THE VIRTUAL ENTERPRISES.
CHALLENGES AND TENDENCIES

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Abstract
Since its creation, the enterprise represented a core institution of the economic sphere and also a definitory coordinate of the modern world. Being part of the society, the enterprise was subject of a continuous development. A major turmoil in the structure and functioning of the enterprise was the ICTs implementation. In what consists the virtualisation of the enterprise? What are the dimensions of the virtualisation and the consequences of implementing the ICTs? What future for the enterprise in the new framework represented by the fourth industrial revolution? These are some of the questions our study aims to respond to.

1. Introduction

The enterprise, the core institution of the modern world, is defined as "an economic and social structure comprising one or more persons working in an organized manner to provide goods or services to customers in a competitive (market) or non-competitive environment (the monopoly)" (Yves-Marie Abraham, Individu, organisation et société, HEC Montréal). The creation of the enterprise is associated with a particular economic ideology, specific to modern Western societies, which considers the economic sphere to be sacred.

The foundations of this social construction are represented by: private property (the quest for appropriation), accumulation (the quest for profit), rationalism (the quest for rationality) and innovation (the quest for innovation). Likewise, within the framework of the company one witnesses

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the development of various social relations: functional (the division of labor), conflictual (the wage relationship), competitive (the market), impersonal (money) and domination (bureaucracy and legal authority) (Yves-Marie Abraham, Individu, organisation et société, HEC Montréal). This image of the company is linked to the socio-economic context of Western societies, which has been in turmoil since the beginning of the 1990s.

Indeed, the transition from the industrial society to the information society (or knowledge society) modifies the socio-economic environment of the traditional enterprise. The development and implementation of information and communication technologies (ICTs) are changing the dynamics of transformation, by irreversibly changing the company's vision of the founding world and the founding social relationships of this institution. The competitive challenge of organizations becomes that of being able to free oneself from space-time constraints, of constantly reorganizing itself in order to respond in real time, around the world, to diverse needs, but also to hold the information that becomes more and more strategic. It is in this context that the virtual enterprise, an organization characterized by an intensive use of information technologies, is coordinating a network of independent actors from one another across the global scale.

2. Sections

With the virtual enterprise, we distance from the classical definition of capitalist enterprise. In fact, virtualization is the result of a creative adaptation of the company to the growing demands of a much more complex and globalized new economy. Henceforth, the focus will be on knowledge and information, valuing capital-knowledge being at the center of the information society.

The virtual company.

Although there is no stated consensus, all the definitions of a virtual enterprise combine the two main characteristics of this type of construction: the use of ICTs and the coordination of a network of actors. Consequently, the virtual organization can be defined as: "(...) an entity composed of geographically dispersed members, who share the same work and communicate exclusively through electronics, physical encounters being practically, if not totally, eliminated" (R. Meissonier, 2000).

The members of this community are the business partners, the subcontractors, as well as the staff running this network. One of the main advantages of a virtual firm type of organization is the reduction of the cost of full-time production capacity that is not likely to be fully utilized due to variations in activities and unforeseen events.

"The extreme case" of this type of organization is the virtual enterprise where all the functions (product design, logistics production, distribution, communication, compatibility, IT, etc.) are entrusted to partners with the possibility of replacing each partner at any time in case a more satisfactory solution is found (J.-A. Bartoli, 1999).

The flexibility of the structure also emerges from the definition proposed by Marc Favier and Françoise Coat (1997): "the virtual enterprise is a concept, but not a place. It's an activity, but not a building. The participants are adherent members, the organization is somehow shared ... the physical and global reality of the company disappears in favor of cooperation between people to achieve a product, or offer a service, on the basis of common objectives. The core of this type of business is virtual teams".

The virtual enterprise differs from its traditional model because of its dimensions related to virtualization, which are directly linked to ICTs, the use of which leads to various organizational impacts.

The dimensions of the virtualization of the company.

To fully understand the virtual enterprise, it is imperative to understand the dimensions that make it unique.

First of all, the notion of space due to the fact that in the virtual enterprise we are witnessing a reduction of space and the elimination of borders. The space expands, the borders no longer exist and the company is dematerialized (reduced rental costs of the office space). Another aspect also concerns reducing travel, since network players are linked by computer systems.

Afterwards, the notion of time given the fact that virtualization promotes ubiquity (being in several places at the same time.) As a result, the company's ability to act and react increases dramatically, owing to the speed of information flow, with the company being able to respond quickly (in real time) to the internal and external stimuli of the markets.

This flexibility of space-time coordinates entails important changes in the dynamics of the company, its flexibility with respect to space and time, constituting an unbeatable competitive advantage. Thereby, it can easily adapt

to the changes and the contingencies of the market. However, adaptation to change also depends on the employees' ability to adapt.

Thus, human capital is a primary dimension of the virtual enterprise. Virtualization contributes to a decrease in capital intensity. Indeed, due to outsourcing, the company will deploy fewer financial and physical assets and it will rather focus on the knowledge capital, or even towards the management of human skills, knowledge and gray matter. In the current context, information has become strategic; the one that holds it can derive major competitive advantages. As a matter of fact, many companies seek information and in order to gain access to it, they must acquire important means of communication.

Communication makes it possible to adapt to the new dimensions of the market. At the level of human relations, we witness the decrease or even the disappearance of the direct, personal, physical communication between the members of the team; interpersonal relations being replaced by communication via the Internet for the most part.

