

## ***USING THE HOLONIC STRUCTURES TO OPTIMIZE THE OUTPUT OF BUSINESS ORGANIZATIONS***

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*Abstract: In this study we intend to argue that holarchies and holonic networks can be a "model" or pattern according inspiration to be designed / developed various forms of strategic alliances between firms. In other words, we take into account the theory of the concept of holon, and system as well as various developments related to these two concepts to define briefly the concepts of holonic network, and holarchie in socioeconomic perspective. We intend to look more closely to the holonic networks as horizontal structures, this pattern being de facto followed / implemented under various forms of strategic alliances of some companies.*

*Keywords: holarchie, holonic network, strategic alliance, holonic structure, holonic enterprise*

### **1.Introduction**

For any observer of economic life, it is obvious that over the past years reflects modification / changes in global, regional and local level on the conduct of business; besides other solutions within the reach of decision makers, building strategic alliances / strategic networks (through various types of cooperation, collaboration, partnerships, etc.) provide companies with solutions to create a competitive advantage. In the world economy there has been an intensification of competition, and especially after 2008, the business environment become more uncertain and therefore more unstable technological conditioning, competitive practices and customers requirements have "forced" somewhat the firms all over the world to invent solutions and adapt to the trends recorded by global competition.

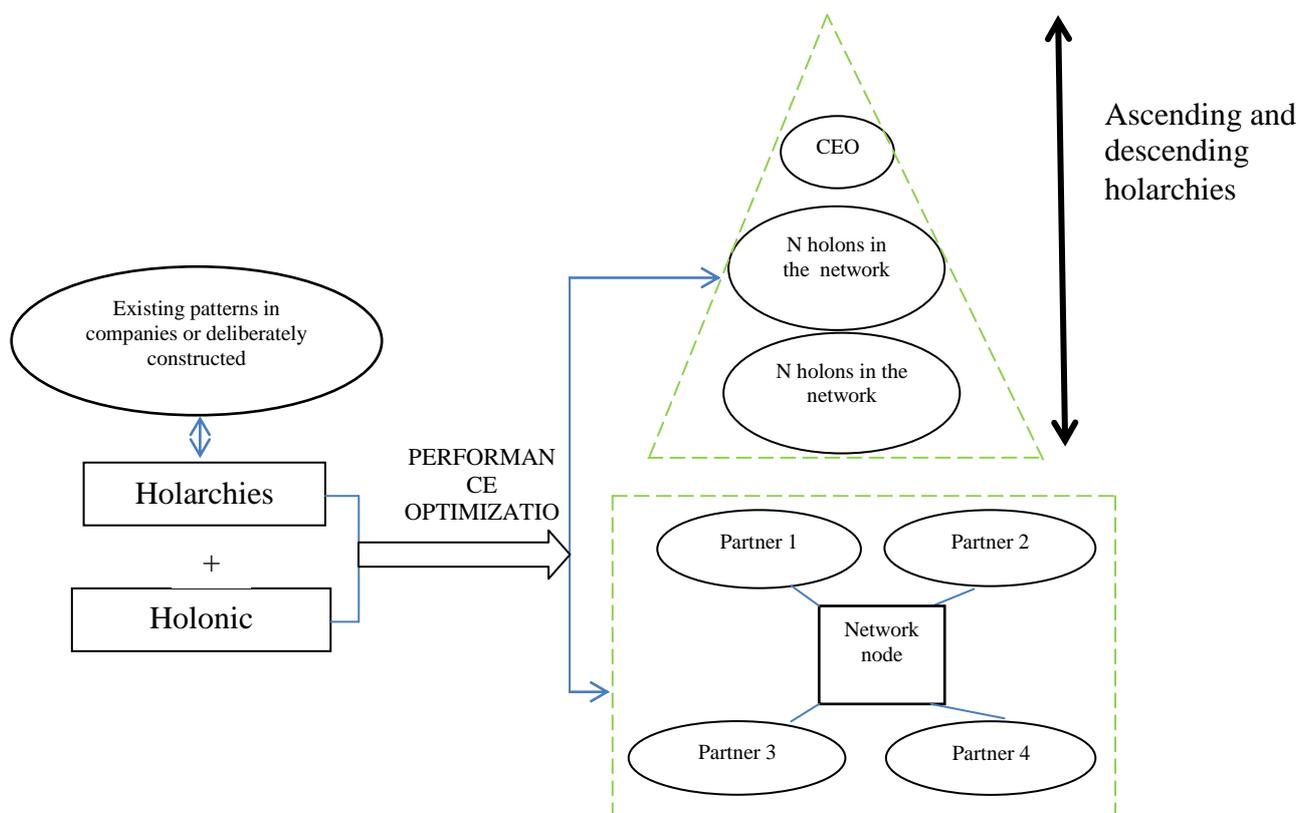
### **2.Specificity of holonic networks**

