Virtual Organizations through a Relational Lens

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ABSTRACT

Virtual organizations have often been identified with a strong ICT infrastructure, used to increase organizational flexibility. In these paper we argue that ICT is important, but not sufficient: organizational aspects (roles, rules, methods) are also critical. Flexibility can be achieved acting on organizational relations and making them looser. The risk must be avoided, however, that loose organizational relations decrease organizational controllability. We propose the Organizational Relational Model, developed by one of the authors in other papers, as a useful framework for organizational analysis and design in virtual settings. Two strategies for virtual organizing are proposed and described.

Keywords: Virtual Organization, Organizational Relations, Flexibility, Organizational analysis, Organizational Design.

INTRODUCTION

Where does the idea of a virtual organization come from? Ubiquitous communication networks provide organizations access to people and information *virtually* anywhere and at all times. This property of information and communication technology (ICT) has been called connectivity. At the same time outsourcing and temping (that is, the use of contingent workers), have become more and more common in business [1]. In the early nineties, Davidow and Malone [2] popularized a business model based on both these characteristics: a strong reliance on ICT to support remote work and a large use of external resources. They called this model "the virtual corporation". In those years the idea that electronic networks would have replaced social and organizational structures seemed to be not so unlikely [3]. During the last decade, few topics have received more attention in the management literature [4].

The term virtual organization has been applied to movie production, online sellers like Amazon.com [5], networks of subcontractors in the automotive and electronic devices industries, consortia [6], remote insurance and banking services providers [7], personal computers manufacturers [8]. In many industries, firms seem to pursue increased reactivity, flexibility [9], and excellence in every phase of the productive process [6] through a virtual organizational model.

The virtual organization has been defined as "a temporary network of independent enterprises (organizations, companies, institutions, or specialized individuals) that come together swiftly to exploit an apparent market opportunity. The enterprises utilize their core competencies in an attempt to create a best of everything organization in a value adding partnership, facilitated by ICT" [10]. According to Mowshovitz [11] virtual organizations are based on the so called "switching principle": connections among members are switched on and off according to the need, with the support of adequate technological systems. The principle can be applied at several levels: a business opportunity can be exploited by an interorganizational virtual organization [10] [12], a project can be performed by a temporary virtual team, whose members are geographically dispersed [13] [14] [15]; a task can be accomplished by a remote virtual worker [16] [17].

Such a description is a Weberian "ideal type" [18]. Few organizations of this kind exist today [19]. Nonetheless, increasingly organizations outsource important areas of activity and coordinate through ICT, that is, they increasingly show "virtual features" [20].

Are electronic networks, then, really replacing social and organizational structures?

This paper argues that virtualness is an organizational as much as a technological phenomenon. Beside technological tools, organizations are developing innovative organizational practices (new roles, methods and rules) for dealing with virtualness. Electronic communications represent a fundamental support and an enabling factor for a deeper change in a great number of organizations: a shift towards dynamic Organizational Relations (ORs).

Organizations, in fact, can be conceived as networks whose nodes are individuals, offices, teams and whose arcs, the ORs, are multidimensional links between these nodes. These links involve economic, organizational, psychological, social and cognitive elements [21].

Alliances, mobile and remote work, work and processes externalization, electronic commerce, virtual communities

and, in general, all the phenomena associated with virtual organizations, share at least one feature: the importance of ORs flexibility. This flexibility is achieved by loosening some traditional constraints along the dimensions of space, time, boundaries and culture [22]. In this context ICT can be used for both creating new links and supporting existing relations. The potential offered by the new technologies, however, can be fully exploited just through a coherent management of all the dimensions of the ORs.
The Organizational Relational Model (ORM), developed by one of the authors in other papers [21] [23], is proposed here as a framework to study how ORs change in virtual settings.
According to this model, an OR can be studied synthetically, but effectively, using four characteristics: goals, tools, rules, cultural background.
When organizations go virtual all the four characteristics are affected. The ORM represents, then a useful guide for organizational analysis and design in a virtual context.

ORGANIZATIONAL VIRTUALIZATION

A widespread, stereotyped image identifies a traditional organization with a physical place, where people work close to each other. In this ideal organization working time is standard, relationships have a long term orientation, decision rights belong to the owners and are delegated along a univocal and well defined hierarchy. Even culture is considered as largely shared among members.
DeSanctis, Staudenmayer and Wang [22], observe that organizational virtualization is a process affecting four aspects of organizational life (see table 1): 1) space; 2) time; 3) boundaries; 4) culture. The *space* dimension refers to the extent of spatial dispersion of employees across different locations. The *time* dimension pertains to temporal dispersion, in other words, the degree to which employees operate asynchronously and the duration of relationships. The *boundary* dimension refers to organizational dispersion – the degree to which organizational processes extend the boundary of the focal organization. The *culture* dimension relates to cultural dispersion – the extent to which an organization consists of employees from different cultures [24].
In a virtual organization some traditional constraints related to these four aspects are loosened in order to gain flexibility. Through ICT work and interactions can be performed remotely, loosening the constraints of physical proximity [7]; members can work asynchronously and with flexible working hours, loosening the constraints on time; work externalization allows for rapid quantitative and functional change in the workforce or in the supply chain when environmental conditions require it [7].
The loosening of constraints, however, has complex consequences that must be carefully evaluated.

