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Reg. Tribunale di Genova, n. 11/2004 del 31 maggio 2004 ISSN 1824-3576 Cod. CINECA E187020 p.iva 00754150100

# The Impact of ICT on International Strategies: Developing a Two-step Model

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## Abstract

In recent years, management researchers have increasingly focused their efforts on the study of e-business, that is the application of ICT to business management and operations.

For what concerns international business, the extant literature has mainly focused on the "e-management" of specific value-creating activities in an international context, while less attention has been paid to the analysis of the impact of ICT on the development of international strategy. In particular, limited research has looked at how the use of ICT affects the strategic orientation of firms, making it possible to adopt new approaches to worldwide competition.

This theoretical paper responds to that call developing a two-step model of ICT-driven evolution of international strategy.

Moving from traditional tools of international strategy analysis, such as the seminal Porter's configuration/coordination matrix, we first outline how a massive use of ICT can help firms to change their orientation from a multidomestic (or "country-by-country") approach to a global one.

Then, we show the contribution of ICT to the adoption of more composite strategies than the pure global one, based on concentration and standardization, such as the transnational strategy.

While the first step mainly relies on the efficiency gain resulting from the application of ICT to business processes, the second one is a consequence of the enhanced intra-firm communication possibilities that these technologies ensure.

As we assume that the global development of firms is substantially a "global learning" matter, it is quite straightforward that such technologies, which have information as their primary input, give a decisive contribution to the elaboration of original and effective solutions to the problem.

In conclusion, we believe the study's findings are important for increasing our understanding of the influence of digital innovation on international strategies, whose definition is the first and unavoidable step of the internationalization process of firms.

### 1. Introduction

The application of ICT to business management and operations, commonly known as e-business, has been, since the second half of the '90s, one of the topics on which the academic community has most concentrated its attention and efforts, due to the very significant consequences that the massive use of digital technologies in a business context carries with it.

In accordance with the contributions of different authors (Chen, 2001; Earl, 2000; Dematté, 2001; Kalakota and Robinson, 1999; Mandelli and Parolini, 2003; Weill and Vitale, 2001), we describe e-business as the redefinition, by the use of ICT (especially Internet and non-proprietary network technologies), of both the internal processes and activities, and the relationships with external economic subjects (such as customers, suppliers, partners, agents, public administration, financiers, etc.), with the aim of improving the firm's performance in its actual business and of creating new ones. This definition, if restricted to specific value-creating activities, leads to expressions such as e-commerce, if we look at the digitalization of sales, or e-procurement, if the focus is on supplying. In our paper, we concentrate our attention on what we call "e-internationalization", that is the effect of ICT on international strategies and operations.

In this broad field of study, particular attention has been paid to the reinterpretation of consolidated internationalization theories (Dunning, 2001; Dunning and Wymbs, 2001) and to the international e-management of specific activities (Carnevale-Maffè, Mahnke and Venzin, 2003; Depperu, 2001; Fratocchi, Presutti and Schicchi, 2000; Negro, 2003). On the contrary, limited research has explored the impact of ICT on international strategies and on the approaches to worldwide competition.

Indeed, the primary purpose of this paper is to introduce a two-step model which shows how a massive use of ICT can lead international firms to change their orientation from a multidomestic (or "country-by-country") approach to a global one and then to adopt more composite strategies than the pure global one, such as the transnational strategy.

#### 2. Theoretical background

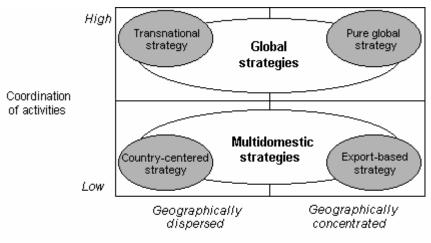
Our theoretical framework mainly relies on the seminal contribution of Porter (1986) on international competition. In his work, Porter identifies two dimensions which contribute to the definition of an international strategy: the configuration of a firm's value-creating activities worldwide and their degree of coordination.

