

THE VIRTUAL DEVELOPMENT OFFICE FRAMEWORK FOR BUSINESS NETWORKS: A CASE STUDY FROM THE UMBRIAN PACKAGING DISTRICT

Marco Botarelli^a, Paolo Taticchi^b, Luca Cagnazzo^c

Department of Industrial Engineering, University of Perugia, Via Duranti 67, Perugia, ITALY

^a marco.botarelli@unipg.it

^b paolo.taticchi@unipg.it

^c luca.cagnazzo@unipg.it

The globalization of competition has entailed that organizations of developed countries have to face new kinds of competitors with low labor cost and often advantageous exchange rates (resulting in favorable export selling prices). In such a scenario, innovation and organizational flexibility are becoming fundamental levers to enable enterprises to increase their competitiveness. For this reason, the need arises of an organizational methodology that enables organizational flexibility and capacity of performing innovation. Our recipe consists of the concept of network enterprises, to enable organizational flexibility, and the formalization of the VDO concept – Virtual Development Office – to enable innovation in a collaborative environment.

1. INTRODUCTION

In the current competitive scenario, enterprises competitiveness is not based on company or industry, but on the value creating systems themselves, within which different agents work together to co-create value and build a network (Gadde, Huemer, & Hakansson, 2003). Researches in cooperated systems have contributed to characterize the benefits correlated to the relationship of cooperation between companies (MacCarthy & Golicic, 2002; McLaren, Head, & Y., 2000; Horvath, 2001). These advantages could be particularly important for Small Medium Enterprises (SMEs) given the resource constraints and limitations they work within (Gilmore, Carson, & K., 2001). On the other hand, networking of enterprises entails new organizational problems, such as the decentralization of decision-making process and the horizontal coordination between different business function as well as, outside the firm, between complementary activity performed by suppliers and customers (Ghoshal & Bartlett, 1990). The aim of this paper is to present a new organizational enterprise network model developed within the Italian research project MIGEN¹, during which the authors supported the development of a network from its first steps. Specifically, the paper addresses the following questions: (1) Can

¹ MIGEN (the name comes from the Italian acronym for Innovative Models for Enterprises Network Management) is a research project supported by Italian government with the PRIN (Research Project of National Interest) program. The project involved the Universities of Perugia, Florence and Genoa and it focused on the development of specific models and tools for managing networks of enterprises.

an organizational model be developed which can foster a long term development of a SMEs network? (2) How can the interactions between the network partners be fostered? (3) How can business opportunities and innovation in the network be managed and promoted?

This paper is organized as follows: firstly, a brief description of the contest in which this core study is carried out is described; secondly, based on the case study, a formal conceptual organizational model is offered and its main highlights are discussed.

2. THE GPT CASE STUDY

The scenario in which the presented study has been developed is the district of paper products, printing and publishing in the Centre of Italy. Such a district, composed by over 160 enterprises, is characterized by a high technical-productive specialization due to an historical handicraft tradition in the mechanical and printing field. The competitive potential of the district is severely limited because it lacks the ability to spontaneously aggregate its activities, a situation exacerbated by the absence of leader firms capable of providing direction for the system as a whole.

Through a SWOT (Strengths, Weaknesses, Opportunities, Threats) Analysis, the researchers were able to identify the advantages, the weaknesses, the problems and the possible future turns of the SMEs of the district. One particular outcome from this exercise was the recognition that even those SMEs with good technological knowledge and decisional and adaptive rapidity were constrained by the small business dimensions that put them at a severe competitive disadvantage when compared to larger competitors. This making an entry in the European and international markets difficult; a situation further exacerbated by the absence of an entrepreneurial culture, effective marketing capabilities and the pursuit of preset objectives through defined strategies. In this regard the Umbrian paper mill district can be seen to embody the problems of the Italian Small & Medium Enterprises (SME).

In such a scenario, three firms (Pasqui, Litop and Litograf), characterized by a range of complementary products and by a partnership based on a solid personal knowledge of the entrepreneurs, decided to form a new company: G.P.T., acronym of "Gruppo Poligrafico Tiberino" (that will constitute what the authors introduced in the model with the concept of VDO), with the first intent of integrating the commercial and marketing functions. Since the early stage of its life, GPT perceived the need of expanding its own mission and activities. From 2005 to 2007 GPT grew from the 3 initial partners to the 18 current members, extending its borders from the district localization, to the national territory. Partners are SMEs prevalently belonging to the printing & packaging sector, even if the group growth also involved financial and service companies in order to increase the network competencies and its ability to manage relevant innovative projects. Today's aggregate turnover is about \$ 310 million, involving over 700 employees, in 22 establishments, underlining the exponential network expansion. In this direction GPT is today pushing interesting strategies for the consolidation of the Italian market and it now entering the South America and Northern Africa markets.