Holonic structures "network" type is characterized essentially by the fact that the n holons constituents are distributed predominantly horizontally and, consequently, the current operating mechanism of these structures is one of a horizontal nature. In other words, any structure type "network" in nature, society and economy, including business administration, approaches clearly the functioning mechanism of holonic networks. However, when we refer to the economic arrangement and / or to operation of holons just under a raised horizontal form, involuntarily, some questions: How does sharing of information / knowledge in the rec members if there is a coordination center or mediation? Are there characteristics of holons (union, aggregation, development, etc.) kept and others disappear in the operation of holonic networks?

In our opinion, the complexity of economic and evolutionary adaptive and relatively autonomous feature of various "actors" that make this life (namely firms) recommends the appeal to two basic concepts summarized by holons theory:

- Holarchy - type holonic patterns;
- Network - type holonic patterns.

In other words, the appeal of top management to both categories of holonic patterns allows hypothetically to optimize the performance aimed at by a company and the results of a group of companies which are in league with a partnership. Our idea is shown in the following figure.

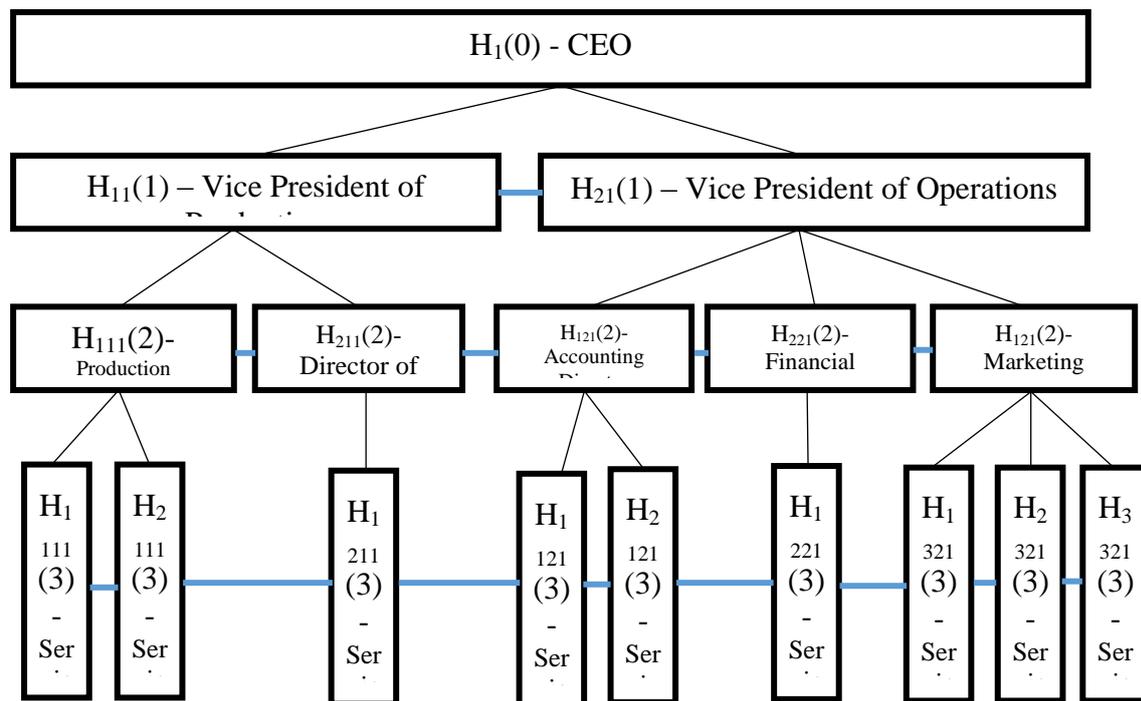


**Figure 1** Application of holonic patterns to optimize the output of business organizations

(Source: own elaboration)

From the above figure we can easily deduce that from the perspective of business organizations, it is preferable to mix permanently holarchies and holonic networks in the attempt of decision maker to optimize the performance of managed entities. In this sense, with respect to the aim previously invoked, one can easily deduce from Figure 1 the fact that the analysis of holonic networks can be highly mode by antithesis with certain characteristics and functioning mechanism of holarchies. Equally, we conclude that it is preferable to share holonic network analysis on two hypothetical applications of holonic patterns in the business world, namely:

a). When we refer to the firm and its associated organizational chart (top right side of the figure used) It is obvious that holonic networks and holarchies are / get combined / mixed in the usual functioning mechanism of any entity of this type. In other words, both ascending and descending holarchies and different types of holonic networks (such "network" type patterns will always be found when analyzing the specific business operation of one hierarchical level) may be useful in the construction of targeted strategies by top management. More specifically, the deep connection (we intuitively can discuss automatic connection / implicit for all the systems that give content to the real economy) between the two types of holonic patterns. Current operation of firm is easily inferred from Fig. 2.



**Figure 2** Organizational chart as ascending / descending holarchy

(source: processed and adapted from Mesarovich, Theory of hierarchical, multi-level systems, New York, Academic Press,1970)