The former dimension refers to the location of a specific activity, which can be concentrated in one site or dispersed: in the first case, the activity is performed in one country and all the other markets are served from there (e.g. the production plant is in Italy and then the products are sold worldwide); otherwise, there is a kind of replication of a more or less complete part of the value chain in every country (e.g. there is a R&D lab in every market).

The latter dimension is built around the extent to which the activities performed in every country are coordinated with each other: Porter's example refers to three production plants, located in three different countries, and whose production can be run with full autonomy or, on the contrary, can be tightly coordinated for what concerns production processes, components or information systems.

If jointly considered, those dimensions lead to a two-by-two matrix, in which each square represents a kind of international strategy; in Figure 1, we propose an adaptation of the original matrix, in accordance with Grandinetti and Rullani (1996: 162).

#### Figure 1: International strategies



Configuration of activities

The most important distinction among the four strategies refers to the degree of coordination of value-creating activities, and leads to distinguish – obviously in a continuum of intermediate solutions – between multidomestic and global strategies, as we are going to briefly illustrate.

As commonly accepted in literature (Caselli, 1994; Hout, Porter and Rudden, 1982; Vaccà and Zanfei, 1987), we consider an industry (or a segment) multidomestic when competition in each country is essentially independent of competition in other countries (Porter, 1986: 11): consequently, a multidomestic strategic approach relies on the lack of interaction between the different markets in which the firm is present, manages those markets with a "portfolio" view and, above all, limits the degree of coordination between value-creating activities worldwide. Depending on the extent of geographical concentration of the

Source: Adapted from Grandinetti, Rullani (1996): 162.

activities, we can identify an export-based strategy, in which most of the value chain remains in the domestic market and only marketing and sales are decentralized, or a country-centred strategy, when there is an almost complete replication of the value chain in every country.

On the contrary, in a global industry the firm's competitive position in one country is significantly influenced by its position in other countries (Porter, 1986: 12) and every change in the competitive environment of a market has direct and significant effects on the competitive environment of the other markets (Caselli, 1994: 85). As a consequence, a global approach to international competition looks at the interdependence among markets as a fundamental peculiarity of its competitive environment and takes advantage of it, coordinating the activities worldwide as tightly as possible. In this case as well, the configuration of the activities leads to two different strategies: the so-called "pure global one", in which the competitive advantage is pursued by concentrating the activities in one location and standardizing processes and products, and the transnational strategy, which combines a high level of foreign direct investment – and the consequent dispersion of the activities – with an equally high degree of coordination.

Every firm designs the configuration of its value-creating activities according to the right balance between "centripetal" and "centrifugal" factors, since every industry has structural characteristics that work for and against the concentration of activities in one location; therefore, every firm has to evaluate its specific business and elaborate an *ad hoc* strategy. Similarly, a choice has to be made for what concerns the degree of coordination among the activities located in different countries.

In other words, there is not an "always-first-best solution", and it is worth underlying that not all firms must necessarily have a global strategy, even if in global or globalizing industries: it could be not convenient in their specific segment or niche, in which a multidomestic approach could be more suitable; they could not have realized yet that they would be more successful by adopting a global approach; they could not have the required capabilities and resources to change their strategy.

### 3. The model's first step: adopting the global approach

While there is a general consensus about the primary role of ICT in stimulating the progressive globalization of industries (Caselli, 1995; Castells, 2000; Cozzi and Genco, 2001; letto-Gillies, 2003; Vicari, 1989; Yip, 2003), extant approaches are partial for what concerns the influence of ICT on the adoption of a global strategic approach by international firms.

The first step of our model shows the crucial contribution that ICT can give to those firms who really want to "cross the barrier" between a more traditional multidomestic approach and a global one. In other words, referring to Figure 1, the focus is on those firms who want to move from the lower part of the matrix to the upper one.

Literature – see, among others, Vicari (1989: 154) – confirms our opinion that firms which first evolve from multidomestic strategies to global ones usually tend to adopt a pure global strategy "à la Levitt (1983)", with significant concentration of activities and a considerable standardization of products.

With specific reference to the repercussion of technological innovation on the strategic evolution, we believe that this "first wave" of globalization, which has involved a lot of firms, has been driven above all by the cost savings that the application of ICT can ensure: the main contribution of the massive use of ICT has been the efficiency gain in business processes, magnified by an international configuration based on extreme concentration and, as a consequence, capable to generate significant economies of scale.