4. THE ORGANIZATIONAL MODEL OF GPT NETWORK

In order to characterize the organizing scheme of a network we will use the dimensions proposed by Gefferi (1994): (1) a governance structure, namely power relations arising from asymmetries in market base, resources and capabilities that determine how economic surplus is distributed within the chain and how activities are coordinated within and across firms; (2) an input-output structure, or sequence of interrelated value-adding activities, including production design and engineering, manufacturing, logistics, marketing and sales; (3) a geographical configuration, referring to the spatial dispersion or concentration of activities within and across locations; (4) a social and institutional context, formed by norms, value and regulatory frameworks of the various community within which firm operate.

The governance. The governance structure plays a key role not only in the creation and distribution of value, but also in the coordination of networks. From a strategic perspective, the coordination of a network requires some degree of centralization in order to ensure an efficient use of resources, rapid decision making and the emergence of a global vision driving the network. For these reasons management researchers stress the role of the *lead firm* (Jarillo, 1988), continuously engaged in attracting and selecting members, in sustaining network relationships by managing conflicts and learning, in positioning the network in the market and in building the structure and culture of the network (Sydow, 1992). In a network composed by SMEs we can't find a subject that can naturally play the role of lead actor over a long time horizon. In our case, GPT is a formally defined entity that plays the role of a permanent figure (lead actor) operating within an enterprise community that survives the single Virtual Enterprise (VE), defined as a temporary organization of companies that come together to share costs and skills to address business opportunities that they could not undertake individually.

Another important aspect covered by GPT, as a permanent figure inside the network, is the problem of *trust* between partners, which is considered a critical aspect within the network (Jap, 2001), and can result in lower transaction costs, easier conflict resolution, or lower need of formal contracting (Das & Teng, 1998). Trust, while advocated by many authors (Stuart & McCutcheon, 1996), was recognised as needing *time* and care to build (Sobrero & Schrader, 1998) and can be difficultly developed in the typical horizon of a single VE. Similar consideration can be done about *information sharing*. In high level of interdependence environments, in order to manage the complexity of activities, procedures and interfaces have to be precisely defined, and a large investment in time and work is needed. This will result in a large complex system that can be justified only within a long-term strategy of the network (Mrtinez, Fouletier, Park, & Favrel, 2001).

Proposition 1. The definition of a central actor operating on a long-term basis can positively influence some key factors as strategy definition, trust and collaboration, information system management, and goal congruence.

The input-output structure. The main mission of GPT is to manage the organization of the VE when the business opportunity is activated and coordinates the innovation activities according to a long-term strategic decision, through a continuous monitoring of both partner resources and competencies (Teece, Pisano, & Shuen,

1997) and market needs. Once the business opportunity is captured, GPT has to set up the specific virtual enterprise composed by members belonging to the community or even outside the community. One of the main features of GPT is that, even preserving the dynamism of a typical VE in responding to market needs, it allows to centralize and to manage on a long time horizon, some critical “company” activities (i.e. the development of a well-known trademark, a long-term maintenance guarantee), without the limitations of a typical VE (Jagdev & Browne, 1998).

Proposition 2. A constant monitoring of partner competences, technologies, products and processes is a key factor to create business opportunities and design development strategy.

Proposition 3. Giving the growing importance of intangible activities such as understanding customer needs, product development and brand building, the definition of a subject, whose mission is to constantly interact with market, can positively influence network competitiveness.

Proposition 4. Effectiveness of the network is positively influenced by the ability to select specific partner within or outside the community to form a VE and respond flexibly to a business opportunity.

The geographical configuration. One of the current main trends characterizing manufacturing scenarios is represented by the internationalization of production processes; the geographical shape of global production networks results from a combination of local, regional and trans-regional dynamics (Scott, 1996). We could think of the previous as different stages or aspects during the network life cycle; even if the first pool of enterprises participating the network will be probably located in a geographically limited community where those enterprises can already have proactive environment in terms of diffused trust, collaboration, knowledge, etc., the network can be then composed by companies coming from different regions or countries, where each region can be characterized by a specific competence. The same process can be found in the development of GPT, where the geographical closeness, with its advantages in terms of informal links and shared values, has balanced the lack of formalized processes, information technology tools, etc., while its structure allows to strategically manage the link between a VE composed by companies coming from different regions or countries. This has been happening during the GPT expansion, since some partner localization is out of the initial district, but they are distributed in various parts of Italy.