Virtual production therefore generates an optimization (in terms of deadlines, costs and quality) of the company's internal processes (order taking, customer and inventory management) (Powell Thomas C., Dent-Micallef Anne, 1997) and thus seems to increase the competitiveness of the latter. Yet, this virtualization cannot be done without the implementation of ICTs which trigger multiple and mixed impacts at the level of the enterprise system. To fully grasp the virtual enterprise and the state of dominance relationships, it is important to understand the implications of the ICTs that underpin the operation and existence of the virtual enterprise.

3. Consequences of the implementation of ICTs in the company.

ICTs, at the basis of the virtual enterprise, have paradoxical consequences not only on work, but also on competences, conditions of work, or even modes of operation.

Transformation of the tasks performed.

The perception of virtual enterprises is generally that of a company liberating the worker in terms of work relief but also innovation and change. However, this perception is often cartoonish. In fact, with the information and communications technologies of virtual enterprises, workers see a reduction of tasks because they no longer perform certain functions themselves. These are

supported by machines or computer systems and a sense of impoverishment of work, or even depreciation of work, often accompanies such cuts. And while ICTs, by eliminating some routine tasks, have allowed tasks to be released, this, in turn, may explain the specialization of work (or diminishing the variety of tasks), which usually leads to monotony of work as well as a possible increase in workload.

Another consequence of the use of ICTs is the complexity of work, which generally represents a stimulating challenge and which is often accompanied by an enrichment of work (or an increase in decision-making power, an enlargement of the scope of initiatives). Paradoxically, even if this enrichment of work is mainly based on work teams via the networks that are created, the fact remains that the workers of virtual companies are often subjected to a deep isolation. This raises the question of whether isolation is conducive to the supposed liberation that virtualization entails or whether, on the contrary, it subdues the individual. Will the division and isolation of individuals allow the "network-system" to reign?

Curiously, we can notice that ICTs used in virtual teams can represent, at work level, both a major transformation in relation to Taylorist enterprises (post-Taylorism) and a return to Taylorian specialization of work (neo-Taylorist). Taylorism is now a question of whether ICTs, and particularly virtual enterprises, increase or not the skills required within their organization.

Transformation of the required skills.

This virtual enterprise organization implies a strong use and a perfect mastery of a certain number of communication tools, collaborative tools and documents sharing and therefore the use of a wider range of knowledge but also of know how. We are talking about a requalification at work also accompanied by an active search for appropriate skills. Indeed, the learning capacity of the virtual enterprise will condition its capacity and speed of adaptation to markets and competition. Hence the importance of knowing how to be employees. It is not enough to have the necessary qualifications so one needs to have the proper personal skills that the company and the market demand.

The networking of actors from different fields of activity can therefore be seen as a reservoir of dynamic skills whose richness is a function of its diversity and the versatility of each.

In fact, the raison d'être of the virtual enterprise becomes the systematic coordination of knowledge, know-how and know-how-to-be throughout its network. With the transition from traditional business to virtual enterprise, we have moved from the qualification model to the competence model, just as we have distanced from a business logic to a professional one.

In addition, with remote work, organizations no longer have to hire local staff and can rely on globally dispersed stakeholders along time zones, making it easier for the virtual enterprise to ensure a continuity of work but also and especially access to qualifications and skills necessary for the proper functioning of the company. But as recruitment processes change, working conditions change.

Transformation of working conditions.

With ICTs there is a greater concentration at work which is accompanied by a deterioration of health at work. These health problems are diverse, but they generally reflect a certain constraint experienced by virtual enterprise workers. This means that workers are sacrificing their health to meet the needs of the business. This "sacrifice" therefore suggests that a choice in the values of the workers has been made for the benefit of the enterprise and thus that the latter in its practices seems to succeed in founding a certain legitimacy. One still has to understand the fundaments and this type of legitimacy.

In addition to the impacts of ICTs on working conditions, it is the organization of work as such that has to change. Indeed, the virtual enterprise is accompanied by an increase in part-time work but also the development of teleworking.

The virtual enterprise is a just-in-time enterprise and as such its demand for workers fluctuates, directly and in real time, according to market demand (unlike other traditional firms who sometimes end up with excess human capital constraints that they cannot easily dismiss.)

As for teleworking - either "remote work, using telecommunications and/or computer technology" - its impacts show that ICTs do not become part of the company without sometimes radically transforming it. To change technology is also to prepare to change skills, ways of working, organization, power relations and, on a larger scale, when this change is systematic, change society as we see it with the transition from industrial society to post-industrial society (or knowledge society). With teleworking it is also the grouping between two spheres previously distinctly separated namely: the professional

sphere (public) and the private sphere (family life.) Therefore, with the virtual company, the professional sphere interferes automatically in family life. In this respect, these new human behaviors may imply adherence to new values.

Moreover, the relations between the actors within such an organization are likely to create a dynamic within which breaches of the commitments made between the members (for example in terms of supply deadlines, delivery rate, etc. ...) can be more easily identified and sanctioned than in a conventional hierarchical system because as soon as the two spheres are closely linked and ICTs are present, this also means that individuals can be contacted at all times and can accomplish what they are requested to do.

4. Conclusions

The introduction of ICTs played a major role in reshaping the enterprise, determining the rise of a new economic entity, much more dynamic, flexible and adaptable. The place of the traditional enterprise was taken by the virtual one, based as fundamental elements on cooperation and networking. The ICTs implementation brought changes in the working process, transforming the tasks performed, the required skills and the working conditions. Nevertheless, the human capital became the primary dimension of the enterprise.

The fourth industrial revolution brings new challenges to the enterprise. One can consider that the virtual and augmented reality, the search of a new business model, the new trends in technology and the digital economy will require a new type of economic organization, in these current coordinates the future of the enterprise looming as an intangible dogma.

5. References

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