Space

ICT allows organizational actors to communicate and share information across great distances. This provides several advantages: reactivity to local opportunities or threats is improved; differential costs can be exploited; transportation costs can be reduced; time zones can be exploited to work twenty four hours a day as often happens in software development industry.
Virtual organizations are often conceived as geographically distributed.
By establishing new communication channels, ICT creates the potential for new relations. These relations, however, are substantially different from the ones existing among co-located partners [7]. Electronic channels, in fact, are not as rich as face to face interactions [25], so that communication, socialization and sense-making processes show different features. Research on Computer Mediated Communications has produced ambiguous results, but scholars seem to share some conclusions: electronic communications facilitate information sharing, but can make consensus formation more difficult in time limited contexts [4]. Creating social relations, trust and reciprocal commitment requires longer, increasing, most of the times, the costs for achieving cooperation [26]. The same can be said for the formation of shared procedural rules or cognitive schemes, which facilitate coordination and discourse [27].

Time

Time becomes a far more complex variable in virtual organizations than in traditional ones.
It can be said that so far, inside organizations, an effort has been done to promote an univocal vision of time (standard working hours, well defined rhythm of work, clear deadlines). Presently, several phenomena undermine this univocity: flexible working hours, are the most evident. But also remote work implies different rhythms, perceptions of time or, simply, calendars and time zones among geographically dispersed members [14].
Furthermore, for temporary workers, work relationships are short. Their work experience is, then, fragmented along the time dimension.
As a consequence the simple strategy of creating a standard time inside organizations is not sufficient any more, and time management becomes a critical practice for virtual organizations.
A second, important characteristic of virtual organizations along the time dimension is, as reminded above, the short duration of relationships.
This has the effect to turn attention to results: while stable relations can be evaluated according to their potential, brief relations can be evaluated just according to results. As well as in markets, parties have strong incentives to both good performances and opportunistic behaviors [28].

Boundaries

In a virtual organization processes cross organizational boundaries. Different owners control different phases of the value chain. These actors have their own priorities, their own methods, their own technologies.

When a new partner enters a virtual organization a careful evaluation of his commitment to the joint enterprise is needed. During work execution, in fact, qualitative or quantitative changes in the required performance could be necessary. There is a high risk, in this case, that a partner with a low level of commitment will behave opportunistically.

Interfaces design is critical. Each organization, in fact, has its own methods: they include rhythms of production, acceptable delays, quality standards and so on. Partners must evaluate these methods and their compatibility with each other, negotiating tradeoffs when necessary. The same holds for technology, especially ICT: it is common that problems arise when different standards are used in different organizations.

Culture

"Culture" can be defined as the set of shared values and meanings that members of the same organization agree upon. People from production and people from marketing come from different technical cultures. People from public and private organizations come from different organizational cultures. Especially in transnational virtual organizations, besides, people come from different national cultures.

Stable relations in traditional organizations contribute to create a shared culture among members. The process is expensive and requires time, but improves cooperation and coordination. In a virtual organization, each new configuration of linkages, implies a new negotiation of values and meanings. This favors creativity and "contamination", but increases conflict and misunderstandings.

Space	*Time*	*Boundaries*	*Culture*
Geographical dispersion	Synchrony/ asynchrony Dynamism	Permeability	Diversity

Table 1: Four characteristic features of virtual organizations

THE ORGANIZATIONAL RELATIONAL MODEL

As described above, the main consequence of organizational virtualization is the weakening of some ORs (the employment relation, for instance) and the creation of some other (often electronically mediated), with an overall increase of relational complexity and dynamism inside organizations. For this reason new models for ORs management are needed. To be useful these models must be at the same time concise and complete.

The concept of Organizational Relation

The concept of Organizational Relation is referred to the types of interaction and connection between two or more organizational actors (individuals, organizational units or whole organizations). It is a multidimensional concept, one which includes economic, organizational, social and interpersonal dimensions.

The organizational relation is something different from the concept of transaction proposed by O. Williamson [28]. Transaction has in fact mainly an economic dimension related to the exchange involved.

