

INTERNET BASED TECHNOLOGIES (IBTS) INTEGRATION IN B2B MODELS – THE IMPACT ON COMPETITIVE ADVANTAGE OF FIRMS

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Abstract

The increase in the number of firms that use Internet based technologies (IBTs) is a global phenomenon and is continually transforming the rules of competition for established businesses in unprecedented ways. However as all companies come to embrace IBTs.... The Internet itself will be neutralised as a source of competitive advantage. In this new context, a question arises: how can a firm use IBTs to create and sustain competitive advantages?

This paper investigates how established firms are developing innovative business models that integrate IBTs. Furthermore it aims to assess the firms' ability to develop and sustain the competitive advantages through IBTs.

The empirical ground of this paper was based on data that was originally collected for a research project conducted in Portugal, between September 2001 and January 2002 [E-Marketplaces: Estratégias de Seleção de Portais B2B. IAPMEI. 2002]. 32 in-depth interviews were made to 20 firms (IBTs users) and 12 vendors of IBTs solutions, along with 2 focus groups with current and potential customers of IBTs solutions. The selection of the sample of firms was made with the following criteria: reasonable wide range of B2B sectors and good potential of demonstration effect (financial services firms were excluded). The information captured covered the type of organisation, its motivations and perceptions about the impact of IBTs in their businesses.

A systematic framework was developed to understand what drives competitive advantage and how it can be sustained. This framework comprises following steps:

- 1- Description of the firm's business model as well as IBTs employed.
- 2- Identification and classification of perceived IBTs driven competitive advantages.
- 3- Assessment of the key success factors for the development of sustainable competitive advantages.
- 4- Analysis and understanding of the basis of IBTs driven competitive advantages

This framework (I.T.I.C.A - Internet Technologies Impact on Competitive Advantage) was applied to the experiences of two established businesses selected from the above IBTs user sample. Going through this framework will facilitate a more comprehensive investigation of the basis of IBTs driven competitive advantages.

Keywords

Internet based technologies (IBTs), Competitive Advantage, Business Models.

THE NEW BUSINESS ENVIRONMENT

Globally, firms are continually facing new market challenges and an increased competition. Customers continually alter what they originally requested and firms are exposed to a constant price pressure and shrinking market windows. Other trends in globalisation, technology, and outsourcing are forcing firms to increase collaboration with an increasing number of participants in their product development process, both internally and with other firms. In many industries, it is no longer cost competitive to serve different markets with independently designed products manufactured in local, isolated operations. As a result, today's design and manufacturing operations have evolved into complex supply chains that rely on an increasingly geographically dispersed network of participants (Johns 2002). Moreover the traditional value chain based on an industry push model is changing to a new customer pull model.

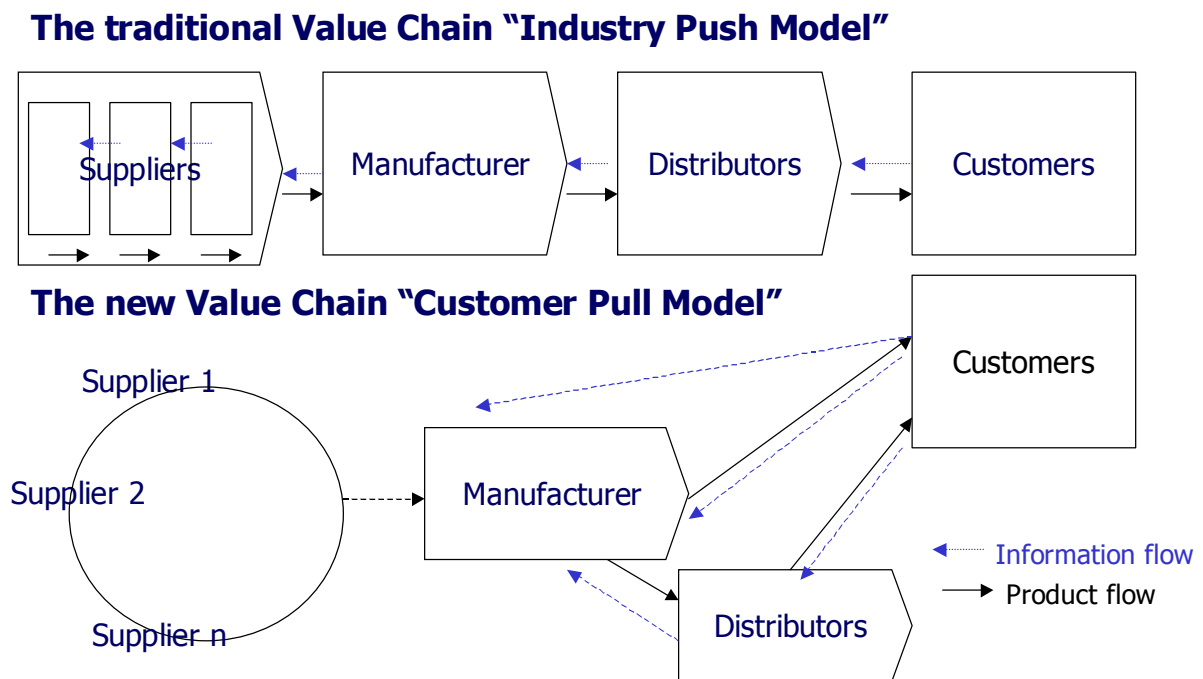


Figure 1. Value Chain Dynamics

This new configuration of the value chain requires an improved information flow. "Physical flows no longer have to follow information flows: the Internet allows information flows to substitute for some of the inefficient physical flows" (Lee & Whang 2001).

