

# ICT and the Virtual Organisation

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## INTRODUCTION

The need to be adapted to the changes in the environment, to improve the operational efficiency, and to increase the level of satisfaction in customers has promoted the redesigning of the firm's organisational processes. Firms tend each time to externalise activities at a different level by making the appearance of new models of organisation possible. The analysis of different theories coming from a variety of literature reviews offers us the opportunity to affirm that being virtual is a characteristic present today in firms at different levels (Shin, 2004). In this article, we offer a definition for the concept of virtual systems. An explanation from the strategic management field is also accompanied. Finally, this analysis attempts to draw an explanatory model of the capacity of value creation in the virtual systems in comparison with traditional alternatives.

## BACKGROUND

The redesign of productive systems in the firm around the concept of being virtual finds a theoretical point of view in different thoughts coming from the strategic field. The evolution of the theory of the transaction costs recognises the barriers in accumulating core competencies (Prahalad & Hamel, 1990), especially in the conditions firms are living in today with a high technological uncertainty (David & Han, 2004; Walker & Weber, 1984). Maybe for this reason firms should develop a different way of acquiring knowledge from third parties.

The resource dependency theory (Aldrich & Pfeffer, 1976) also supports the need to complement, in this context of complexity and dynamism, different internal and external competencies. The fact that a variety of organisations are sharing their intangible assets promotes the need of developing a common language, a context of trust and mutual compromise and an infrastructure of communication for an effective exploitation. All this recognises the benefits derived from the

partial codification of a certain group of expressions of tacit knowledge since it improves the processes of identification, transfer, retention, and exploitation of strategic routines and processes (Fauchaux, 1997; Khalil & Wang, 2002).

The agency theory (Fama & Jensen, 1983; Jensen & Meckling, 1976) also offers an argument for the appearance of virtual systems in some conditions. The high interdependence amongst a group of agents involved in the satisfaction of the same specific opportunity in the market can explain a decrease in the partners conflicts and in the agency costs. This way, the production structures can be converted into an effective alternative to create and sustain competitive advantages.

The evolution of the resource based view (Peteraf, 1993) in the dynamic capacities focus (Teece et al., 1997) and the theory of knowledge (Nonaka & Takeuchi, 1995) widens the analysis of uncertainty in decision making. In these situations, the cooperation with other stakeholders in order to complement the firm's specific base of knowledge can be the best alternative to create value.

## VIRTUAL SYSTEMS

There is not a uniquely recognised definition for virtual systems (De Pablos, 2006). Some authors consider virtual systems as intermediate mechanisms that operate between markets and hierarchies for organising the economic activity (Davidow & Malone, 1992). This perspective describes a virtual system as a group of interlinked networks sharing a specific problem (Greiner & Metes, 1995; Lipnack & Stamps, 1997; Preiss, Goldman, & Nagel, 1996).

Many of these analyses recognise that the virtual systems imply the integration of different value chains, where any of the agents is specialised in a phase of the process and offers its core competencies to the rest of the partners. This way, a group of competitive advantages and upper gains can be obtained. Besides, these systems offer great difficulty in identifying the

participants and their real value to the final product or service. This can be a key success factor to sustain competitive advantages through time (Goldman, Nagel, & Preiss, 1995; Nikolenko & Kleiner, 1996).

## Virtual System Definition

Davidow and Malone (1992) cite for the first time the term “virtual” as an expression of a very agile and flexible organisation that is quite customer centred. Later on, Travica (1997) proposes a definition of virtual organisation as a temporal or permanent collection of individuals geographically dispersed, groups, or organisational units that depend on electronic linkages to complement a process of production. From our perspective, the virtual system appears as an alternative way of designing the structure of an organisation containing the basic characteristics of high levels of cooperation amongst the different agents implied in the system of value creation in the company, a high use of information and communication technologies and high levels of flexibility and time response to contingencies in the market. This is the reason why we propose a definition of virtual organisation as:

An organisational structure that, including components of one or various firms they are shaped around a group of core competencies by promoting the inter-firm co-operation by an adequate use of information and communication technologies and with the main objective of the achievement of business processes oriented to the creation of value for all and any of the partners. (De Pablos, 2006)

## Virtual Systems Elements

Now we describe the main elements of the virtual system as we have already stated.

### 1. Cooperation

Byrd and Marshall (1997) define cooperation as any type of official or unofficial agreement achieved by two or more firms with the main objective of implementing a certain degree of collaboration amongst them. The outsourcing appears as one of the most common mechanisms used when searching it. In the process of getting virtual, there is a need to establish any kind of mechanism to coordinate the different disintegrated activities. The virtual system uses as a main mecha-

nism of coordination the cooperation amongst different activities. As the firm transfers some of its activities to the value system, some elements for the integration of processes can be of crucial importance, as it is the case of information and communication technologies.

### 2. Information and Communication Technologies

A key element in the virtual system is the capacity of acquiring and integrating a massive flow of information and being able to exploit it cleverly. For that reason, the success in a virtual system is going to depend on the ability to develop with efficiency the process of managing the information. Information and communication technologies used in the last years as main assets in the corporate strategy play an important role in the process of virtualisation in the organisations in two aspects (Rayport & Sviokla, 1995):

- They allow the breaking of activities in the value chain by maintaining the firm’s differential competence in their coordination.
- A transfer of activities from the tangible to the virtual value chain is produced.

This way, the technological context makes the virtual model easier. The ICTs allow the development of a typical virtual organisational environment. They permit the maintenance of innovative applications that allow a decrease in costs, improvement of the internal coordination, and better customer service. Some authors such as Travica (1997) established types of virtual systems by using, as almost exclusive criteria, the use of information and communication technologies.

### 3. Flexibility: A Main Element in the Virtual Organisation

Firms search for organisational efficiency by promoting the flexibility of the labour relationships in the work methods and in the employed technology (Brian, Doorley, & Paquette, 1990) since they offer a better response to changes in the environment. The virtualisation of processes produces a better efficiency to the firm, and it allows, at the same time, multiplying the capacity of their structures through the use of adapted market networks. The virtual organisation makes closer the work processes to the customers and offers more agile and diverse alternative ways of operating. Table

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