firstly, we develop a theoretical framework within which some hypotheses are postulated. Secondly, the empirical analysis is presented in order to test the theoretical hypotheses. Finally, the conclusion discusses and summarises the results, implications, limitations and directions for future research.

Theory and hypotheses

The Internet is a low-cost open standard and, as such, just about any organization can make use of it (Clemons and Row, 1987; Porter, 2001). Therefore, it cannot offer competitive advantages per se. Success depends on other factors such as its actual integration into organizational routines and management skills of the firm (Powell and Dent-Micallef, 1997, Mata et al., 1995), co-specialization with other organizational resources (Clemons and Row, 1991) and the exploitation of network

economies (Shapiro and Varian, 1999). Companies need to tailor their deployment of Internet technology to their particular strategies (Porter, 2001).

On the other hand, the Internet, like other IT tools, reduces information asymmetries and facilitates coordination of interdependent processes –such as design and engineering– both internally and externally; likewise, it allows knowledge sharing within a partnership (Venkatraman, 1994, Dewett and Jones, 2001, 333). As a result, transaction costs –both internal and external– can be significantly reduced (Dewan et al., 1998) and this will bring about certain changes in the boundaries of the firm.

Internet usage and differentiation strategies

One of the most widely studied Internet advantages is that it can reduce customer search costs, which favours price competition. This may be the reason why the efficiency of electronic markets has been analysed by several works, although the evidence is inconclusive as regards the situation of prices in virtual markets with relation to physical markets.

Internet reduces search costs and enables instant price comparison between competitors (Lee and Gosain, 2002), which leads to lower prices (Brynjolfsson and Smith, 2000; Smith et al., 1999). However, other works argue that Internet retailers had higher prices and in some cases researchers have even detected some evidence that there is, in fact, certain differentiation (Clay et al. 2002; Clemons et al., 1998; Lee and Gosain, 2002). Also, some studies find significant price dispersion in Internet markets. This dispersion could be explained by heterogeneity in the characteristics of e-retailers, such as trust and reputation, branding or customer services (Smith et al., 1999).

Several annual surveys carried out by Brynjolfsson and Hitt (1997) in 1993, 1995 and 1996 showed that customer service, as well as quality, convenience and timeliness ranked higher than cost saving as the motivation for investment in IT. This opinion is also shared by Spanish managers. A recent survey (SBS, 2001; see the empirical section for more details) showed that the use of Internet technology was useful to improve the relationship with customers, provide assistance, offer information and enhance the firm's reputation, while cost saving and electronic sales increase had limited interest. These objectives remained the same for both big and small companies (Tables 1a, 1b).

Even when results are not conclusive, it seems advisable to seek competitive advantages through different factors other than price (Yang and Jun, 2002), as price competition does not provide advantages to any firm.

Differentiation strategies seem to be more promising and profitable than cost strategies (Porter, 2001; Kim et al., 2004) and the Internet offers a great many differentiation possibilities, even to brick and mortar companies. The integration of online and offline operations may create advantages in terms of reputation, wider distribution, better customer service and management skills (Park et al., 2004). In addition, constant innovation could be one of the few ways of differentiation (Sampler, 1998). In fact, innovation is the most important organizational performance clearly related to IT, together with efficiency, although it is certainly underrepresented in the literature because of the general focus on the latter (Dewett and Jones, 2001).

Successful development of new products requires linking scientific, engineering, entrepreneurial and management skills, as well as profound understanding of customer needs (Teece, 1992).

The Internet and information technologies can enhance internal communication, including collection, integration, transfer and application of employees' knowledge. In other words, they enhance the knowledge base available and its interaction, which will, in turn, promote innovation (Dewett and Jones, 2001).

Virtual markets are defined by high reach and richness of information (Evans and Wurster, 1999). Reach refers to the number of people that can be connected at once and the number of products that can be offered quickly and cheaply in those markets. Richness refers to the depth and detail of information that can be obtained, offered and exchanged between market participants.