And as global markets grow increasingly efficient, competition no longer takes place between individual businesses, but between entire value chains (Horvath 2001). Therefore the ultimate goal is to reach a truly value chain synchronisation, which demands deeper collaborative functionality and capabilities among partners (Brooks and Dik 2001).

These pioneer firms recognise that they have to share business information all along the business life cycle and enhance order visibility throughout the entire value chain. All of them are seeking innovative ways to improve competitive position and reduce or eliminate non-

essential costs. Plus they realise that product improvement and shortened delivery times are prerequisites to attaining competitive advantage.

Nowadays it's clear among a large business community that the Internet will affect every firm in some way (yet it is not going to change everything). Furthermore many firms are already employing IBT in their internal and external business processes to overcome the increasing cost and time pressure and simultaneously to remain competitive and maintain a strong market presence. The Internet transforms the traditional value chain in a digital value chain where some of the physical interactions are substituted by electronic means. IBTs are employed to manage the physical and information flows in a more efficient way (Aldrich 1999).

Actually IBTs can provide significant competitive advantage by enabling streamlined business processes and improved information flow and faster time to market in the course of the business life cycle (Herrmann and Hodgson 2001), namely:

- a) Dramatic cost savings: achieved by reduction in working inventories, greater efficiency through the elimination of non-value added tasks and leveraging scale with strategic suppliers.
- b) Increase flexibility and responsiveness to customer requirements: achieved by improved visibility, communication and collaborative planning with suppliers. An improved ability to match production to demand translates readily into greater market share and higher profitability.
- c) Substantially faster cycle times: achieved by collapsing the latency of information flow through faster communications, streamlined process management to ensure that buyers and customers are working with the most accurate, up to date information available.

According to management professor Rafi Amit, director of Wharton's Electronic Business Initiative (WeBI), firms that delay profit-boosting technologies such as new electronic procurement and customer relationship management systems are threatening their future, adding that such companies "will fall behind competitively". There are some straightforward IBT that produce immediate revenues. For instance, building a corporate extranet where buyers can examine whether a company has a product available in its inventory before placing an order has a short revenue distance because it directly affects sales revenues. In this case, revenues come from the customer since IBTs makes the firm existing linkages with customers more efficient.

Based on the above conditions the number of firms that use Internet based technologies (IBTs) is continually increasing and is transforming the rules of competition for established businesses in unprecedented ways. To remain competitive, these firms need to transform and adapt their old business models to this new environment.

However as all companies come to embrace IBTs.... The Internet itself will be neutralised as a source of competitive advantage. As customers become familiar with the technology, their loyalty to their initial suppliers will also decline, they will realise that the cost of switching is low (Porter 2001).

In fact, technology, despite vendors' claims that it can streamline the supply chain, fine-tune inventory and bring about a revolution in the way manufacturing and distribution is

approached, is not, in itself, the answer. “Losers always ask for more IT but there's no relation between money spent on technology and profits. IT executives need to look at transaction costs, data centre efficiencies, and product, service and marketing cost at the very least. They need to be strategists” (Roy 2002). Technologies without strategic context are only toys (Strassmann 2001). In this new context, a question arises, how can a firm make use of IBTs to create and sustain competitive advantages?

RESEARCH OBJECTIVES AND METHODOLOGY

This paper investigates how established firms are developing innovative business models that integrate IBTs. Furthermore it aims to assess the firms' ability to develop and sustain the competitive advantages through IBTs.

The empirical ground of this paper was based on data that was originally collected in a research study (“E-Marketplaces: Strategies to select B2B portals”) conducted in Portugal, between September 2001 and January 2002. 32 in-depth interviews were made involving 20 firms (IBTs users) and 12 vendors of IBTs solutions, along with 2 focus groups with current and potential customers of IBTs solutions. The selection of the sample of firms was made according to the following criteria: reasonably wide range of B2B sectors and good demonstration effect potential (financial services firms were excluded). The information captured covered the type of organisation, its motivations and perceptions about the impact of IBTs in their businesses.

The nature of this data does not permit to measure and quantify IBTs driven competitive advantages and its sustainability. However it is feasible to develop a systematic framework for understanding what drives competitive advantage and how it can be sustained. This framework will be applied to the experiences of two different established firms (selected amongst the most dynamic IBTs users that correspond to the best demonstration effect). Besides the assessment of the firm's ability to develop and sustain the competitive advantages through IBTs, this framework will also aim to produce a set of recommendations about the firm's business strategy.

PROPOSED FRAMEWORK

This framework (I.T.I.C.A - Internet Technologies Impact on Competitive Advantage) is based on a select conceptual review of e-business strategic issues and grounded in observations (data collected in the above research project):

I.T.I.C.A. process flow consists of the following steps:

- 1- Description of the firm's business model.
- 2- Identification and classification of perceived IBTs driven competitive advantages.
- 3- Assessment of the key success factors for the development of sustainable competitive advantages:
 - 3.1- Business Strategy: Strategic fit and positioning.
 - 3.2- Process Technology.

4- Analysis and understanding of the basis of IBTs driven competitive advantages.

