Structural and dynamic aspects of virtual organizations

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This paper depicts the basic characteristics of virtual organizations and some of their structural and dynamic aspects of functioning.
Key words: *Virtual organization, organizational structure, develpment dynamics.*

1. Introduction

Virtual organization is an electronically linked network of individuals and organizations whose aim is to achieve mutual interests, sharing the risks and resources, but also the benefits from the results obtained. It functions as a temporary network of legally independent, but organizationally related entities, where each entity adds to the economic value to the final goal for the purpose of which the network is actually formed. Connecting into a virtual network, the members of the virtual organization help reduce the complexity and uncertainty of the environment, acting together as a unique organization.

The logics that underlines the emergence and development of virtual organizations is founded in the idea that the survival in an ever more fierce competition on the global market largely depends on the organizations' ability to clearly define their core competences and cooperate with a large number of other organizations of complementary competences, in order that they should mutually succeed in accomplishing the goals set before them in most effective and efficient ways.

2. Basic characteristics of virtual organzations

"There are no results within virtual organization. Within an organization there are only efforts and costs borne. The results are outside. The only business results are created by the customer, who converts the efforts and the costs into the income and the profit, willingly exchanging his buying power for the products or services of the organization."[2] This is the basic premise upon which the logics that supports the emergence and developmet of virtual organizations should be based on. All members of the virtual network must be entirely marketing oriented, that is, they are to monitor the changes on the market and in other segments of the environment so as to be capable of permanently reviewing and improving the competences on which they base their competitive advantages.

Besides the abovementioned premise which is the basic precondition an organization must satisfy in order to be an eligible candidate for a virtual network member, it is possible to identify several other characteristics of virtual organizations. These are: a mutual goal, adding economic value, a moduled organizational structure, heterogeneity of network members, cooperation, and switching.

The mutual goal is the basic goal any prospective member must achieve. In order that an organization may become a member of a virtual organization, it has to identify its own interests within the interests of the goals of the project for which the network is formed. In other words, it is necessary that there be a certain extent of goal integration on the virtual organization level and the goals of each of its members respectively.

Adding economic value is a basic principle on the basis of which the broker selects the network members. Each member must at any moment act as a link that adds economic value to the overall goal (for the purpose of which the network is designed) on the basis of its own core competence, otherwise its presence in the network fails to be economically justified.

The moduled structure is the extent to which a virtual organization, based on customer oriented integrated processes, is composed of relatively small units that can be managed (modules). These units are distinguished according to their competence and their responsibilities for decentralised decision making [12]. The moduled organizational structure enables the virtual organization to change its structure (in terms of network members) presently, depending on the conditions in the environment.

Heterogeneity of the network members results from the need that the network members have different, but complementary core competences (moderate heterogeneity). The geographical dispersity of virtual organizations results in virtual organization members being culturally heterogeneous too.

Since the virtual organization is a network of small and medium organizations, they are forced to cooperate to carry out the projects which would never be realized without their ***cooperation***. The virtual organization

members make such a partnership with an aim to create a "virtual size", simultaneously trying to render the flexibility of their small organizations. The model of cooperation may vary from ordinary contracts on delivering services or trading certain products, to forming strategic alliances. Regardless of the model of cooperation applied, each network member must dispose of a satisfactory level of ICT facilities and competence so that they should successfully overcome the spatial and time differences in comparison with other network members [10].

The principle of *switching* means a flexible (re)combination of individual competencies to form projects on an ad-hoc basis, which allows for the virtual organization to adapt to changeable market conditions [8].
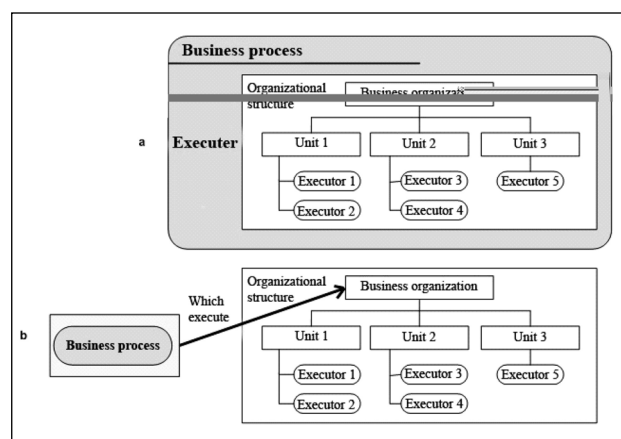
3. Virtual organization structure