Proposition 5. Even if the geographic closeness can foster the development of a network in its firsts life cycle stages, the structure of the network should allow the participation of companies coming from different countries.

The social and institutional contest. Katz and Darbishire (2000) have shown that country specific labour market structures and institution play a critical role in shaping employment relations systems, although they are affected by the spread of new practices in highly globalized sectors. One of the main advantages of the organizational model proposed is that it can formulate and manage over a single

business opportunity a jointly development strategy within the community and drive networks of firms toward continuous improvement and learning. Furthermore, it can interact for the community with institutional subjects as a single entity promoting innovation activity with research centres or the support of financial institutions (banks, government offices, etc.). GPT has in fact good relation with local and national institutions as much as ministries, research centres and prestigious academies, that allow to perform important initiatives and innovative projects.

Proposition 6. Network organization should promote the cooperation between firms and government and research and financial institution to find and efficiently manage resources and competences needed by network for its development.

5. DISCUSSION: THE VIRTUAL DEVELOPMENT OFFICE (VDO) CONCEPT

Considering the attribute previously described, the aim of our work was to define a conceptual organizational model for enterprise networks. In particular we focused on Medium Enterprises (SMEs) that in most cases operate in a dense network or inter-firm relationship given that they represent an important aspect of the European economy. Therefore it's necessary to propose a cooperative model to SMEs to encourage the innovative ability, the innovation and research, to develop technology activity and the quality of the products. Our approach is based on the creation of an independent subject, the VDO (Virtual Development Office) and GPT in the case study, which act as a leading actor, and it has the role of creating, coordinating and managing a community of enterprises. Particularly, it should be the market intelligence of the network, continuously catching business opportunities in the market and positioning the network on it. Moreover, the VDO is the permanent interface to public institutions, financial institutions and research centres. As described before, a proactive collaboration with such subjects is a leverage factor in today's business. The VDO activities presented above are "external" to the network. However, the VDO also has a crucial role inside the network life. First of all, it has the role of maintaining and consolidating the trust of companies involved in the network by generating and promoting a long term alliance. By acting as a central player on respect of the "business ecosystem", it promotes both the willing of cooperation, both the readiness to collaborate each time a "collaboration opportunity" (CO) arises.

The efficacy of this subject, called VDO – Virtual Development Officer, is composed by the following phases:

- Analytic Phase; it involves a continuous monitoring of the environment and the competitive position of enterprises belonging to the enterprise community in terms of resources and competencies. One of the core activities of VDO is the definition of the strategic positioning of the community and the creation/promotion of business opportunities. Moreover it is important that with this approach it is possible to define developmental lines for innovation projects or it is possible to open the community to different actors.
- Planning Phase; after the target definition (business opportunity, new product development project, etc.), the VDO should manage the following activities: (1) plan activities, identifying the necessary resources/capabilities to reach the targets; (2) select the enterprises in the community that will create the virtual

enterprise to satisfy the business opportunity; (3) establish the contribution of every actor in the virtual network and the cooperation rules based on SLA (Service Level Agreement). The last is a very critical activity in the management of the virtual network, given that it requires the definition of organizational models, revenue sharing contracts, transaction costs, etc. i.e. the “rules of the game” that will guide the activities of the single enterprise.

- Operating phase; it implies the control and the monitoring of the quality of the products/services provided (safety, availability, reliability, etc.) and the solution effectiveness; these data represent a fundamental feedback for the analytical phase.

6. CONCLUSION

In this paper we pointed out the increasing importance of an interconnected business environment, especially to foster SMEs competitiveness. After a description of the main current organizational model, we analysed some key dimensions that can be used to classify networks: an input-output structure; a governance structure; a geographical configuration; a social and institutional context. Using these dimensions we proposed a new organizational model based on the figure of the VDO, an institutional subject, acting as a lead actor in an enterprises community.

One of the core activities of VDO is to analysis the market position of the community to establish developmental lines for innovation projects over a long time horizon. Then the VDO, through the different phases we have described (analysis, development and operations), has to manage the specific business opportunity as follows: planning activities, identifying the necessary resources to attain targets; selecting the enterprises in the community that will create the virtual network to meet the business opportunity (the selection can be made by self-nomination or by a VDO selection of the best pool of enterprises that can meet the business opportunity); establishing the contribution of every actor in the virtual network; controlling the execution of the planned activities. The organizational model proposed aim to go over the typical limitations of a VE while maintain its main strength. At the same time it opens a new critical aspect for its management and for the definition of the optimal environment in which the framework should and could be adopted.

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