From Figure 2, we can easily notice all components providing a company with the operating mechanism were intentionally joined (the graphical structure proposed by us in this figure is apparently similar to descending one described by Mesarovich holarchy; in fact, it is not just a simple analogy between an organizational pattern and outline Unie holarchie downward as we have emphasized the current relations between the  $n$  distinct holons on any hierarchical level). In addition, we can immediately notice that any hierarchical level of any organization has a distribution network type which is essential for the holonic cooperation and interaction between the members of a level  $n$ ; collaboration and interaction both upward and downward in the same organizational chart functioning are essential as well. In other words, de facto both holonic structures (holarchies and networks) may explain, at least partly the strategic directions that should be taken by top decision maker.

According to my views, the identification of characteristics specific to holonic networks will be based on implementing antithesis of properties and / or characteristics that are already known in any organizational chart operation (considering the organizational chart consisting of n hierarchical levels) as against the to the features previously mentioned on holarchy functioning. So, by referring to the first direction throughout the application of the two concepts, namely private company as an entity on its own, we formulate the following question: "To what extent are or are not certain characteristics of holarchies available in an organizational chart operation?" "What are the specific properties of holons ordered hierarchically which maintain their action in the operation of a hierarchical level of organization chart?" "What theoretical conclusions can we drawn from the joining of components of a descending holarchy (the segment added by us in Figure No. 2)?" "What theoretical conclusions can we draw by applying integrative properties of holons on one hierarchical level of any company's organizational chart?"

In our view, there result quite nuanced theoretical implications when mixing or "overlay" holarchies and holonic networks with the aim to identify potential applications for any type of company; it is difficult, we consider, to formulate complete answers to the questions raised above.

As results from the mixing of the two types of holonic structures (mention should be made that we foresee potential applications only in the case of type firm / company Entities), we deduce that certain features that are found in the operation of the holarchies from n holons are kept and / or included in the operation of holonic networks as predominantly horizontal ordered structures. Among such characteristics or properties that are preserved and / or found in holonic network operation we mention:

- **union property**, since normally the same hierarchical level employees cooperate closely and follow the same course of action to achieve certain objectives (their efforts to work as an efficient team);

- **aggregation property** because heads of service / department can join their subordinates in various work teams and they pursue them;

- **interaction property** because any branch of the company cooperate / interact with another department but each department is supervised / watched distinctly by that department head;

- **internal coordination property**, because any departments / sections / workshops are coordinated individually by a chief, and one chief is the coordinator of all;

- **development property** because the results of the department's daily production depend on previously acquired raw material purchasing department.