Anyway, the efficiency gain does not explain by itself the adoption of a pure global strategy, because it does not clarify why a firm should couple concentration with a high level of coordination: if the only effect of ICT use was a cost reduction due to the concentration of activities, an export-based strategy as well would permit to take advantage of it.

A good explanation of the ICT-related reasons which stimulate the adoption of a global approach is given by Yip (2000; 2003: 10), who takes into considerations the following five levers, which "determine whether the strategy lies toward the multilocal end of the continuum or the global end":

- market participation,
- products,
- marketing,
- competitive moves,
- location of value-creating activities.

The management for each lever of the trade-off between localization/ adaptation and concentration/standardization results in the adoption of a strategy with more or less pronounced global features.

Even if this topic would deserve a much more detailed treatment, we are going to briefly underline the most significant effects of ICT use on each lever and, therefore, how it contributes to the adoption of global solutions. Once more, we remind that firms face a continuum of alternatives between the most radical choices, but for clarity of explanation it seems more useful to refer to the purest options.

### 3.1 Market participation

According to Yip (2003: 12), "in a multilocal participation strategy, countries are selected on the basis of their stand-alone potential in terms of revenues and profits. In a global market participation strategy, countries need to be selected in

terms of their potential contribution to globalization benefits". Therefore, a market, even if unattractive when evaluating its characteristic and potential, could play a crucial role at a global level because, for example, it is the home market of a major competitor or it is the market from which innovation spills over. Local markets, in this view, are not important by themselves, but as specific battlefields for a global war.

Going on with the military metaphor, ICT are a new weapon for international firms which want to join the global war. In particular, they enable firms to enter less relevant markets through virtual channels, such as the e-commerce, without diverting resources from a "brick-and-mortar" entry in the most important ones. By this approach, firms can balance their mix of real and virtual presence, maximising the return in terms of global market coverage.

Furthermore, pure Internet players can take advantage of the global reach that the Web ensures and, in theory, serve a large number of foreign markets without the need of direct investment; nevertheless, global reach requires the capability to serve global customers, a requisite whose satisfaction sometimes implies deep changes in business management and organisation.

Finally, ICT make it more feasible to build inter-firm alliances, an entry mode which takes advantage of a balanced mix of control and cooperation.

### 3.2 Products

If a firm adopts a multidomestic strategy, it usually tailors its products to local needs, with significant adaptations from market to market. On the contrary, truly pure global products are standardized in their core and minimally adapted in their non-core elements, to take advantage of cost reduction in development, purchasing, production, etc. due to the economies of scale and to the learning effects.

As regards product strategy, ICT facilitate overcoming the trade-off between adaptation and standardization, as they enhance the ability of firms to globalize and localize at the same time. Due to the high degree of flexibility associated with ICT, it is possible to adopt a modular approach to production, in which complex and personalized products are obtained as a combination of many different – but standardized – basic elements.

The consequence is a high potential of creative and interactive response to the customers' ever-changing needs, with solutions which are specifically tailored to the peculiarities of markets and do not involve significant extra-costs in comparison with standard products. In this adaptation a major role is played by intangible elements, based on information, which are even more enhanced by ICT.

At an extreme, this can lead to the so-called "mass customization", that is the design of the product not around the specific needs of a single market or segment, but in accordance to the desires of a single customer: a typical example

is Dell Computers, which can build a PC tailored to the most various customer's wishes by assembling standard components.

### 3.3 Marketing

Our reflection about product strategy can be extended to marketing management, because it is the whole marketing facing the trade-off between standardization and adaptation.

In this case as well, ICT are a very useful tool to get the right balance: their global reach ensures a simple, efficient and effective transmission of shared central marketing elements from the headquarter to foreign markets; at the same time, their flexibility makes it possible to adapt non-core elements of the marketing mix to each market's specificities.

Therefore, it is feasible to organize marketing as theorized by Takeuchi and Porter (1987), by concentrating some activities, such as salespeople training, merchandising design or advertising guidelines definition, and by dispersing – but with an high degree of coordination – the management of other ones, for example product and price adaptation, distribution channel management, etc.