In the conditions of discontinued environment, the organizational structure should have a high level of differentiation. Dispersed organizational components should be composed of executors to whom a high level of authority and responsibility is delegated, so that they should be in a position to make the majority of decisions "on the spot", that is, that they should be able to promptly respond to the environmental changes the frequency of which is increasing. In the conditions of fast changes it is necassary that the decision making process is as close as possible to the execution process. This, of course, must be followed with a greater extent of organizational integration, i.e., with a highly efficient coordination system which will allow for all the employees to jointly act in a synchronised way towards achieving the set goals [3]. Virtual organizations absolutely support such a logics of functioning. The virtual organization structure is flat, highly decentralised and spatially dispersed, with a strong coordination mechanisms in the form of mutual harmonization and the output standardization.

Interorganizational specialization and labour division in virtual organizations and the ad-hoc configuration of project networks implies that organizations have to manage quickly through cooperation in order that they should integrate the competences of their employees in mutual projects. In order to achieve that, they need a ***flat organizational structure*** that provides a higher level of flexibility due to the vertical flow of information being reduced.

As regards the processes it is permeated with, the organizational structure may be viewed in two ways (Figure 1):
- as part of business process that flows through it; and
- as a business process environment [7].

Figure 1. *Organizational structure: a) as part of business process; b) environmental to business process [7].*

The flat organizational structure allows that each virtual network member be allotted a clearly defined process or part of process it will be responsible for, and that the overall project be designed on a process basis (which is not frequent in traditional organizations).

*A **high level of decentralization*** grants all the virtual network members an adequate level of autonomy in decision making, thus enhancing the overall decision making process. Of course, each member's decision making activity is subject to concrete limitations that are contracted with the network broker.

Virtual organizations are ***departmentalized*** to a small or to no extent at all [9]. They are characterised by project oriented ad-hoc team creation.

Coordination is mainly effected by way of mutual coordination and output standardization. Mutual coordination is carried out by way of modern communication technologies, as well as in the form of implicit coordination via data basis, where two or more organizational entities have access to the same data base [4]. The output standardization is achieved through contracts concluded among the network members and through various forms of specification.

A dispersed organizational structure allows for the work on the projects in virtual organizations to run without halts, in accordance with the time zones. When the organization members situated at one end of the planet finish their work day, for the network members on the other end it has just begun. This type of work means a maximum time saving, thus enhancing the efficiency of work on the projects under way.

4. Dynamic aspects of virtual organizations

The essence of virtual organization is the restructuring process. The theory of the virtual organization design and implementation that describes dynamic mechanisms is founded on three synthetised notions [6]:

the network consisting of relevant, previously existing industrial structures, e.g., relations with partners in confidential cooperation or in the resources market, etc; virtual business doing, that is, cooperative processes that combine competences and resources during the period necessary to realise (materialize) the value; and value, as a force that makes the virtual organization restructure.

The processes of change in the virtual organization related to the network design, dynamic business restructuring, and creating new business opportunities or dynamic competition (Figure 2).
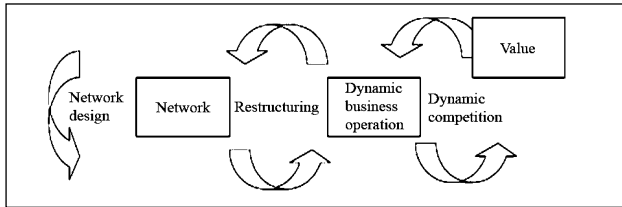
Figure 2. *Conceptual model of virtual organizations design and implementation* [6].

The virtual organizations life cycle can be described through four phases: task identification in the environment, network forming, project execution and network disintegration [11].

Opportunity identification starts with market research, or the identification of demand for certain products or services. On the basis of the possibilities of market absorption identification, the organization selects the task (job) it wishes to execute.