Also, from the mixing of the two types of holonic structures (correlated with the questions raised by us) we may conclude that certain characteristics or properties of holarchies are harder to be revealed in the operation of holonic networks, namely:

- **external coordination property**, whereas normally any employee of an organization does not receive / accept external coordinate directions; it is possible that the only exception to this rule is met if the component company will be involved in a holonic network with other businesses in the form of strategic alliance, partnership, etc. (in such cases there will be a double subordination of managers and executives);

□ **open ended property**, started by Koestler, because other employees, other departments, other workshops, etc. cannot be endlessly added to the company organization chart; This can only happen if the company is expanding into other areas.

b. *When we refer to a holonic network consisting of n firms*, the theory discusses various types of strategic alliances, collaborations and partnerships of different types; potential directions of applying the concept of holonic are nuanced in this case with reference to the business world.

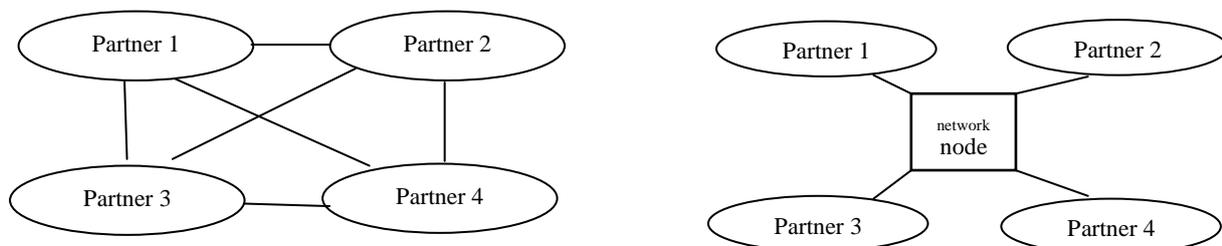
A network of organizations, as a group of companies, brings together their forces to share resources and information in order to increase the competitiveness of the supply network minimizing the barriers of space, time, cost and other considerations.<sup>1</sup> Theoretically, the new structure consistly of n firms may have tasks and / or specific role of autonomous business organizations (so we can discuss about holonic firm).

The holonic company is corporated by integrating two or more independent companies in a network, taking into account some criteria:

- ✓ which ones are common customers and what they want in the future;
- ✓ autonomous companies products or services offered to the market is a reference standard (originally cit has been considered that theoretically only companies that reached a stage of excellence in their field could aspire to their inclusion into a holonic network, but then the realities of the global economy have shown that such a conditioning is exceeded);
- ✓ which ones are the practices of competitors and other sectors to gain or maintain competitive advantage.

In a holonic firm the information technology plays a decisive role. Any business holonic system is based mainly on a network such as the Internet. By its means, data and knowledge are instantly distributed and people base their decisions on them. The authors of this concept consider that "business holonic system is primarily a system where the management system is embodied in real-time entirely by computers. Therefore, holonic network is the first business system that really depends on the most modern information technologies"<sup>2</sup>.

Theoretically, two or more companies that aim to establish a network can conceive holonic collaboration / cooperation between them, with or without other hierarchical structures that are intended to manage the new network. The figure below graphically present the synthesis of variants to form a holonic network of companies.

