

THE VIRTUAL ENTERPRISE – OPPORTUNITY FOR SMEs IN THE DIGITAL ECONOMY

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Abstract:

Contemporary manufacturing practices are placed in the context of the virtual enterprise to synthesize the development towards the enterprise of the global information society. E-business is often described as the small organisations' gateway to global business and markets, and the success of the adoption of digital technologies. Because SMEs are more flexible in their internal organisation than larger companies, they may often be able to adapt to changing market conditions more quickly and efficiently.

In this paper, I presented two concepts related: digital ecosystem and virtual enterprise. The purpose of the virtual enterprise, as defined here, is to provide a new solution for an unpredicted opportunity, special for SMEs.

Keywords: *digital ecosystem, virtual enterprise, SMEs, cooperation, e-business*

JEL classification: *O33*

SMEs and e-business

The SMEs are the backbone of European economy but they are lagging behind in the adoption of e-business as a strategic distribution channel.

However, in the new globalised business scenario, European small organisations are not ready to use the Internet more intensively as a business tool, except for a few startups which are at the leading edge of the IT revolution, the major part of SMEs still have some reservations that prevent them from jumping easily into the digital age. These barriers are well-known: lack of resources, lack of skilled employees, lack of easy to use technology adapted to SMEs, and also lack of awareness of the potential benefits for them.

Being more follower than leader of the change process, small organisations seem to need favourable conditions to accelerate the diffusion of the Internet and adoption of ICT technologies and thus to avoid a digital divide between larger and smaller enterprises and among geographical areas.

E-business is often described as the small organisations' gateway to global business and markets, and the success of the adoption of digital technologies in Europe is critically dependent on whether the small organisations are fully engaged in the strategic adoption process

Because SMEs are more flexible in their internal organisation than larger companies, they may often be able to adapt to changing market conditions more quickly and efficiently.

The adoption of Internet-based technologies for e-business is a continuous process, with sequential steps of evolution. These steps are: email (early adopter started in 1986), web presence (from 1993), e-commerce (from 1996), e-business (from 1999), networked organizations and, the last, digital ecosystems.

Organisations build faster and more effective strategic partnerships and alliances, reengineer and integrate their business processes, develop value added products and services, and share knowledge and experiences.

When groups of organisations adopt networked methods of cooperative work, make associations for exploiting the market opportunities, combine their products and services, could jointly produce and offer new services and products.

The Networked Organization is then a response to restructure and respond to the new digital market, where there has been a growing recognition of the need for new kinds of organizational structure.