The abundance of information enables the company to better meet the segment needs of specific clients and to tailor its products and services to conform to these needs. Consequently, the company will be able to innovate and make improvements in accordance with its clients' suggestions.

To summarise, the use of Internet technology enables companies to identify and predict clients' needs while efficiently using the employees' knowledge to meet them. This will predictably lead to more innovative products tailored to customer needs. Therefore, we postulate the following hypothesis:

Hypothesis 1: The Internet will be positively related to both innovation-based product differentiation and tailoring customer needs.

Internet usage and organizational changes

The Internet promotes information flows, which improves in-house communication and makes other coordination methods less necessary. As long as

Internet is used in collaboration with other organizational resources, such as business processes or work practices, sparking off some abilities through a process of learning by doing, IT resources can be predicted to give its users a competitive advantage hardly arguable (Brenahan and Greenstein, 1997, Murnane et al., 1999, Brynjolfsson and Hitt, 2000).

Organizations become flatter and communications more fluid through the use of IT, specifically the Internet. Brynjolfsson et al. (2002) have shown that companies with heavy IT investment have a larger number of qualified employees and use a more team-oriented production. IT allows simultaneous centralization and decentralization; it also reduces hierarchy levels by increasing the level of formalization or permitting “controlled” decentralization (Dewett and Jones, 2001). Middle managers are no longer necessary, physical proximity is no longer so useful and parallel activities can now be organised, whereas previously they had to be sequentially arranged (Fulk and De Sanctis, 1995).

This increases the organization’s flexibility and ability to learn. According to an exploratory study carried out among Australian small and medium sized enterprises, improved organizational and process flexibility is the main strategic advantage created by the use of IT, whereas the most significant tactical advantages are better administrative systems and better response to changes (Love et al., 2004). Thus, we propose the following hypothesis:

Hypothesis 2: Internet will be positively related to organizational changes.

Internet and the Value Chain reconfiguration

Internet does not only affect the way things are done in companies, it also affects their size and boundaries. As we have mentioned above, both transaction costs in markets and internal coordination costs can be reduced with the use of the Internet. If cost reduction is higher in the latter than in the former the company is expected to grow, whereas if the opposite is true then a decline is to be expected. Therefore, the ultimate effect of the Internet on company size cannot be anticipated (Brynjolfsson et al., 1994).

Brynjolfsson et al. (1994) have found that sound investment in IT correlates with a reduction in company size, which suggests that IT affects external coordination more significantly than internal coordination. Likewise, Dewan et al. (1998) and Hitt (1999) have found a positive relationship between IT investment and a lesser degree of vertical integration.

However, the Internet enables some internal activities to be outsourced and some outsourced activities to be performed internally (Afuah, 2003). Virtual activities do not eliminate physical assets, quite the contrary, physical assets could even become more important for certain activities within the value chain. In fact, cost savings in certain activities could be offset by an increase in other activities (Porter, 2001). Consequently, the Internet is expected to affect company size, although we cannot anticipate how. Taking this into account, we propose the following hypothesis:

Hypothesis 3: Internet will be related with the degree of vertical integration.

Internet and interorganizational relationships

Strategic alliances facilitate access to information, resources, markets and technologies (Gulati et al., 2000). Several studies (Cusumano and Takeishi, 1991; Dyer, 1996) suggest that close vertical ties that are characterised by rich information exchange and long-term commitments can lead to greater collaboration and higher levels of specific assets (Gulati, 1998).

The Internet facilitates vertical coordination and communication, including constant feedback. It will also favour close relationships with suppliers and clients. IT can reduce both direct and indirect costs, such as less stocks and faster reaction times (Clemons and Row, 1991). According to Calkins et al. (2000), purchase costs can be reduced up to 20% while supply times could be reduced up to 50%. Park et al. (2004) have found that alliances of e-commerce firms have a positive effect on firm value. Summarizing, the following hypothesis results:

Hypothesis 4a: Internet will be positively related to the outsourcing of activities.