### 3.4 Competitive moves

In a multinational strategy, as formerly stated, each market is the battlefield of a local war, whose boundaries coincide with the market confines. On the contrary, global competition has no borders, each market is just one of the many battlefields in the world and each local competitive move has consequently to be interpreted as a single element of an overall global competition strategy.

Therefore firms make use of innovative strategic initiatives, such as crosscountry subsidization, counter parry, globally coordinated sequence of moves and so on (Yip, 2003: 171): the common element of these different competitive actions is exactly the exploitation of local competitive dynamics for the achievement of a global goal.

It is unquestionable that ICT – especially Internet-related technologies – contribute to the creation of a global competitive space, in which global competitive moves gain importance. The so-called "marketspace" (Rayport and Sviokla, 1994) – the virtual space where digital transactions occur – is much more "transparent" than the traditional marketplace, and therefore it is much more difficult for firms to hide and confine their competitive moves in a local dimension. In contrast, they have to compete in this new scenario, in which they are asked to be able to "answer to the enemy's fire" on a global scale, even if the actual menace comes from a local context.

### 3.5 Location of value-creating activities

In multidomestic strategies, activities are concentrated in the home country or, when dispersed, they are loosely connected and coordinated. On the contrary, as we have already mentioned, the fundamental trait of a global strategy is the high level of coordination.

The pure global strategy implies that each activity has just one location, not necessarily the home country (e.g. production in China, R&D in Italy, Finance in the U.K.), while in the transnational strategy they are duplicated in more markets: in both cases, the peculiar trait of the global approach is that connections between different activities and within different locations of the same activity are really tight.

The application of ICT to business processes and management sustains highly-connected international structures for at least three kinds of reasons:

- it makes it possible to substitute "real" dispersed activities with "virtual" concentrated ones, by re-designing the overall geographic structure of the firm (Zaheer and Manrakhan, 2001);
- as a consequence of the cost reduction associated with the economies of scale that ICT ensure, they have stimulated, at least in the "first wave" of globalization, the concentration of activities in few selected locations, to maximize, in a pure global view, the overall performance of the organization;
- at the same time, ICT allow to attain high level of coordination even within very dispersed structures, due to their efficiency and effectiveness in enhancing the potential of communication of complex organizations.

The latter argument introduces the second step of our model, that is the evolution, within the global approach, from concentration-based strategies to more complex ones, namely the transnational strategy.

#### 4. The second step: beyond the pure global strategy

In the previous paragraph we described how the potential of innovation associated with ICT can lead firms to adopt a global approach towards international competition. At the same time, we have underlined how the "first wave" of this process of globalization of strategies has mainly (but not only) relied on the cost reduction resulting from a centralized management of value-creating activities: in other words, the first step has emphasized the role of ICT as an instrument to pursue an efficiency gain in business, and has led firms to the implementation of the simpler forms of global strategy, specifically the pure global one. Later, a new approach towards globalization has widespread, a sort of "second wave" with more and more firms which show a much larger concern about local specificities and consequently organize themselves with more geographically dispersed but strongly coordinated structures. If the pure global strategy was focused on similarities among markets, the transnational one returns importance to the "weak signals" from local consumers, to build competitive advantage on the greater value of products which better respond to the peculiarities of the different markets (Cozzi and Vaccà, 1986: 18).

What we want to show in this paragraph is the contribution of ICT to the evolution from a concentration-based global strategy to a transnational one; back to Figure 1, the attention is now on the move form the upper right-hand corner to the upper left-hand one.

According to Grandinetti and Rullani (1997: 165), the transnational strategy is characterized by a decentralised configuration of activities, resources, responsibilities and decisions, not only to make the most of local resources, but also to give a better response to the specific demand of every single market. At the same time, all parts of the system are connected by mutual interdependence, cooperative interaction and coordination tools which are "subtler" and more informal than those typical of hierarchical organizations. As a consequence, several productive and decisional centres are established, to match the needs of a multicultural development (Vaccà, 1994: 32).