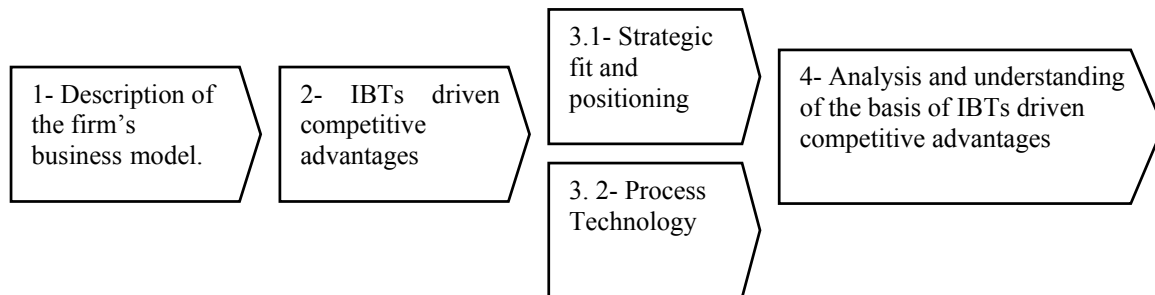


Figure 2. I.T.I.C.A. Process Flow

Description of the firm's business model.

Networked commercial applications, especially on the Internet, have resulted in many changes in how B2B transactions can be carried out. Firms often discover entirely new ways of pursuing business objectives, developing strategies and business models that were neither apparent nor possible prior to the Internet (Lee & Whang 2001).

Benefits from such approaches include rapid data exchange, low inventories and quick response. All of these require a high degree of system integration between supplier and customer. Supply chain management transactions involve business relationships that can be competitive, collaborative, or some mix of this two. Choices among these strategies depend on existing and desired relationships between suppliers and customers (Archer and Yuan 2000).

The balance chosen between competitive and collaborative relationships depends on the following:

Competitive relationship is more appropriate if:

- Transaction tends to be *ad hoc*
- There is a over supply in the marketplace
- Little real market differentiation between products and services
- Rapid evolution of innovation

Collaborative relationship is more appropriate if:

- Partners have complementary capabilities and resources
- Access in needed to vital assets and unique innovation
- There are strong and enduring relationships, common values and goals support by market hierarchies.

The business model concept suggests that value is created by the way in which business transactions are enabled (Amit and Zott 2000). So how can IBTs enable a more competitive or collaborative business transactions?

Firms can employ IBTs (different e-business solutions through open trading platforms/portals – e-marketplaces and/or restricted trading platforms/portals – intranets/company portals/extranets/private exchanges) to support different processes (e.g. procurement; product design; customer service, etc). For instance a process based on a more competitive relationship, implying less relationship building and more attention to cost efficiencies, is well supported by an e-procurement solution through an e-marketplace.

Table 1. Business Model Analysis

Objectives:	Business Objectives.
Internal analysis:	ICT infrastructure; Human resources availability and training; Internal processes (degree of formalisation).
External analysis:	Key partners identification (customers, suppliers, channel partners and competitors); How do they make use of IBTs?
IBTs employed:	Type of e-business solutions and platforms/portals employed.
Benefits:	Main advantages from IBTs employment.

Enabling this type of transaction requires not only a full understanding of the internal environment but also a network of capabilities drawn from multiple stakeholders (Table 1). Business models may therefore span industry and firm boundaries (Amit and Zott 2000).

Identification and classification of IBTs driven competitive advantages

This section is focus on an assessment of IBTs use to gain a competitive advantage. Jammeson (1997) found that IBTs can provide a business with a competitive advantage if any or all of the following statements apply:

- a) IBTs allow the business to carry out a relevant business activity or process it did before but quicker and/or cheaper.
- b) IBTs allow the business to carry a relevant business activity or process it previously was unable to do.
- c) IBTs facilitates/inspires the business activity or process to instigate a previously unheard of mode of operation.

Table 2. Competitive Advantage (C.A.) Criteria

Type of C.A.	Examples
a) IBTs allow the business to carry out a relevant business activity or process it did before but quicker and/or cheaper.	Information retrieval, research and communication with offices/customers around the world; Savings in process improvements and on the cost of goods.
b) IBTs allow the business to carry a relevant business activity or process it previously was unable to do.	Allowing customers to query company data at any time day or night from anywhere in the world without requiring the intervention of company staff (customer self-service).
c) IBTs facilitates/inspires the business activity or process to instigate a previously unheard of mode of operation.	Establishment of digital value chains/networks (collaborative and synchronised value chains).

If IBTs employment encounter/ meets the above criteria, the firm will be able to gain a competitive advantage. However is very difficult to achieve a competitive advantage based on

collaborative and synchronised value chains (performing a business process in an unheard of mode of operation).

Many firms are focusing on collaboration with their most strategic trading and technology partners to gain a competitive advantage. Using collaborative solutions such as supplier relationship management, a company can support and improve business process across the supply-chain, and this contributes to competitive advantage (Herrmann and Hodgson 2001). This kind of collaboration requires:

- alignment of goals
- commitment for a long term business relationship
- ability to react and change based on market demands and end customer changes
- joint initiatives to continuously drive value for the end customer

As was previously argued the Internet is accelerating the rollout of a new kind of model: a networked corporation - partners sharing information across entire supply chains linked over the Net (Hof and Hamm 2002). Nevertheless due to intrinsic difficulties of collaboration amongst business partners (most of the firms are unprepared to meet the demands of the emerging collaborative environment) this model is incredibly tough to execute.

Assessment of key success factors for the development of sustainable competitive advantages.

Taking in consideration that the Internet itself is not the basis of competitive advantage, how IBTs driven competitive advantages can be sustained?