Hypothesis 4b: Internet will be positively related to the establishment of strategic alliances with intermediaries.

Among the different types of alliances, technological agreements are becoming ever more necessary as a result of rapid technological change, the uncertainty that surrounds technological development and the necessity for firms to monitor a wide spectrum of technologies (Hageddorn and Schakenraad, 1994). Collaboration agreements for R&D offer significant advantages (Dyer and Singh, 1998). Firstly, they

enable substantial knowledge exchange, which encourages joint learning. Secondly, they provide access to specialised resources of other companies, which results in the joint development of new products or technologies with lower development costs (Henderson and Cockburn, 1994).

However, research and development activities (R&D) are among those activities which are not usually externalised due to the high transaction costs they imply (Teece, 1988). These transaction costs result not only from contractual uncertainty and cumulative knowledge acquisition but also from the difficulties involved in coordinating and exchanging a high volume of cumulative and interdependent technical knowledge (Brockhoff, 1992; Hagedorn, et al. 2000). Likewise, the Internet is more likely to generate substantial savings on transaction costs precisely when it comes to coordinating tasks that are characterised by variability and interdependence (Afuah, 2003). Therefore, we propose the following hypothesis:

Hypothesis 4c: Internet will be positively related to technological collaboration agreements.

Empirical analysis

Methodology

The “matched-sample comparison group” methodology is employed to empirically assess the relationship between intensive Internet use and firm strategy. This is a popular methodology that has been used in several research studies in the accounting, finance, and marketing literatures, and in particular “IT studies”, (Bharadwaj, 2000; Garby, 2002) to compare some dimensions of interest across two

samples: the *treatment sample*, in this case, a sample of firms with “intensive Internet use”, and a carefully selected *control sample* of firms matched to the treatment sample by size and activity sector. A variety of strategy and structure indicators are used to compare, between both samples, the kind of relationship there is between the use of the Internet and some measures that approximate the company’s competitive strategy, and the changes in the activity configuration of the firm, both internal and external.

In what follows, we will describe the sample selection, the measures and the results of statistical tests.

Sample selection

The source of the empirical work is the Survey of Business Strategies (SBS). It is a firm-level panel of data compiled by the Spanish Ministry of Science and Technology. The SBS covers a wide sample of Spanish manufacturing firms operating in all industry sectors. There are 3,000 observations available in the SBS for each year. We have used the information corresponding to the year 2001, where the SBS offers valuable information about company characteristics, their resource endowments, the use of IT and different aspects of their strategy.

Companies in our sample were divided into two main categories: “companies with intensive Internet use” and “rest of the companies”. Companies belonging to the first category had to satisfy the following requirements: 1) They must have their own Internet domain name, 2) Their web site must be hosted in the company’s own servers 3) they must purchase goods or services through the Internet, 4) The company must consider the Internet to be a useful, or very useful, tool for at least three of the following purposes: reinforce their corporate image, provide information about products or services, assist consumers and users, implement e-commerce and reduce supply costs.

Companies satisfying all these requirements are included in the *treatment sample*. They are classified as “companies with intensive Internet use”. There are 88 companies that meet these requirements in the sample available for the year 2001 (with 3,400 observations).

Once we had this sample, we created a second one, the *matched control sample* of firms which serves as benchmark and is made up of 88 companies, carefully selected from the category “rest of the companies”. These companies did not satisfy any of the criteria specified. Each of the companies included in the *matched control sample* was selected to match one of the companies of the *treatment sample* according to size and activity sector. Following these classification parameters, for each company included in the *treatment sample*, we will have another one included in the *matched control sample* with the same SIC digit code and whose total sales must lie within 80 and 120%.¹

The process outlined above helped us match pairs of firms in two dimensions. The firms in each of the 76 pairs are drawn from the same industry and have a similar size. For this reason it is to be expected that the companies included in each pair will be easier to compare in terms of forms of production, degree of vertical integration, possibility of product differentiation, etc.