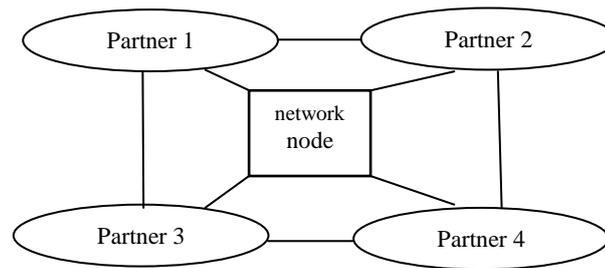


<sup>1</sup> Dumitru Oprean, Victoria Oprean - *Managementul afacerilor pe Internet*, Cluj-Napoca, 2010, p.46

<sup>2</sup> Patrick McHugh, Giorgio Merli, William Wheeler - *Beyond Business Reengineering – Towards the Holonic Enterprise*, John Wiley & Sons Ltd, Chichester, UK, 1995

**Option I:** Direct cooperation/collaboration  
cooperation/collaboration  
between all n firms (without a new hierarchical

**Option II:** Centralized  
between n firms through a



network node structure

**Option III:** Decentralized cooperation / collaboration between  
n firms and the existence of a network node

**Figura 3** Options for setting up a network of holonic firms  
(Source: own elaboration)

If we look from the point of view of its contents or internal nature a holonic network consisting of n firms, we find that the four fundamental features of a holon suggested by Piero Mella and holons properties of a complex set of Andrew Wallace in "Holons and holonic society "is kept for each firm individually (each firm in the network is considered a holon):

» **Self-preservation:** any company within the holonic network can maintain its original structure, although, over time, its components (ie company employees) changes. Through this self-preservation, the company retains its own identity, even if it can be part of one or more networks holonic companies.

» **Self-adaptation:** a firm part of a network, the holonic part of a larger whole; that is the firm itself is an integer but, at the same time, it is part of a larger whole, called holonic network. Being part of a network, the company must be able to adapt and create links with other firms in the network and respond to their requests / suggestions / requests; that is firms in a holonic network of n firms must work together.

» **Self-transcendence:** a holonic network is dynamic and creative, aspect that allows the inclusion of new companies in the network.

» **Self-dissolution:** only applies if a company wants to withdraw from the holonic network, which is highly unlikely. Self-dissolution of the entire network can occur if the outgoing network node, or if all n firms in the network cease their collaboration in the network.

» **Scalability:** the holonic network of n firms is autonomous and can operate with limited information from other companies; therefore, we can add other companies to the network without affecting the network operation of previously existing firms. A good organization will lead to a positive influence of new companies on the network.

» **Robustness:** refers to autonomy resulting from the network. Due to the scalability feature new companies can be added to a holonic network, but a firm can also be removed from the network, without affecting the functioning of the network as a whole of other companies. This is a holonic network of  $n$  firms can operate smoothly and  $n-1$  firms (provided that  $n > 3$  because if a network of two companies is deleted, then there is no company network).

» **Simplicity of control:** each firm in the network gets well-defined tasks, aspect that facilitates the system verification and control.

Patrick McHugh, Giorgio Merli, W.A Wheeler believe that holonic network favors knowledge exploiting as a new resource type. A piece of information are becomes a "new asset" of the company that is freely available to all. Operation and prosperity of holonic firm can be explained by the widespread exploitation of information / knowledge - using information technology - a resource for the future, based on past and present. In this reorganization, there are three main variables to be considered: customers, competition and change process.<sup>3</sup>

Company networks is a form of cooperation between independent firms legally, but sharing common economic interests that are geographically dispersed.

The concept of company network refers, in addition to a number of advantages to a major weakness point that stands out especially if there is mutual distrust between partners which can lead under extreme conditions to network collapse. Thus trust between network partners supports both the premise of network foundation and the basis of effective collaboration. It should be kept in mind that confidence about significant invests both in financial terms and in terms of time consumption, on the other hand trust is a concept unstable and precarious.

An advanced concept of company networks is the collaborative network of innovative technological system that is configured to coordinate cooperation between various organizations that pursue a common goal, namely economic, social, cultural and political development of a region.<sup>4</sup> Implementation of this concept involves the creation of clusters by exploiting local industries and other skills (universities, financial institutions, local government).<sup>5</sup>

Company networks is a convenient and beneficial option, especially for small and medium enterprises to cope with globalization and the current complexity and to boost innovative capacity to ensure and improve competitiveness. Within networks, otherwise independent members assume some collaboration on certain issues, can create such synergies by coordinating resources and expertise. They remain, however, at the same time, independent of each other, thus avoiding the risk of having to build costly bureaucratic structures and thus losing flexibility.