Founded on contributions from other researchers and founded on observation, two key success factors for sustainable competitive advantages were identified:

1. Business Strategy: IBTs integration in the firm business model
 - Strategic Fit: Is there a good fit between IBTs employed and business objectives? (Y/N).
 - Strategic Positioning: And does it reflect a distinctive strategic positioning? (Y/N)
2. Process Technology: IBTs integration in the firm business processes and activities
 - Are the processes being improved, enhanced, well integrated and reinforced by the employment of IBTs? (Y/N).

Business Strategy: "Align e-business to business needs"

Strategic fit: Is there a good fit between IBTs employed and business objectives? (Y/N).

Many companies have successfully deployed e-business initiatives (e.g. external improvement processes with supply chain partners and customers). These results have generated measurable benefits (e.g. hard-dollar savings in process improvements and cost of goods) as well as perceived benefits (e.g. quality improvements and customer satisfaction). Unfortunately many others have failed to realise these benefits. This can be attributed to several issues, but a META Group research indicates that a common characteristic of most failures is deficiency in the management approach. Many planners have failed to adequately address the characteristics and needs of targeted users (customers, supplies and even employees), and instead have focused on deployment of a software package as the solution

design point and business objective. (Lehmann 2002). Yet what is really essential is to match technology with a business problem.

So it is crucial to define an appropriate and innovative business model (Tetteh and Burn 2001) that integrates IBTs, based on the firm's vision and strategic goals. Furthermore an effective e-business strategy and IBTs portfolio management helps align business objectives by building organisational consensus to clarify rank and prioritise e-business investments.

However there is no single optimal business strategy for e-commerce, since the sources of competitive advantage differ across different industries or markets (Shin, 2001, p.38). As companies grow and expand their products and market penetration, supply chain network reconfigurations don't keep pace with the proliferation of products, customers, and channels. Firms must create a mixed e-business strategy to monitor and improve the performance for different stakeholders. They need tailored e-business strategies to succeed, but they lack a framework to monitor and manage these mixed strategies across the value network (Asgekar 2002).

The E-Business Positioning Matrix (Patrício et al, 2002) is a framework that supports and advises companies in making more accurate decisions when selecting B2B platforms/portals.

Based on their internal and external environment a firm can perform the following strategies:

Development Strategy - The firm is prepared to implement e-business solutions within itself and with its partners. However the market is not pressing for the use of such solutions. Instead of trying to develop any form of web portal oriented to customers/suppliers Firms in this position should concentrate their efforts in leveraging their own human and technology resources and focusing as much as possible in the development of e-business solutions within the company trough intranets/company portals. These firms have an opportunity to develop their internal resources and to improve productivity and efficiency ratios.



Figure 3. E-Business Positioning Matrix

Learning Strategy - The firm is not prepared to implement e-business solutions (within itself and with its partners) neither is the market (main business partners) pressing for the use of

such solutions. Firms in this position have a good opportunity to test the technologies and the automation of some business processes less strategic (with lower risk and impact in the bottom line). It gives them a chance to improve their processes and at the same time to learn more about the Internet. Before entering in a more complex environment a company can use an e-marketplace to test and routine their organisation in the use of e-business solutions.

Reaction Strategy - The firm is not prepared to implement e-business solutions within itself and with its partners. However some of their main customers or suppliers are pressing for the use of such solutions. Firms in this position should respond affirmatively to those invitations from strategic partners to join their portals or other type of platforms. If the decision is not to connect to their portals they face the risk of losing their partners and business. Apparently the only way to succeed is to respond positively to their partner's e-business initiatives.

An illustration of this kind of positioning is the case of firms that were obliged to hook up into an e-procurement solution of a customer developed through a buy-side extranet. Since there were no system-to-system connections between them, the supplier companies were forced to confirm the order in the customer system apart from doing the same in their own information system. The superior relationship with the customer more than compensates the extra cost of the order process.

Pro-active Strategy - Both the firm and the market are prepared to implement e-business solutions. A firm takes the initiative of developing their own portals or participating in a vertical e-marketplace with strategic customers /suppliers. And it is just a question of time and who is going to lead the process. Firms in this position should take the initiative of developing their own portals to collaborate with strategic customers/suppliers. They can also participate in vertical e-marketplaces and invite their partners to join them. If they manage to lead the implementation process of developing portals to customers/suppliers they will have an important advantage over their competitors since they we able to connect closest partners into their own network solution. A growing number of firms are developing extranets oriented to customers not only to enter in new markets but also and above all to enhance their business performance and establish a better relationship with existing customers. The same could be done with existing and closest suppliers.

It is crucial to make effective technology selections and efforts to rationalise technology portfolios. For a company to have a full host of capabilities it will need to have a strategically and dynamically managed portfolio approach that aligns IBTs solutions and platforms with business needs (Copacino and Dik 2002).

Frequently firms have to employ different IBTs to support and enhance their business strategy, and consequently they can perform different e-business strategies at the same time (for different market segments) or in different time frames. E.g. Supply chain leaders saw extranets/private exchanges (restricted trading platforms) as a way to extend their competitive advantage. The strength of the extranet/private exchange is its ability to support a company's unique strategy and requirements. Motorola, Wal-Mart and others use private exchanges to provide a level of intimacy with their trading partners that is not achievable currently in a public marketplace. Dell's extraordinarily short cycle time, for example, is an important competitive advantage. Joining an e-marketplace would bring Dell's capabilities to its competitors, so Dell relies on its own extranet/private exchange to outpace competitors while keeping its proprietary supply chain management practices secret. Yet e-marketplaces should

enable the next wave of supply chain management synchronisation and collaboration gains (Copacino and Dik 2002).