Dependent variables

Differentiation strategy. Two indicators are defined to compare the competitive strategy adopted by companies: 1) the number of product innovations introduced during the year (INN) and 2) a dichotomous variable indicating whether or not the product has new functions (NFUN).

¹ There are 12 cases in which there isn't any matching control firm within 80 to 120% of sales level at the same SIC. Therefore, the final sample comprises 76 companies in *matched control sample* with the corresponding 76 companies belonging to the *treatment sample*.

Organizational changes. To approximate internal changes in the company's activity configuration we rely on the information provided by the dichotomous variable concerning the introduction of new methods of production organization (NORG).

Value chain reconfiguration. To approximate the company's vertical integration, that is to say, the integration of value-chain activities within the company, we use the value-added to sales ratio (VI).

Interorganizational relationships. Relationships with other companies are measured with the following variables: a) Agreements with other companies for outsourcing part of the production of firm-specific components to the firm, measured as the ratio of total outsourcing production to total sales (OUTS); b) Agreements with wholesalers and retailers, intermediaries, to commercialise firm's product. In this case, the variable included is a dichotomous variable indicating whether or not the company has such agreements (COM); c) Technological collaboration with suppliers or clients, both dichotomous variables are included (STEC and CTEC, respectively).

Empirical results

Hypotheses are tested using the mean difference test between both subsamples (*treatment sample* and *match control sample*). Results of t-tests carried out are shown in Table 2.

According to the results obtained with the mean difference tests, the competitive strategy of companies with intensive Internet use are more product-differentiation oriented, as postulated in Hypothesis 1. In comparison with the control sample, these companies have a larger number of product innovations on average. Likewise, they incorporate more functions into their products, which is a form of differentiation.

We can observe that organizational changes are more frequent in companies with intensive Internet use, as Hypothesis 2 proposed.

The average value added to sales is also higher in these companies. Hypothesis 3 postulated a relationship, either positive or negative, between the use of Internet and the degree of vertical integration. The relationship has turned out to be positive and significant, which suggests that the degree of vertical integration is higher in the control sample.

Rather paradoxical results have been found concerning changes in the activity configuration which affect the relationship with suppliers and clients. Our hypotheses concerning both types of agreements (Hypotheses 4a y 4b) predicted a positive relationship between the use of the Internet and the establishment of agreements with other companies. However, there are no significant differences between both samples either in their outsourcing of production activities or in their agreements with wholesalers and retailers. On the other hand, technological agreements do show significant differences between both samples. Technological collaboration, both with suppliers and customers, are more frequent in companies with intensive Internet use (Hypotheses 4c).

Discussion and conclusions

For the last years the use of Internet and information technologies has aroused strong interest in business management research. There has been a number of works on the impact of IT on business performance and competitiveness although results are still inconclusive.

Even when the use of the Internet cannot be considered to be a strategic resource in itself, it can be a powerful instrument for competitive strategy and establish itself as a key factor for business success. There is no doubt that the benefits of using the Internet as a management tool are maximised when it goes hand in hand with the necessary organizational changes or when it becomes a tool for internal and external cost reduction in the company's transactions.

In the present work we have studied the extent to which the use of the Internet can foster and support competitive strategies based on differentiation and innovation and how it relates to both internal and external changes in the firm's activity configuration. A matched sample comparison group methodology is used for this purpose using a sample of Spanish manufacturing firms.

Our results show that the use of the Internet favours the implementation of differentiation strategies based on innovation and the ability to meet customer needs. We have found positive and significant relationships between the use of the Internet and product innovation, as well as the incorporation of new product functions.