Bartlett and Ghoshal (1989) clearly explain the difference between the pure global (or, simply, "global") organisational model and the transnational one, emphasizing the following aspects:

- in the global firm most resources, responsibilities and decisions are centralized, while in the transnational one they are much more distributed;
- consequently, in the global firm the headquarter strictly controls the activities of the local branches, which are considered logistic appendices or a channel to transmit central decision to the foreign markets; in the transnational firm, on the contrary, there is a complex coordination and cooperation activity with shared decisional power;
- moreover, in the global firm there are little flows of components, products, resources, people and information among different units, and almost exclusively from the headquarter to the local markets, while in the transnational one these flows are much more significant and run throughout the whole organisation.

To sum up, the transnational corporation is both polycentric and strictlycoordinated, and this explains why, for this kind of firm, ICT accomplish a deeper task than in pure global firms: not only they ensure an efficiency gain, but also enhance the coordination and communication capability within the organization.

In particular, the role of the headquarter is critical as concerns the overall coordination, because it has to avoid that the dispersion of responsibility on a local scale turns into fragmentation and duplication in the decision-making process (Majocchi, 1997: 82). As a consequence, intense flows of knowledge

arise and run, both between headquarter and periphery, and between the internal network of the firm and the local economic subjects of the different markets.

To implement, sustain, manage and coordinate these flows, it is necessary that the firm's "nervous system", which was almost one-way in the global firm, becomes not only two-way, but even multiple-way; moreover, both the "bandwidth" and the "spread" of the system have to dramatically increase, because there is much more abundant and complex information to convey to many more geographically dispersed users.

In such a scenario, ICT – especially network-based technologies such as the Internet – represent a turning point: their application opens new paths of integration and coordination, which are still mainly unexplored by firms, making it possible to overcome most of the obstacles which have long limited the actual possibility of adoption of a transnational approach to global competition.

Just to mention some of the many contributions of ICT, we first remind that they give such an unprecedented level of connectivity to the internal communication network of firms that every single element of the organisation can be reached in real time. At the same time, the relation between the internal network and the external subjects becomes more flexible, and makes it possible to "internalize" the environment through the creation of strong communication channels, opening the way to new and more complex forms of outsourcing.

In fact, it is worth underlying that ICT, by overcoming the trade-off between reach and richness (Evans and Wurster, 2000) in information broadcast, are able to transmit within the organization, and to the external partners, very complex messages without limiting the audience, acting as a valuable tool to reduce the hierarchical levels and the steps needed for information to get to the receiver; digital information is also very easily storable, sharable from a distance and replicable with no extra costs.

Moreover, by shrinking time and space, they ensure a quick spread throughout the organizational network to the coordination mechanisms, enhanced also by the adoption of shared languages and standards that ICT support and sustain.

Lastly, they remarkably simplify the internationalization of value-creating activities, sustaining in specific circumstances their move from the real marketplace to the virtual marketspace (Spinelli, 2005).

However, these innovations pose a very interesting question: how long can we keep on calling "international" a firm whose activities are mostly virtual or, if real, are largely outsourced to the external partners of a highly coordinated worldwide inter-firm network? In other words, are our theoretical models of international firms still capable of describing and interpreting the innovative business models and organizational structures resulting from the development of the e-internationalization? At this moment the question remains open and may represent a challenging future research subject for international business scholars.

#### 5. Conclusions

Broadening firm's competitive horizon towards international markets is always a big challenge, even bigger if trying to face competition with a global approach. We have shown that knowledge is the resource which plays the most important role in this process, as it is knowledge the only glue which holds together all the elements of an international complex and highly-coordinated organization; therefore, we consider the global development as a "global learning" matter, based on a proper management of worldwide collected information and knowledge.

It is consequently quite straightforward to understand why ICT can play a crucial part: if information and knowledge are the key resources for international growth, such technologies – which have them as their primary input and output, which elaborate them and which transport them – can do nothing but give a decisive contribution to the elaboration of original and effective solutions to this problem.

With this model in mind, future research might address companies which have experienced a change in their orientation towards international competition, to verify the actual role that ICT have had in stimulating and orienting the process.

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