Strategic Positioning: And does it reflect a distinctive strategic positioning? (Y/N)

Having a strategic fit is not sufficient to guarantee the development of sustainable competitive advantages. It is essential to assess if the source of an IBTs driven competitive advantage comes from a distinctive strategic positioning or not.

Generally and accordingly to Porter and many others researchers, sustainable competitive advantage comes from operational effectiveness (doing what your competitors do, but better) or strategic positioning (delivering unique value to customers by doing things *differently* than your competitors). And Porter emphasises that it's strategic positioning (performing different activities than rivals or performing similar activities in different ways), *not* operational effectiveness that lets a company most effectively distinguish itself from competitors.

Most companies define Internet competition in terms of operational effectiveness (speed, flexibility, and efficiency). But because competitors can easily copy a firm's advances in these areas, strategic positioning becomes most important. In fact, the Internet makes it harder for companies to sustain operational advantages, but it opens new opportunities for achieving or strengthening a distinctive strategic positioning. A Company's strategy must enable it to deliver a value proposition different from those that competitors offer (Porter 2001).

If IBTs employment meets the Jamesson criteria (framework step 2), the firm will be able to gain a competitive advantage. Table 3 provides a guideline to assess the sustainability of IBTs driven competitive advantage.

Table 3. Source of Competitive Advantage (C.A.)

Type of IBTs driven C.A.	Source of C.A.
a) IBTs allow the business to carry out a relevant business activity it did before but quicker and/or cheaper.	It gives a business a competitive advantage based on operational effectiveness (cost advantage).
b) IBTs allow the business to carry a relevant business activity it previously was unable to do.	It gives a business a competitive advantage based on a distinctive strategic positioning (differentiation advantage).
c) IBTs facilitates/inspires the business activity to instigate a previously unheard of mode of operation.	It gives a business a competitive advantage based on a distinctive strategic positioning (differentiation advantage).

Process Technology

Are the processes being improved, enhanced, speeding up, well integrated and reinforced by the employment of IBTs? (Y/N).

Overcoming the strategic issues it is now fundamental to assess the firm's ability to employ the technology in a unique way.

There are many ways to employ the net, many of which make no sense whatsoever (Tapscott 2001). Indeed technology, especially IBTs, is available to all. "The question is whether you can apply that technology in a unique way" (Hammel 2000).

Process Technology is the organisation of the different activities conducted by the firm. Even if IBTs are basically the same, each firm integrates them in a unique way. The differentiation between them comes from the different impact on the business processes, so the way the company will carry out the process technology is critical for the success of sustainable competitive advantages.

Technology alone isn't a silver bullet. For real benefits, companies must be willing to transform the way they do business on a fundamental level. "When you invest in digital technology, you have to modify your business processes and organisational structure" (Amit 2002). Ultimately, competitive advantage will no longer reside in the ability of a business to erect technological barriers to rivals, but in its ability to leverage the intelligence in the value chain/network and transform existing business processes (Horvath 2001).

If IBTs deployment is robust and difficult to replicate and it generates a clear improvement in the firm's business processes (reinforcing and optimising the key business processes) it will enable the development of sustainable IBTs driven competitive advantages.

The firm value chain model (the set of activities through which a product or service is created and delivered to customers, Porter 1985) is going to be used to examine if the processes are leveraged by the employment of IBTs.

Even if the business model concept enables to address a unique set of questions that cannot be sufficiently addressed by the value chain model (Amit and Zott), this perspective is mainly concerned with how one particular firm adds value in the production of a product. And it facilitates the assessment of the key process areas, the process definition (individual and common processes) and the fit among activities (redesign of some activities).

How IBTS affect both the company margin and the value delivered to customers?

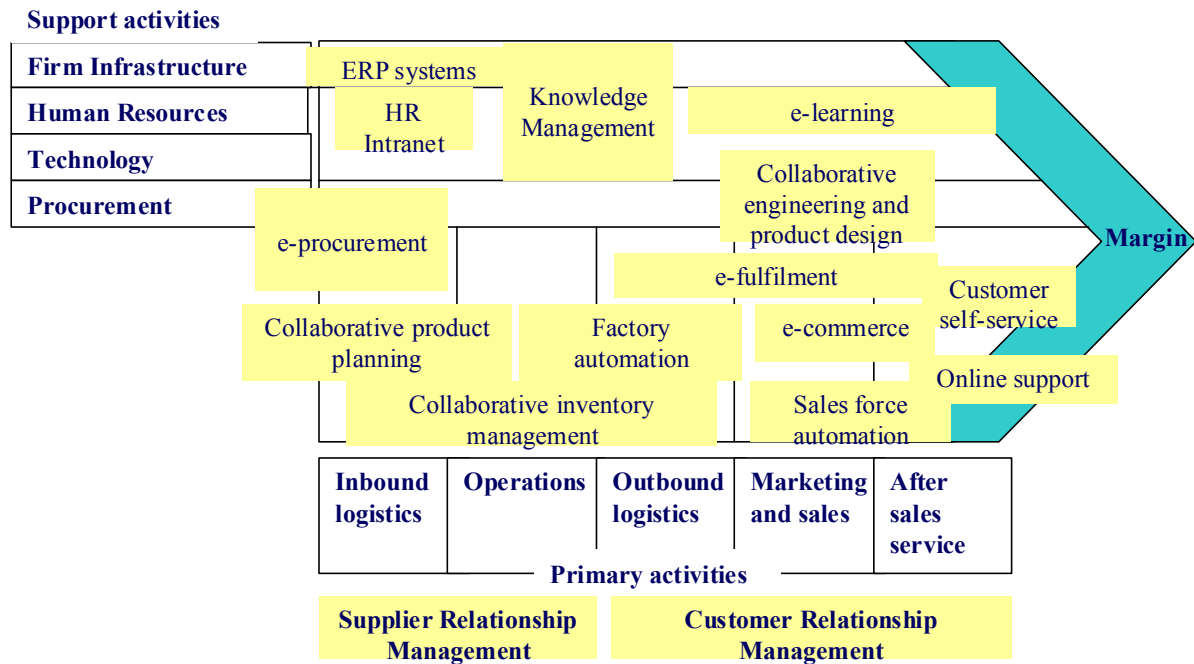


Figure 4. Analysis of the effects of IBTs deployment in a firm value chain - adapted from Porter (2001), Hoof and Stegwee (2001).