The relationship between the Internet and organizational changes is also confirmed. Coordination advantages offered by the Internet entail certain changes in the way to develop activities and processes, as previous works have also shown (Booth and Philip, 1998).

This study provides some support for the proposition that Internet modifies the boundaries of the firm. First, we have found a positive relationship between the use of the Internet and the degree of vertical integration, which is higher in companies with intensive Internet use. This result contradicts some previous results in the literature (Brynjolfsson et al., 1994; Dewan et al., 1998), which state that companies with heavier

IT investment have a lower degree of vertical integration. On the other hand, our results seem to be coherent with Porter's proposal (Porter, 2001), who suggests that each company should configure a tailored value chain that enables a company to offer a unique value, in other words, a value chain highly integrated to be defensible. Thus, any competitor wishing to imitate the strategy must replicate the whole system.

Information technologies enable organizations to become bigger with neither efficiency nor innovativeness loss (Huber, 1990; Dewett and Jones, 2001, 331) due to the internal coordination possibilities they offer; this includes the undertaking of new activities while avoiding a parallel increase of hierarchical levels.

The measure of the degree of vertical integration is not very accurate. Value added to sales is sensitive to industry structure and it captures backward integration, but not forward integration (Dewan et al., 1998). However, this measure has already been used in previous works, such as Brynjolfsson et al. (1994), who found a relationship between the use of IT and size reduction.

As regards establishment of agreements, results are mixed. On the one hand, no significant differences have been found between both samples regarding outsourcing and collaboration with intermediaries. On the other hand, there are significant differences on technological collaboration agreements, both with suppliers and clients. This finding supports the idea that the Internet facilitates the constant exchange of relevant and changeable information while improving the coordination of other members of the value chain. This characteristics in combination enhance innovation and the introduction of products tailored to individual customer needs.

The lack of results with the other two types of agreements might be attributable to the fact that agreements with suppliers and customers are more common than

technological ones, even previous to the development of IT, particularly the Internet. Technological means are likely to play a fairly minor role in the establishment of both outsourcing and customer agreements, where the creation of solid and trusting relationships acquires greater value. Moreover, Internet is more likely to bring more benefits to commercial agreements when there are network effects and a larger customer base (Park et al., 2004), as they will mutually reinforce both online and offline activities.

Supplier and intermediary agreements were established long before the introduction of the Internet, whereas technological agreements were not as frequent precisely because of the leakage and free rider effects (Teece, 1992) they used to produce, which the Internet can help to reduce. To summarise, the Internet significantly reduces transaction costs on those activities which were not typically externalised before, due to the high costs they used to represent.

Among the practical recommendations emerging from this work, perhaps the most important is that the Internet offers differentiation opportunities to brick and mortar companies. Information technologies can help firms leverage their resources and develop new capacities. They contribute in several ways to the offer of goods tailored to individual customer needs. First, because they can have a better notion as to what these needs are. Second, because they are in a better position to mobilise the necessary knowledge and expertise to achieve that goal, not only at intra-firm level, but also in collaboration with other members of the value chain. In fact, the Internet does not seem to have a disintegrating effect on the company, it simply modifies those activities governed by hierarchy and market.

This paper is not without its limitations, partly attributable to the lack of information available. The number of companies with intensive Internet use is not large and the information available on them is scarce. Future lines of research will attempt to improve the amount and the quality of the information available. It would certainly be interesting to be provided with a longitudinal series as well as to explore the capacities emerging from the interaction between the Internet and other firm resources, how these capacities are built and the organizational changes they entail.