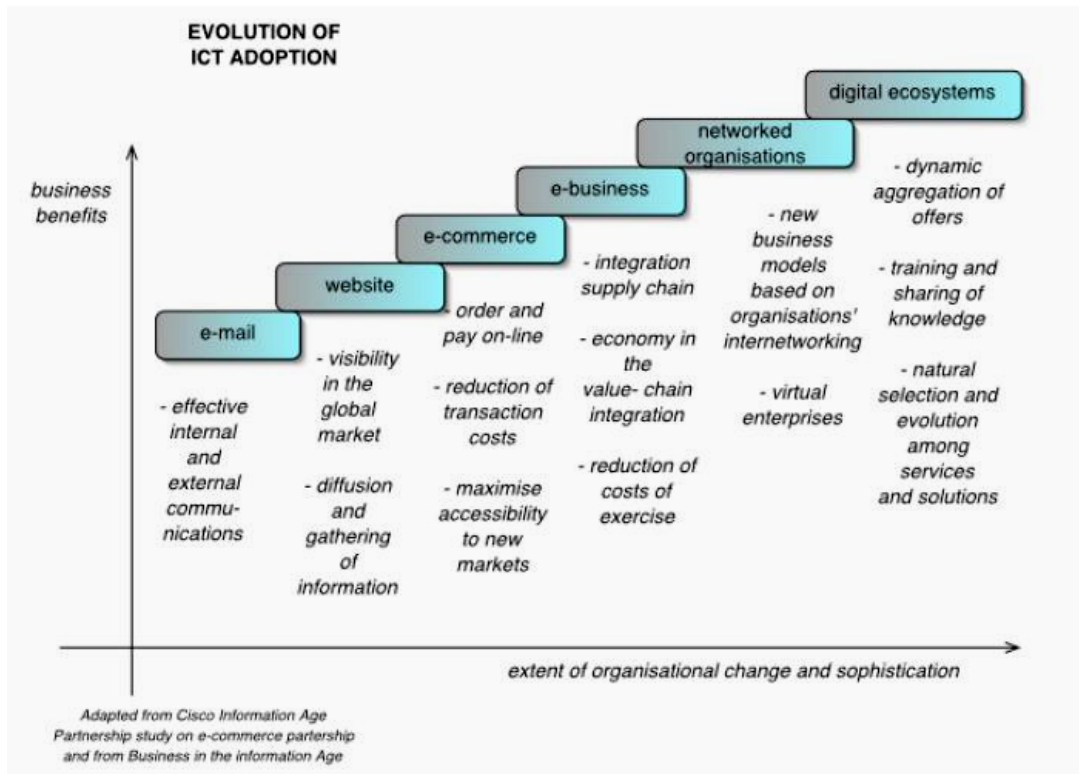


Figure 1. The adoption phases for e-business

Source - Francesco Nachira, European Commission DG INFSO, Enrica Chiozza, Hannele Ihonen, Marina Manzoni, Frank Cunningham, TOWARDS A NETWORK OF DIGITAL BUSINESS ECOSYSTEMS FOSTERING THE LOCAL DEVELOPMENT, discussion paper, Bruxelles, September 2002

As consequence of this evolution, the dynamic networking of the organisations, drives to the dynamic cooperation of the players on the territory and the connection of the resources in a system, building a community that shares business, knowledge, and infrastructures. This will dramatically affect the ways enterprises are constructed and business is conducted in the future, and the actual slowly changing organisations will be replaced by more, fluid, amorphous and, often, transitory structures based on alliances, partnerships and collaboration.

To support this scenario, which envisages the dynamic aggregation of services and organizations, is required a further stage in ICT technology adoption which exploits the dynamic interaction (with cooperation and competition) of several players in order to produce systemic results in terms of innovation and economic development.

The adoption and development of scalable and adaptive technologies, allows new models of business based on the dynamic association of enterprises. The ecosystems are, in fact, characterised by intelligent software components and services, knowledge transfer, interactive training frameworks and integration of business processes and governance models.

The small organisations, facing difficulties to the migration to e-business, could take advantage of this evolution, but could afford this challenge only with a networked organization, cooperating and sharing information and instruments.

Thanks to the network organization and thanks to their flexibility SME could reach impressive results preserving their small dimension.

The generic technological infrastructure represents the basic dynamic building block for the development of the distributed network of local ecosystems and it is shared among all the ecosystems.

The distributed, open-source basic infrastructure is the common ecosystem environment and is composed by:

- *the infrastructure*: network architectural modules which include the services which implements the standard protocols and the services which allows the network communication, the interoperability and definition of common semantics, the dynamic webservices deployment, the seamless communication among the processes,

- *a set of basic e-services*, which could be used as basic component for developing solutions for different business sectors.

In addition to the basic services, a set of components and basic generic services not depending from a specific application sector could be provided by the basic infrastructure. They might include systems for electronic payment, for certification and trust, enterprise resource planning, customer relationship management, e-procurement.

For this reason, I think that the concept of the “virtual enterprise” is specific for these digital ecosystems.

For the conditions of unpredictable change and dynamic markets the concept of the virtual enterprise is characterized, first, as a business model to create business value, second, as an operational model to co-operate temporarily and third, as an organizational model of restructuring. The concept of the virtual enterprise, then, is structured in three elements that form a coupled system, first, the business value that drives the change, second, the virtual operation that is temporarily configured to capture the value, and finally the network, that provides the platform for rapid restructuring.

“The virtual enterprise is based on the ability to create temporary co-operations and to realize the value of a short business opportunity that the partners cannot (or can, but only to lesser extent) capture on their own.”[1] The purpose of the virtual enterprise, as defined here, is to provide a new solution for an unpredicted opportunity.

The most important characteristics of virtual enterprises are:

- In the virtual enterprise, value is created, not added. The goal of the virtual enterprise is to create value from changing opportunities in its environment.

- The virtual enterprise is a temporary co-operation to achieve objectives. The virtual enterprise is an alternative way to differentiate and integrate work under dynamic conditions. To capture a new opportunity quickly, cooperation between distributed sites is necessary. This co-operation is structured for a limited period of time, with a limited purpose, and with a minimum of overhead for coordination.

- The virtual enterprise facilitates permanent restructuring. If the virtual enterprise is permanently adapting, it follows that solutions to support it must share dynamic characteristics.