Porter recognises that the special advantage of the Internet is the ability to link activities, both within the firm and with outside partners. Some of these already existing linkages have been integrated by using IBTs, ultimately providing a fully integrated e-business process.

IBTs can reach all activities of the firm and some e-business solutions cover multiple value activities. Taking the example of e-procurement, it can be seen that this system affects both the supporting (procurement) and primary (inbound logistics) activities. The multiple activities are being linked together through such tools as customer self service, sales force automation, collaborative product design, factory automation among other e-business solutions (figure 3).

IBTs make it possible to build truly integrated and customised systems that reinforce the fit among activities. By integrating virtual and physical activities to compensate for the Internet's performance limits (e.g., customers can't physically touch and test products), firms gain competitive advantage. "If you use your Web site to attract customers and draw them to flesh-and-blood salespeople who provide personalised advice and after-sales service, you reinforce connections—and strengthen sales." (Porter, 2001). Hoof and Stegwee (2001), also recognise that the integration of the physical processes and IBTs solutions is essential to achieve maximum results.

Analysis and understanding of the basis of IBTs driven competitive advantages

Going through the framework phases will facilitate a more comprehensive investigation of the basis of IBTs driven competitive advantages.

Table 4. Overall criteria

Perceived IBTs driven CA:	?
Assessment of key success factors for sustainable CA:	
Is there a good fit between IBTs employed and business objectives?	?
Does it reflect a distinctive strategic positioning?	?
Are the processes being improved, enhanced, speeding up, well integrated and reinforced by the employment of IBTs?	?

If there is a very good strategic fit and process technology (IBTs employment meets the overall criteria), perceived IBTs driven competitive advantages can be developed and sustained.

Main limitations of this analysis:

- Nature of data: The nature of data collected do not permitted perform a quantitative analysis of the key success factors for the development of sustainable competitive advantages, neither the establishment of key performance indicators for each factor.
- Time frame: To estimate the real effects of the process technology (process enhancement) it requires at least a two year analysis to compare the present situation with the one prior the employment of the IBT.
- Cost vs. Benefits analysis: Costs and returns are difficult to measure because some of the items cover a host of intangibles.

FRAMEWORK APPLICATION

I.T.I.C.A is applied to the experiences of two established businesses (a construction industry contractor and a textile manufacturer). Due to the extent of the framework analysis the positioning matrix and the value chain figures will not be display in these two business cases:

A) Construction Industry Contractor

Description of the firm's business model.

Table 5. Business Model Analysis

Objectives	Cost savings (reduce the cost of indirect procurement supplies). Test and train the organisation to start using IBTs
Internal analysis	Adequate ICT infrastructure (the company is planning to implement an ERP web-enabled). Some efforts were made in human resources ICT informal training (through extensive use of email and internet). Formalisation of some internal processes.
External analysis	Paper based workflow with customers (few large companies – public and private) and suppliers (a huge number of SMEs). Until so far none of them make use of IBTs. Strong price competition (main competitors are large companies with old legacy systems).

IBTs employed	E-procurement solution for office supplies through a horizontal e-marketplace. Besides that there is a new emergent project: the development of a more complex business intranet portal (data exchange and collaboration between head office and different sites).
Benefits	Significant cost savings in a large variety of office supplies items (40% savings in some of those items). The company made a small investment: € 37.41 per month (for a basis of 3 users placing their orders through the system) and achieved a considerable benefit. E.g. just for a specific item (business paper cases unit cost drops off from € 2.84 to € 2.29 - weekly consumption of this item is more than 500 cases).

This is a typical case of a competitive relationship focus on cost efficiencies. The indirect procurement process is well supported by an e-procurement solution developed through a horizontal e-marketplace.

Identification and classification of perceived IBTs driven competitive advantages

Table 6. Competitive Advantage Criteria

Type a) IBTs allow the business to carry out a relevant business activity it did before (indirect procurement) but quicker and/or cheaper.	This company performs part of the indirect procurement activity quicker (buyers can place the orders at any time based on an approved workflow) and cheaper (lower administrative costs to place the orders and cost savings in the office supplies).
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Since IBTs employed meets these criteria, the firm is capable of developing an IBTs driven competitive advantage based on a more efficient mode of operation and cost savings.

Assessment of the key success factors for the development of sustainable competitive advantages:

Business Strategy

Strategic fit

It would appear that this company is putting into practice a learning strategy. The company is not yet prepared to implement IBTs itself (although it is planning to expand the use of its business Intranet platform) and with its partners. In fact the main business partners and competitors are not employing any kind of IBTs in view of the fact that none of them are e-ready or even e-pressure.