References

- Afuah, A. (2003), "Redefining firm boundaries in the face of the Internet: Are firms really shrinking?", *Academy of Management Review*, 28, (1), pp. 34-53.
- Afuah, A. N. and Tucci, C.L. (2000), *Internet business models and strategies: Text and cases*. New York: McGraw-Hill.
- Amit, R. and Zott, C. (2001), "Value Creation in e-Business", *Strategic Management Journal*, 22, pp. 493-520.
- Bharadwaj, A.S. (2000), "A Resource-based perspective on information technology capability and firm performance: An Empirical Investigation", *MIS Quarterly*, 24, (1), pp. 169-196.
- Booth, M.E. and Philip, G. (1998), "Technology, Competencies and Competitiveness: The case for Reconfigurable and Flexible Strategies", *Journal of Business Research*, 41, pp. 29-40.
- Brenahan, T.F. and Greenstein, S. (1997), "Technical Progress and Co-invention in Computing and in the Uses of Computers", BPEA, *Microeconomics*, pp. 1-77.
- Brockhoff, K. (1992), "R&D Cooperation between firms: A perceived transaction cost perspective", *Management Science*, 38, (4), pp. 514-524.
- Brynjolfsson, E., Malone, T. W., Gurbaxani, V. and Ajit, K. (1994), "Does Information Technology lead to smaller firms?", *Management Science* 40(2), pp. 1628-1644.
- Brynjolfsson, E. and Hitt, L. (1996), "Paradox lost? Firm-level Evidence on the Returns to Information Systems", *Management Science*, 42 (4), pp. 541-558.
- Brynjolfsson, E. and Hitt, L. (1997), "Breaking Boundaries", *Informationweek*, 22, pp. 54-61.
- Brynjolfsson, E. and Hitt, L. (2000), "Beyond Computation: Information Technology, Organizational Transformation and Business Performance", *Journal of Economic Perspectives*, 14 (4), pp. 23-48.
- Brynjolfsson, E. and Smith, M.D. (2000), "Frictionless commerce? A comparison of Internet and conventional retailers", *Management Science*, 46, (4), pp. 563-85.
- Brynjolfsson, E., Hitt, L.M. and Yang, S. (2002), "Intangible Assets: Computers and Organizational Capital", Brookings Papers on Economic Activity.
- Calkins, J.D., Farello, M.J. and Smith Shi, C. (2000), "From retailing to e-tailing", *The McKinsey Quarterly*, number 1, pp. 140-147.
- Clay, K., Krishnan, R., Wolff, E. and Fernnades, D. (2002), "Retail Strategies on the Web: Price and Non-Price Competition in the Online Book Industry", *Journal of Industrial Economics*, 50, pp 351-367.
- Clemons, E. K. and Row, M.C. (1991), "Sustaining IT Advantage: The Role of Structural Differences", *MIS Quarterly*, 15, (3), pp 275-292.

- Clemons, E. K and Row, M.C. (1987), "Structural Differences Among Firms: A Potential Source of Competitive Advantage in the Application of Information Technology", *Proceedings of the Eighth International Conference on Information Systems*, Pittsburgh, PA, Diciembre 1987, pp. 1-9.
- Clemons, E., Hann, I. and Hitt, L. (1998), *The Nature of Competition in Electronic Markets: An Empirical Investigation of Online Travel Agent Offerings*. Working Paper, Wharton School of Business, University of Pennsylvania.
- Cusumano, M.A. and Takeishi, A. (1991), "Supplier relations and management: A survey of Japanese, Japanese-Transplant and U.S. auto plants", *Strategic Management Journal*, 12, pp. 563-588.
- Dewan, S. and Min, C.K. (1997) "The Substitution of Information Technology for Other Factors of Production: A Firm Level Analysis", *Management Science*, 43(12), pp. 1660-1675.
- Dewan, S., Michael, S.C. and Min, C. (1998), "Firm Characteristics and Investments in Information Technology: Scale and Scope Effects", *Information Systems Research*, 9, (3), pp. 219-230.
- Dewett, T. and Jones, G. R. (2001), "The role of information technology in the organization: a review, model and assessment", *Journal of Management*, 27, pp. 313-346.
- Dyer, J.H. (1996), "Specialized supplier networks as a source of competitive advantage: Evidence from the auto industry", *Strategic Management Journal*, 17, (4), pp. 271-292.
- Dyer, J. H. and Singh, H. (1998), "The Relational View: Cooperative Strategy and Sources of Interorganizational Competitive Advantage", *Academy of Management Review*, 23(4), pp. 660-679.
- Evans, P. and Wurster, T. (1999), "Getting real about virtual commerce", *Harvard Business Review*, 77, (6), pp. 85-94.
- Fulk, J. and De Sanctis, G. (1995), "Electronic Communication and Changing Organizational Forms", *Organization Science*, 6, (4), pp.337-349.
- Garby, E. (2002), "Alternative measures of performance for E-companies: A comparison of approaches", *Journal of Business Strategies*, 19, (1), pp. 1-17.
- Gulati, R. (1998), "Alliances and Networks", *Strategic Management Journal*, 19, pp. 293-317.
- Gulati, R., Nohria, N. and Zaheer, A. (2000), "Strategic networks", *Strategic Management Journal*, 21 (3), pp. 203-215.
- Hagedorn, J. and Shakenraad, J. (1994), "The effect of strategic technology alliances on company performance", *Strategic Management Journal*, 15, pp. 291-309.
- Hagedorn, J., Link, A. and Vonortas, N. (2000), "Research partnerships", *Research Policy*, 29, pp. 567-586.