Organizational Relation is also different from the concept of interpersonal relation because it is not limited to psycho-sociological aspects between actors but it includes also the economic and the organizational dimensions.

Organizations can be considered as networks of nodes linked through organizational relations. Nodes consist of organizational actors: according to the purpose of the analysis, several criteria may be used to define a set of organizational actors as a node (similarity in technical activity, equality in hierarchical position…). The word "relation" was introduced by Elton Mayo and his 'Human Relations school' but with a limited meaning.

The Organizational Relation is defined in this paper as a link between two actors with the following characteristics:

It is *based on* (partially) *common goals*. If the shared goals disappear, the organizational relation changes to another mechanism (for example to a classical market contract).

It is *not trivial*: the shared goals are connected to the objectives of the organization. It is *not an occasional link*: a link becomes an organizational relation when interactions among two actors need to be repeated with a certain continuity for the common goal to be achieved.

The concept of organizational relation is particularly useful for analyzing network and virtual organizational forms. Here, in fact, structures are evanescent. By studying the two basic components, nodes and links among them, dynamic organizational processes can be understood.

In the present competitive environment, innovative organizational forms seem to enlarge the autonomy of nodes and the complexity of links among them, for improving know-how, flexibility and capacity to react rapidly to environmental changes.

The proposed model: basic concepts

The concept of organizational relation is the result of the connection of two nodes: the relation considers both properties of the nodes and the characteristics of the link itself.

This concept has been used for proposing an innovative view of the organization: the organizational relational model [21] [23].

The method for the analysis of organizational relations is derived from the AGIL model (Adaptation, Goal, Integration, Latency), proposed by T. Parsons. While Parsons proposed the method at the society level, the

organizational relational model proposed in this paper makes reference to the enterprise at microanalytic and microeconomic level. A special attention is paid to the role of IT in supporting the autonomy of nodes and links in the organizational relational model.
There are two basic dilemmas: formal/informal and community/society. The first opposition deals with the recalled distinction between explicit and tacit knowledge while the second one was introduced by F. Tonnies for sociological analysis: community indicates aggregations based on traditional behavior and common will of people, while society is considered to be based on common accords, on legal rules and on contracts.
IT amplifies formal characters and societal aspects: in this way IT tends to improve the efficiency of the relation, but reduces the richness of the relation itself.
Companies adopt new mixed strategies of collaboration and competition. The traditional organization chart represents just hierarchical lines of control and communication: they are no longer adequate for describing organizations composed of semi-autonomous organizational units, that can create several links through lateral mechanism of co-ordination and communication.
The organizational relational model has been proposed by Migliarese and Ferioli [21] [23]. The organizational relations can be described through four axes (see fig. 1):

- the ***tools*** supporting the relation: inter-personal contacts (periodic meeting, personnel rotation…); group management techniques; IT instruments, the price system (in the internal market [29]);
- the ***goal,*** (partially) shared by organizational actors: for instance, in a client-supplier relation, the two actors collaborate for achieving quality improvements or to accomplish a common project; without this shared goal, the relation becomes a simple market exchange;
- the r***ules*** regulating the behavior of actors within the relation: relational norms define the accepted behavior. They can be tacit or explicit;
- the ***cultural background*** associated to the relation: the common assumption reduces the need for negotiation and information exchange (Organizational culture).

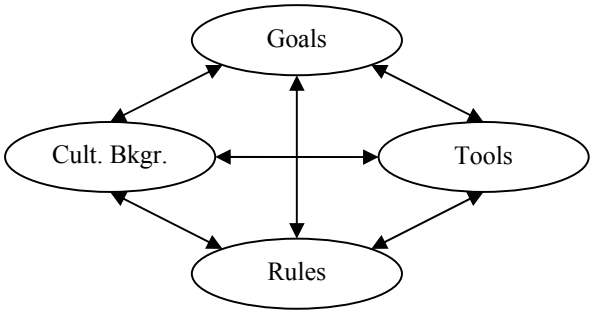

Fig. 1: The four axes of the organizational relation according to the Organizational Relational Model

Organizational virtualization can be analyzed making reference to the Organizational Relation Model. The innovative features of virtual organization can be fruitfully interpreted according to the effect they have an the four dimensions of an organizational relation.