This company found new suppliers within the horizontal e-marketplace catalogue with a more competitive offer. Consequently their traditional suppliers were forced to participate in the e-marketplace to continue do business with them. The participation in an e-marketplace with the goal to slash prices fits quite well in a highly competitive business model focus on the indirect procurement. It is a very straight, low priced and easy process of negotiating and trading with current or new partners. In addition to that, the firm had a chance to test IBTs (in a less strategic business process) and to train their staff to a better and more extensive use of their intranet application.

As a result of all these e-business practices the firm will be in a much better position to conduct a new developing strategy.

Strategic positioning

The supposed strategic fit does not seem sufficient to open new opportunities for this firm to achieve a distinctive strategic positioning, since IBT driven perceived competitive advantage is only based on operational effectiveness (cost advantage).

Table 7. Source of Competitive Advantage

Type of IBTs driven C.A.	Source of C.A.
a) IBTs allows the business to carry out a relevant business activity it did before but quicker and/or cheaper.	It gives a business a competitive advantage based on operational effectiveness (cost advantage).

Process Technology

The company had a chance to reorganise itself and create a new workflow for the indirect procurement. Only three central buyers were authorised to order the office supplies (based on the items and suppliers that were selected). That enabled the company to bundle all the different orders from different departments and locations and negotiate better conditions. The workflow provided by the application was adapted taking into account the process that was already followed by the company. Only when all people become familiar with the process the company will this allow each and individual user to place the orders through the system.

In this particular case the employment of IBTs have generated hard-dollar savings in cost reduction. The indirect procurement process was redesigned and it seems much more robust and stronger than before. Other companies may well start buying the same kind of products at the same platform yet may not have a chance to develop solid linkages between those activities connected to the indirect procurement process and couldn't take full advantage of the most direct benefits (cost reduction). Yet it is not possible to measure or estimate the effect of the process improvements potential.

Analysis and understanding of the basis of IBTs driven competitive advantages

Table 8. Overall criteria

Perceived IBTs driven CA:	Efficiency and cost savings
Assessment of key success factors for sustainable CA:	
Is there a good fit between IBTs employed and business objectives?	Yes
Does it reflect a distinctive strategic positioning?	No
Are the processes being improved, well integrated and reinforced by the employment of IBTs?	Yes

It appears that there is a good strategic fit between the firm business objectives and the IBTs employed. The company performed a business activity it did before (indirect procurement) but in a different way (through an e-marketplace).

Nevertheless, other companies will employ the same kind of IBT to achieve a cost reduction in the indirect procurement process. As a consequence it will reduce or eliminate the initial

cost advantage of this firm. Even if the employment of IBTs is supported and integrated by a very good process technology (which may well happen in this case) it will be very difficult to sustain a competitive advantage based on a pure cost reduction (operational effectiveness).

Recommendations

This company should follow a development strategy (in order to leverage their own human and technology resources and to improve efficiency) gaining that way a more valid distinctive strategic positioning.

B) Textile Industry Manufacturer

Description of the firm's business model.

Table 9. Business Model Analysis

Objectives	Higher level of customer service (it aims to increase customer loyalty and retention), plus efficiency gains (cost and time reduction)
Internal analysis	Adequate IT infrastructure (running a web-enabled ERP system that covers most of the firm activities). Yet there are some connectivity problems and a very small use of email and the internet. Most of the human resources were trained to use the ERP system (people from production, office staff and management). The company is in a process of ISO 9001- 2000 implementation (large effort on process formalisation and redesign).
External analysis	Most of the customers are SMEs with a small use of IBTs. However a restricted number of customers, that supply global and powerful retailers, are already using EDI. And occasionally some customers are showing interest in some form of electronic relationship with this firm. Suppliers are global cotton traders that do not make any use of IBTs for business relationships with their customers. Competitors are global firms, much stronger that control the market.
IBTs employed	This firm developed a supply chain collaboration solution with one strategic customer based on a system-to-system interface (both ERPs systems from the customer and the supplier are linked trough the web). This e-business solution allowed the automation of some of the activities of the production and the order management process: to do plan the production, to check the stock availability, to place and follow up the orders (track and trace from production schedule until delivery). And it also permitted the development of an automatic quality control of products (quality inspection of production raw materials and final output).

Benefits	<p>Besides the intrinsic cost reduction (basically from timesaving and lower inventory costs) valid for both the firm and the customer, there are considerable service benefits enhanced by this e-business solution.</p> <p>Both parties have a good visibility of the order cycle, from production until delivery. In addition to the updated information about the order follow up (controlling the key checkpoints) the customer can reduce his safety stock since they have visibility of the supplier production schedule.</p> <p>On the other hand, given the real time information about customer consumption and stock levels, the firm can react much quicker to changes. And it can improve the production and delivery planning accordingly to a more accurate customer demand.</p> <p>The firm believes that this specific e-business solution leads to a higher customer loyalty and retention.</p>
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This business model focuses on collaborative transactions with a strategic customer. In this case the strong and enduring relationships between the firm and the particular customer permitted the development of a system that requires the exchange of business critical information.

Identification and classification of perceived IBTs driven competitive advantages

Table 10. IBTs driven competitive advantages

c) IBTs facilitates/inspires the business activity to instigate a previously unthought mode of operation.	IBTs enabled the establishment of a collaborative digital supply chain between the firm and one strategic supplier. Even if it reflects a first stage of collaboration (and too far away from synchronise value chain), this mode of operation is completely different from the current business environment in which firms are more focus on competitive transactions.
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Since IBTs employed meets these criteria, the firm is capable of developing an IBTs driven competitive advantage based on a higher customer service level.