- Harris, S. E. and Katz, J.L. (1991), "Organizational performance and information technology intensity in the insurance industry", *Organization Science*, 2 (3), pp. 263-295.
- Henderson, R. and Cockburn, I. (1994), "Measuring competence? Exploring firm effects in pharmaceutical research", *Strategic Management Journal*, 15, pp. 63-84.
- Hitt, L. and Brynjolfsson, E. (1996). "Productivity, Business Profitability, and Consumer Surplus: Three Different Measures of Information Technology Value", *MIS Quarterly* (20:2), pp. 121-142.
- Hitt, L. M. (1999). "Information technology and firm boundaries: Evidence from panel data". *Information Systems Research* 10(2): 134-149.
- Huber, G.P. (1990), "A theory of the effects of advanced information technologies on organizational design, intelligence and decision making", *Academy of Management Review*, 15, (1), pp. 47-71.
- Kim, E., Nam, D. and Stimpert, J.L. (2004), "The Applicability of Porter's Generic Strategies in the Digital Age: Assumptions, Conjectures and Suggestions", *Journal of Management*, 30, (5), pp. 569-589.
- Lee, Z. and Gosain, S. (2002). "A longitudinal price comparison for music CDs in electronic and brick-and-mortar markets: Pricing strategies in emergent electronic commerce", *Journal of Business Strategies*, 19 (2), pp. 55-61.
- Love, P.E.D., Irani, Z., Standing, C., Lin, C. and Burn, J.M. (2004), "The enigma of evaluation: benefits, costs and risks of IT in Australian small-medium-sized enterprises", *Information & Management forthcoming*.
- Lucas, H.C. (1993). "The Business Value of Information Technology: A Historical Perspective and Thoughts for Future Research", en R. Banker, R. Kauffman, y M.A. Mahmood (eds.), *Strategic Information Technology Management: Perspectives on Organizational Growth and Competitive Advantage*, Idea Group Publishing, Harrisburg, PA.
- Malone, T.W. 1997. "Is empowerment just a fad? Control, decision making and IT", *Sloan Management Review*, 38 (2), pp. 23-35.
- Mata, F. J., Fuerst, W. L. and Barney, J. B. (1995), "Information Technology and Sustained Competitive Advantage: A Resource-Based Analysis", *MIS Quarterly*, Diciembre, pp. 487-505.
- Murnane, R.J., Levy, F. and Autor, D. (1999), "Technological change, computers and skill demands: Evidence from the back office operations of a large bank", mimeo, NBER Economic Research Lober Workshop (June).
- Park, N.K., Mezas, J.M. and Song, J. (2004), "A Resource-based View of Strategic Alliances and Firm Value in the Electronic Marketplace", *Journal of Management*, 30, (1), pp. 7-27.