The created / designed networks offer cost advantages components to companies by exploiting conjunctly resources, and within company networks risks can be also conjunctly

<sup>3</sup> Patrick McHugh, Giorgio Merli, W. A. Wheeler - *Beyond Business Process Reengineering: Towards the Holonic Enterprise*, John Wiley & Sons, 1995, England

<sup>4</sup> Carlos Scheel - *Knowledge clusters of technological innovation systems*, Journal of Knowledge Management, 2002, Vol.6, 4, p.357

<sup>5</sup> Adrian Dumitru Tanțău (coord) - *Ghid de bună practică pentru clustere și rețele de firme*, Print Group București, 2011, pp.5-6

born which, such as the financing of investment goods which requires significant capital, and in the case of staff hiring. As the number of entrepreneurs who bear certain risks is higher, you can take bold decisions at the firm level can be taken and decision-making processes are secured by the expertise of a larger group of entrepreneurs. The success of such association is justified by the special characteristics of organization form called, network which is due to be describe further succinctly. Networks have been described in the literature on network management since early as a mixed form between hierarchical organizational patterns and the market ones.<sup>6</sup>

Firms may associate in networks that are not hierarchical (version I figure 3), unlike holarchies, the purpose of a network is to encourage cooperation availability of its members, without obtaining this by constrain aspect which leads to a kind of cooperation significantly oriented towards success. Companies will remain in the network only when convinced that work together within the network brings a certain advantage. Since collaboratin with other firms leads to success this make companies be willing to share knowledge and resources. In a competitive relationship, as in an organization, there is good reason to hide some information, but the operation of networks is peculiar because information is often distributed quickly and accurately. Networks provide the opportunity to incorporate extremely heterogeneous partners in a cooperative relationship.

Networks often start with a lot of enthusiasm, but quickly lose it a certain form of awareness is crystalized when it turns out that the objectives to be achieved can not be easily achieved, when those involved are not targeted in the same direction, but they have divergent interests, that behind the apparent and free cooperation of any hierarchy there are still power structures and that sympathy, initially shown should be confirmed throughout day-by-day collaboration. Working with successful networking is really a very demanding activity that requires a high degree of flexibility, communication and especially patience.

Network pattern is essentially a paradox: on the one hand mesh structures require mutual trust between participants to work, but on the other hand this trust can really develop only in the cooperation between participants. Namely, we can say that a trust is both the premise and the result of networks.<sup>7</sup>

Therefore, structuring a successful company network involves building trust between those involved and care that this confidence is not damaged due to false expectations and disappointment.

### **3. Conclusions**

Entrepreneurs must be able to experience under real collaboration that the cooperation between them is useful, that members have similar goals and are willing to actually work together in a constructive manner. At the same time, a successful network can be driven from the outside, the way it will be designed later is a matter that ultimately should be taken into consideration by these involved organizational responsibilities. So, there is no certainty about

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<sup>6</sup> Walter Powell – “Neither market nor hierarchy: Network forms of organization.” in: *Research in Organizational Behavior*, vol.12, 1990, JAI press Inc., pp. 195-336.

<sup>7</sup> Jost Wagner – “Trust in Network Relationships”, *Review of International Comparative Management*, Vol.11, nr. 4, October 2010, pp.646-655

how the network will look like and what forms of cooperation will emerge. The possibilities are significant, but what should be implemented depends on the participants.

At this point it is hard to predict which the basic feature of the global market / capitalist economies for the next period, ie we can not predict the mechanism by which markets will operate; In our opinion we think that they will be combined and will be completed in different formulations / variations based on clear rules as well as on competition and cooperation needs determined by common goals. Therefore, we believe that theorists interest in concepts such as holons / holarchies and holonic networks will increase significantly in the future.

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