Assessment of the key success factors for the development of sustainable competitive advantages

Business Strategy

Strategic fit

The firm took the initiative of developing an extranet with one strategic customer to improve collaboration on production planning and order management. Yet in this case both partners were involved in the design of the e-business solution, which turned out to be fundamental for their acceptance and deployment. As a result of a higher visibility of the order cycle the customer felt more confident as to the firm's business performance, in particular its stock replenishment activity.

This proactive strategy fits well with its aim to increase customer loyalty and retention. In a very competitive environment based on price pressure and global competition, the firm is trying to develop a more collaborative relationship with their closest customers. Until so far

the firm has only this collaborative relationship with one particular customer yet is planning to expand it to other strategic customers.

Strategic positioning

Additionally to the strategic fit this perceived IBT driven competitive advantage open new opportunities for this firm to achieve a distinctive strategic positioning.

Table 11. Source of Competitive Advantage (C.A.)

Type of IBTs driven C.A.	Source of C.A.
c) IBTs facilitates/inspires the business activity to instigate a previously unheard of mode of operation.	It gives a business a competitive advantage based on a distinctive strategic positioning (superior customer relationship).

There is no public knowledge of such kind of IBTs initiatives in other national and local competitors. In view of the fact that the textile industry is not a heavy user of IBTs this firm has a real opportunity to achieve a competitive differentiation advantage.

Process Technology

Following the business design of the project (in this case leaded by the supplier), the same software vendor was responsible for the development and implementation of this e-business solution in both partners (the firm and the customer). A significant technical effort was made to avoid lack of software integration and related problems.

ERPs from the firm and the customer are connected through web servers. Customer can have access to the stock availability and place their orders. The firm confirms the order accordingly to their production capacity and then the date of delivery. All along the order cycle the customer is able to control the crucial checkpoints (production, dispatch and delivery). And the firm can also have access to the real consumption level of the customer, which let them reformulate the delivery schedule (for a more smooth and efficient stock replenishment). This supply chain collaboration solution links both the supporting (firm infrastructure and technology) and primary (operations and outbound logistics) activities. The firm is trying to transform the existing business processes into a more integrated process that reinforce the fit among those activities.

Analysis and understanding of the basis of IBTs driven competitive advantages

Table 12. Overall criteria

Perceived IBTs driven CA:	Superior customer relationship
Assessment of key success factors for sustainable CA:	
Is there a good fit between IBTs employed and business objectives?	Yes
Does it reflect a distinctive strategic positioning?	Yes
Are the processes being improved, well integrated and reinforced by the employment of IBTs?	Yes

It became obvious that the major constraint in a supply chain collaboration project was not the technology itself but basically the traditional barriers that exist among partners regarding the

exchange of critical business information. For a successful business strategy implementation it is fundamental to have a high degree of confidence, based on strong and enduring relationships between the firm and the customer.

Nevertheless, in this specific case, it is much easier to assess the business strategy factors than the process technology. Along with the individual processes it is critical to integrate the ones the firm have in common with their strategic partners. This will lead to real value chain integration where collaboration through the web is key to the success of the relationship and competitiveness of each partner. However, in this analysis, it is not possible to clearly evaluate the integration of the common processes, which represents an important limitation for the process technology assessment.

Even so, it seems that IBTs employment meets the overall criteria, which may lead to the conclusion that the perceived superior customer relationship competitive advantage can be developed and sustained.

Recommendations

To develop and sustain a competitive advantage, this company should try to extend this system to other strategic partners, moving forward to a truly networked corporation business model (in which their most strategic partners are sharing business information across entire supply chains linked over the Internet).

CONCLUSION

Some firms are reaching a point of diminishing returns with traditional cost-reduction strategies. Few firms are cutting costs appreciably faster than their rivals. Hamel stated, "The problem isn't that companies are wrong to worry about (operational) efficiency. The problem is that companies aren't imaginative in the ways that they worry about efficiency" (Hamel 2002). So, the importance of differentiation is reinforced.

Accordingly to Porter, strategy involves the configuration of a tailored and highly integrated value chain that enables a company to offer unique value. When a company's activities fit together as a self-reinforcing system, any competitor wishing to imitate a strategy must replicate the whole system rather than copy just one or two discrete product features or ways of performing particular activities (Porter 2001). Like Porter, Eisenhardt and Sull emphasise the importance of strategy in today's unpredictable, complex markets. They emphasise keeping strategy clear and simple by focusing on a unique set of strategic processes - e.g., product innovation, partnering, branding - that place a firm where the flow of opportunities is swiftest and deepest, and then defining just a handful of simple rules to guide those processes.

Innovation is key.

It is not enough to formulate a unique strategic positioning (allowing a firm to be fast and flexible to constant changes). To gain a sustainable competitive advantage, firms have to systematically generate new and superior value propositions, much quicker than their key competitors, through innovation (Hamel 2000). Basically, firms seeking competitive edge reshape their organisational structures to take advantage of how to realign the relationships with suppliers, employees and customers in innovative ways (Strassmann 2002). Moreover

the business practices investigated corroborate that along with the formulation of a unique strategic positioning IBTs could inspire the firm to be imaginative in the process technology.

I.T.I.C.A. developments

This paper has outlined in a systematic way, relevant conceptual instruments to understand what drives competitive advantage and how it can be sustained. Still, extensive research is required into the process technology factors, especially in the fit among activities and the redesign of business processes. Combining these with a quantitative approach (that overcomes some of the mentioned framework limitations) could deeply illustrate the basis of IBTs driven competitive advantages. I.T.I.C.A. is open for further developments within IBT driven competitive advantages analysis and future work will concentrate on the extension of pilot applications to other established businesses.

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