Network building is manifested through the identification and then the selection of members that will participate in the virtual network (at this moment the organization begins to act as a virtual network broker), so that in the end the network should be shaped by defining the position and role of each member of the network, tasks they are to accomplish, standards of their realization as well as their rights and liabilities during the project execution. The organization wishing to set up a virtual network (broker) must first analyse the project before it. Having decided, on the basis of the analyses carried out, which jobs must be performed in order that the project be executed efficiently, the organization builds a network. For the defined jobs in the project designing those members are chosen that offer the most favourable terms or are found trustworthy on the basis of the previous experience [5].

Project execution is a phase involving all the activities related to achieving the set project goals, that is, fulfilling the contracted obligations of a virtual organization as a whole, but also those of its individual members, as project subcontractors.

Network disintegration is the final phase in the virtual organization's life cycle and it starts at the moment the work on the project has been completed, to continue with the previously agreed distribution of profit and possible mutual property. The virtual organization's life cycle is presented in Figure 3.
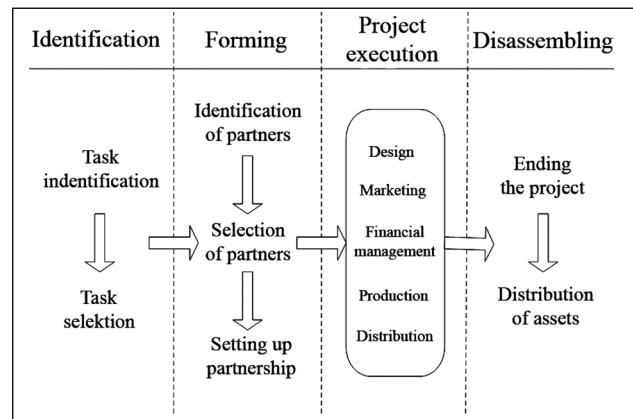
Figure 3. *Virtual organizations life cycle* [11].

We propose introducing coordination roles as an adequate form of managing business operations in the virtual organization [3]. They are part of a long-term structure of virtual organizations and a way to overcome typical barriers in cooperation. The following coordination roles may be distinguished:
- The network trainer is in charge of overall management, infrastructure development, conflict management and defining relationships among network partners;
- The broker is responsible for the customer relations management (CRM), acquisition of offers and other market specific tasks;
- The task manager designs the configuration of a specific value chain, i.e., a short-term project network;
- The project manager is in charge of offer transaction, process management and, if necessary, project planning and management;
- The auditor takes care about the aspects of competition, especially about auditing and inspection (quality guarrantee).
- The In-/Outsourcing manager presents the interests of his organization to other partners.
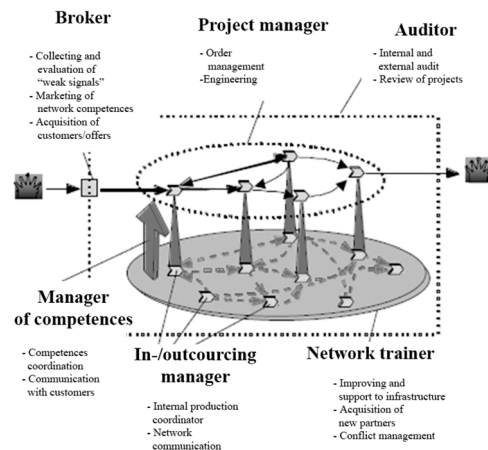
Figure 4. *Roles within virtual organization* [3].

5. Conclusion

The essential difference between the virtual organization concept and the traditional concepts is that the former incorporates the change into the organizational design, while in the traditional concepts the change is the force frustrating organizational processes.

The advantage of virtual organizations is that they allow for a maximum flexibility, while simultaneously concentrating upon the best practices of the organization.

The analysis of modern literature has shown that, generally, two perspectives may be identified: a structural and a process perspectives. The former defines the virtual organization in terms of characteristics of elements and relationships within the virtual organization. The latter focuses upon the change process. Our aim in this paper has been to highlight the need for a holistic approach to virtual organization, which would allow for the management of the virtual organization to gain a better insight into how the virtual organization can be created in a dynamic business environment and thus be more successful.

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