The virtual organization is restructured from within, with the goal of capturing value from short-term opportunity. Three basic elements define this system: 1) the value that is the opportunity or reason restructuring takes place, 2) the virtual operation or result of restructuring and, 3) the network, or source of restructuring.

For some specialists, the virtual enterprise is an approach for achieving high efficiency in inter-organizational supply chains. Supply Chain Management (SCM) and Efficient Consumer Response (ECR) are seen as early examples of virtual methodologies and tool sets. From this perspective, the focus of development is to

improve inter-organizational co-ordination and control. Integration of information flow (e.g. EDI) and material flow creates transparency in the entire value chain and reduces waste and doubles effort in the virtual enterprise. However, for others, virtual enterprise means self-organization.

Three elements seem to have strong impact on the success of the virtual enterprise: 1) customer interaction, which links the virtual enterprise to the changing business opportunity, 2) the routine of restructuring, which permanently (re-)creates the virtual operation, and 3) the evolution of the network.

In the virtual enterprise, close integration with customers is one form of customer interaction. It is the objective of the virtual enterprise to improve the overall efficiency of inter-company processes for a given purpose and shared reward.

With the fragmentation of markets and decreasing product lifecycles, methods have been fine-tuned, so that remaining demand pockets in fragmented markets can be reached with an increased number of customized product variants. Manufacturing has reacted to this increasing number of different products by increasing the flexibility of production systems to mass-customize, or manufacture small lots of product variants within a mass production system. With this system, the goal is to structure many individual products with short lifecycles into product groups with longer lifecycles.

Co-makership or co-design are further concepts that build on creating additional value in dialogue with the customer. In other words, the value in a business opportunity is not the absolute value of a product on a shelf, but the relative value in a specific context. Specialized partners play an active role for this customer interaction process.

Six different kinds of roles were developed in the course of the prototypical manufacturing in the network of the region of Lake Constance (Figure 2).

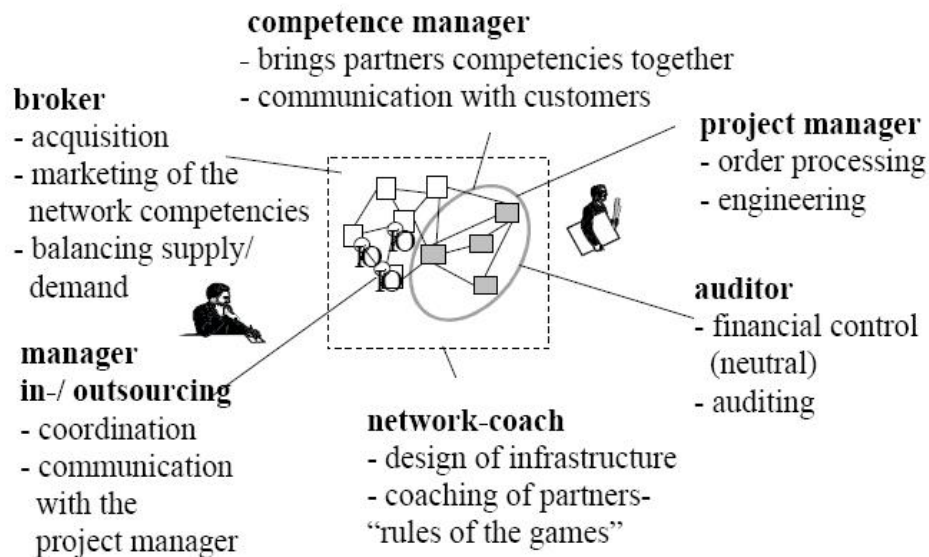


Figure 2. The roles in the virtual enterprise

Source: Katzy, B. R.; Schuh, G., And Millarg, K., Die virtuelle Fabrik - Produzieren in Netzwerken," Technische Rundschau, 1996, pp. 30-34

Conclusions

The essence of the virtual enterprise is to thrive on unpredictable change and to permanently recreate the industrial structures for the new opportunity. Further, the virtual enterprise has been structured, first, in the value of the business opportunity, which is the motor for restructuring, second, in the virtual operation, which is temporarily created to capture the value and finally, the network, which is the platform for restructuring. The virtual enterprise has been characterized as a dynamic concept.

Thus, the virtual enterprise is not a new institutional form or a type of corporation, but an economic activity in the expectation of return.

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