- Porter, M. E. (2001), "Strategy and the Internet", *Harvard Business Review*, pp. 63-78.
- Powell, T.C. and Dent-Micallef, A. (1997), "Information Technology as Competitive Advantage: The Role of Human, Business and Technology Resources", *Strategic Management Journal*, 18, (5), pp. 375-405.
- Sampler, J.L. (1998), "Redefining industry structure for the information age", *Strategic Management Journal*, 19, pp. 343-355.
- Shapiro, C. and Varian, H. (1999), *Information rules: A strategic guide to the network economy*. Boston, MA: Harvard Business School Press.
- Smith, M.D., Bailey, J. and Brynjolfsson, E. (1999), "Understanding Digital Markets: Review and Assessment", *Understanding the Digital Economy*, MIT Press.
- Strassman, P. A. (1997). *The Squandered Computer*, The Information Economics Press, New Haven, CT.
- Teece, D. (1988), "Technological change and the nature of the firm". In G. Dosi et al. (eds.), *Technical Change and Economic Theory*: 256-281. London: Frances Pinter.
- Teece, D.J. (1992), "Competition, cooperation and innovation. Organizational arrangements for regimes of rapid technological progress", *Journal of Economic Behavior and Organization*, 18, pp. 1-25.
- Tippins, M.J. and Sohi, R.S. (2003), "It competency and firm performance: Is organizational learning a missing link?", *Strategic Management Journal*, 24, pp. 745-761.
- Venkatraman, N. (1994), "It-enabled business transformation: from automation to business scope redefinition", *Sloan Management Review*, 35, pp. 73-87.
- Wilson, D. (1993). "Assessing the Impact of Information Technology on Organizational Performance", en *Strategic Information Technology Management: Perspectives on Organizational Growth and Competitive Advantage*, R. Banker, R. Kauffman, y M.A. Mahmood (eds.), Idea Group Publishing, Harrisburg, PA.
- Yang, Z. and Jun, M. (2002). "Consumer perception of e-service quality: From Internet purchaser and non-purchaser perspectives", *Journal of Business Strategies*, 19 (1), pp. 19-41.

Table 1a
Consequences of having a presence in Internet (– 200 employees)
 (only firms having their own Internet Domain)

	(1)	(2)	(3)	(4)
Reinforce corporate image	32,2	55,0	9,1	3,6
Offer information	44,5	40,4	10,3	4,8
Assist consumers and users	12,9	40,8	32,41	13,8
e-commerce	8,7	25,0	38,5	27,6
Reduce supply costs	3,7	17,3	39,7	39,1

(1) Very important (2) Important (3) Not very important (4) Not important at all

Table 1b
Consequences of having a presence in Internet (+200 employees)
 (only firms having their own Internet Domain)

	(1)	(2)	(3)	(4)
Reinforce corporate image	37,3	50,7	9,0	2,9
Offer information	40,7	45,0	11,2	2,9
Assist consumers and users	16,5	37,9	33,2	12,3
e-commerce	10,7	24,1	43,3	21,8
Reduce supply costs	5,3	18,6	48,6	27,4

(1) Very important (2) Important (3) Not very important (4) Not important at all

Table 2

<i>Variable</i>	<i>Intensive Internet firms</i>	<i>Matched firms</i>	<i>Difference</i>
INN	3.14	0.80	2.33*
NFUN	0.25	0.09	0.16***
NORG	0.11	0.03	0.08***
VI	0.33	0.28	0.04*
OUTS	0.06	0.05	0.01
COM	1.89	3.12	-1.22
STEC	0.40	0.23	0.17**
CTEC	0.39	0.22	0.17***

Significative level: ***p<0.01, **p<0.05, p*<0.10