IMPACT OF VIRTUALIZATION ON ORGANIZATIONAL RELATIONS

The impact of virtualization on ORs can be considered with reference to each of the four axes of the ORM (see table 1):

- first of all in virtual organizations new *tools* for communicating or exchanging information are introduced. These tools are the channels through which new and different relations can be developed. Compared with tools in traditional organizations they support relations which are more flexible with regard to the space (*connectivity*) and time (*synchrony/asynchrony*) dimensions;
- the structure of interests changes when relations are perceived as brief and members belong to different organizations (or are independent individuals). Members working life is not any more tied to the destiny of the organization. Authority can not be used as a means to align *goals* as in traditional organizations (where the employment relation implies that one party, the employee, gives up a part of his decisional rights). Goals, then, must be carefully negotiated in order to take into account all the relevant and legitimate interests and to avoid future conflict;
- a new system of *rules* has to be developed by a set of partners who don not know each other. In traditional organizations rules are developed through a long process of trial and error, during which members adjust to each other. In virtual organizations an *ad hoc* system of rules must be developed and made operative, with reduced possibilities of making experiments;
- different *cultural backgrounds* have to be mixed. Languages, cognitive schemes and values compatibility must be evaluated when the virtual organization is formed and their interaction has to be managed throughout its lifecycle.

	Traditional Organization	**Virtual Organization**
Goals	Imposed	Negotiated
Tools	Rigid	Flexible
Rules	Institutionalized	*Ad hoc*
Cultural Background	Homogeneous	Heterogeneous

Table 2: Ideal types of organizational relations in traditional and virtual organizations.

Beside the effects on the single axes of the ORM, it is important to consider the overall consequences of organizational virtualization on the relation.
We call *flexibility* the organizational capability of changing swiftly the output produced and *controllability* the possibility of management to determine organizational behavior [30].
The ephemeral and dynamic nature of virtual organizations makes traditional tacit mechanisms for coordination (*community*) less reliable. These mechanisms, in fact, rely on a homogeneous cultural background, which needs long term relationships to be developed. The need for coordination, on the contrary, grows, given the complex structures of interests involved and the typically innovative nature of the enterprise. The importance of the explicit mechanisms (*society*), then, increases. These last mechanisms are based on formal agreements (*a priori* rules) and communication (*a posteriori* mutual adjustment).
With the terms of the ORM we can say that virtualness intrinsically implies a weakening of the relation along the *goals* and *cultural background* axes. On the contrary the relation can be strengthened through appropriate *tools* (flexible contracts and, above all ICT).
Rules are a second, critical area of intervention: a tight definition of (*a priori*) rules can prevent from opportunistic behaviors due to divergent goals and from poor coordination and misunderstandings due to a heterogeneous cultural background (*increased controllability*). On the other side they could decrease *flexibility*; a light system of rules, instead, gives space to an *a posteriori* mutual adjustment, supported by ICT and, so, to flexible processes. As a consequence, decision making is distributed, with the risk of reducing *controllability*.
Two organizational strategies with symmetric properties seem possible (see table 3):

1. Reducing the level of virtualization through a formal system of rules (which increase controllability, but risk to reduce flexibility);
2. Introducing a light system of rules and relying on an *a posteriori* mutual adjustment supported by ICT (which increases flexibility, but risks to reduce controllability).

	ORM focal axis	**Opportunities**	**Risks**
Strategy 1	Rules	Increased controllability	Reduced flexibility
Strategy 2	Tools	Increased flexibility	Reduced controllability

Table 3: Organizational strategies for virtual organizations

The existence of two possible strategies, highlights how technology does not determine univocally organizational choices and how, even when powerful communication channels are available, the choice of an appropriate coordination mechanism is still relevant.

CONCLUSIONS

Far from being heralds of the "end of organization", virtual organizations seem to be extremely complex systems where organizational aspects play, more than ever, a critical role.
Virtualization can be understood as a process driven by advances in ICT, but also by changes in the competitive environment. These changes involve both the resources and the competitors and can be summarized as an overall increase in market turbulence. Organizations need to become more flexible and rapid in reacting to threats and opportunities. The main feature of virtual organizations, then, is the use of technological and organizational tools to relax some traditional constraints to their activities and to allow dynamic partnerships.
In particular flexibility is achieved through a continuous re-design of ORs, which become, simultaneously, more complex.
New conceptual models are needed, then, to represent ORs. These models must be concise and complete at the same time.
This paper proposes the Organizational Relational Model as a framework for ORs analysis and design in virtual organizations. The impact of virtualization on each of the four axes indicated by the ORM has been analyzed.
Virtualization can be interpreted as a weakening of ORs along the *goals* and *cultural background* dimensions. Previous studies have concentrated on the possibilities offered by technological *tools*, ICT in particular. In this paper we have argued that organizational *tools* and *rules* deserve as much attention.
Two strategies have been proposed for organizations to deal with virtualness. Both take into account the multidimensional nature of Organizational Relations. Through a balanced design of ORs the ORM allows to take full advantage of the technological and organizational innovations which are driving the virtualization of contemporary organizations.

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