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The Design of the Virtual Organization: A Research Model

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Abstract

Conceptualizations of VO and uses of this term by both business press and firms increase, while theoretical controversies persist and evidence of VO remains meager and inconclusive. The research model proposed in this paper comes from an information perspective, places information technology in the central role, and intends to help resolve theoretical controversies and enrich evidence of VO.

1. Research Problem

The purpose of this paper is to propose a research model of the virtual organization (VO). Although conceptualizations of the virtual organization (VO) proliferate, they exhibit disagreements regarding necessary conditions for VO, newness of this form and other important issues. The disagreements reflect on empirical research the conceptualizations inspire. In addition, empirical research in itself is still meager. On the other hand, business press appears to be using "virtual organization" as a buzz word, while a growing number of organizations declare themselves as "virtual". All this creates an ambiguous situation in which VO appears to be everywhere, whereas we indeed cannot tell with more certainty where it really is. Put another way, defining the domain of VO and key characteristics of this form becomes a problem for research. The following discussion will elaborate on this problem, and sets the stage for proposing a working definition of VO and a research model for investigating it empirically.

2. Previous Research

First mentions of VO, sometimes refereed to as "virtual corporation", date only few years back. A consensus exist with regard to centrality of information technology (IT) in VO; many also agree that VO has a temporary character. However, disagreements are numerous. One refers to the concept scope. For example, Davidow and Malone (1992), who are credited for creation of the term, use "virtual corporation" to refer to a very broad concept encompassing any new organizational form, inter-organizational forms, etc. In contrast, Byrne (1993) assigns the same term to a transient collection of electronic communication linkages between ephemeral entities that donate their core competencies to a temporary collaboration. Another point of discord concerns necessary conditions for VO. A group of researchers believe that electronic linking is necessary for VO to exist. This assumption underlines, for example, Nohria and Berkeley's (1994) specification of VO conditions -- increased computer-mediated communication in primary activities, the rooting of organizational structure in the organization of information and IT, and networking beyond the firm boundaries. Similarly, Martin (1996) proposes a "cybernetic corporation" which sports a vast web of electronic links implemented in the Internet and intranets. In contrast, other writers either do not discuss explicitly electronic linking (e.g., Goldman et al., 1995) or overtly deny its necessity (e.g., Coyle and Schnarr, 1995).

The literature also disagrees regarding the newness of VO. A number of scholars treat VO as a new organizational form (e.g., Byrne, 1993; Martin, 1996) -- common denominators including a more flexible structure and a collaborative culture. In contrast, Venkatraman and Henderson (1997) contend that VO is not a distinct type, but that virtualness is a characteristic of every organization having "the ability to consistently obtain and coordinate critical competencies".

Empirical studies of VO are still rare, and evidence they bring is partially under the insignia of the controversies discussed above. For example, if a conceptualization of VO includes classical inter-organizational forms (e.g., joint venture and strategic alliances; cf. Goldman et al., 1995), then evidence of VO could be equivocal because it may not be clear how it is different from organizational action sets and
networks. The differentiation difficulties also arise when necessary conditions are not explicit (cf. Coyle and Schnarr, 1995). Furthermore, the equivocality of the evidence is increased by intervention of the business press which appears to be using "VO" as a trendy term ascribable to any organization that either calls itself "virtual" (and many do so) or is somehow conspicuous in appearance.

3. Toward a Working Definition of VO

In order to cope with conceptual and empirical equivocality discussed above, a working definition of VO needs to be formulated and then tested empirically. A standard dictionary defines "virtual" as "being in essence or effect, not in fact; not actual but equivalent" (Webster, 1984). In the organizational domain, this effect not fact can be instantiated in an impression that there is what customarily is presumed to be one organization (e.g., a company), while in fact there is no such a thing. What does exist are the people and material resources outside the same or immediate organizational boundaries that are somehow brought together so that they produce an impression of a single organization. For instance, there could arise an impression that spatially scattered people are working at the same locale, or that resources from different firms function like they are owned by one.

Formulating a working definition of VO needs to proceed toward resolving the controversies discussed above. The following propositions are therefore proposed:

(a) There are two necessary structural conditions for VO to exist: (1) geographical dispersion of organization units; (2) electronic linking of production process. The former defines VO as a spatially dispersed organization with a dispersion of individuals, groups, departments, or whole companies at minimally two locations. The second condition implies that the production process in VO cannot be completed without support of IT in linking the parts of VO. This proposition has some support in literature (cf. Lucas & Baroudi, 1994).

(b) VO is a distinct organizational form, not just a property of any organization. This proposition excludes from the VO universe organizations that can use communications extensively, but not in a way critical to completing the production process (e.g., a multinational corporation with dispersed parts being on the same satellite network whose use, however, is not critical for completing the production process).

(c) VO is a new organizational form. The implication here is that VO inherits certain organic characteristics of new forms (cf. Travica, 1995), while being differentiated from them minimally on the basis of its necessary conditions. For example, VO can share with adhocracy the property of design volatility, while VO differs from an adhocratic corporate instruction unit (see Mintzberg and McHugh, 1985) which has no spatial dispersion nor electronic linking.

A working definition of VO can now be formulated: VO refers to a temporary or permanent collection of geographically dispersed individuals, groups, organizational units -- which do or do not belong to the same organization -- or entire organizations that depend on electronic linking in order to complete the production process.

4. A Model for Investigating VO

A research model that can be used for investigating empirically VO appears on Figure 1 below. It contains nine inter-related aspects with IT being in the center. The model applies to any industry; 'production' simply means any work process leading to 'product' which is either a service or a good. In addition, the model builds on the propositions outlined in Section 3. Most importantly, the two necessary conditions for VO -- spatial dispersion and electronic linking without which production process cannot be completed -- make part of the VO structure in the model. The following discussion will outline just those relationship in which IT participate.
The next important characteristic is the central role of IT. In VO, IT supports production, binds the organization together and reflects in all other organizational aspects. Specifically, production process is supposed to be information rich (in case of certain services, it indeed is information processing/production), and IT is the tools for carrying it out both at individual locales and across. The electronic linking implies that work matter (or critical parts of it) are being transferred across VO locales via IT. Another linking dimension refers to the support of communication between workers. IT, furthermore, supports organizational information which in turn can mirror social organization (cf. Nohria and Berkley, 1994). It is hypothesized that this aspect instantiates in, for example, information construction practices that depend on the problem at hand (such as exceptions occurring during a task execution), the IT available and the data accessible (cf. Rosenbaum, 1996).

IT also relates to the aspect of virtualness culture. This implies that VO members need to adjust to the dispersed organizational context which precludes socialization processes pertinent to non-mediated contexts. That being the case, it is important to understand how IT influences creation of stories an beliefs that bind VO members and parts together; what sort organizing images does the IT-mediated context create in the cognition of VO members; how do VO members cope with the problem of developing trust (cf. Goldman et al., 1995; Handy, 1996)?

IT is also related to organizational learning which in itself could be crucial to sustaining VO (cf. Martin, 1996). Not only that VO members need to learn how to use IT, but they also have to learn about each others' skills, expertise, work habits and so on. How instrumental and/or constraining is IT in these processes of learning? -- is certainly important to ask. Another important relationship within VO is that between IT and the aspect of organizational memory management. One can assume that the dispersed character of VO increases the importance of maintaining organizational memory which in turn could be an integrating force; on the other hand, there can be serious limitations to deal with (e.g., memory fragmentation). How, then, IT contributes to the memory management? -- naturally emerges as a question to ask. This is largely a domain of unknown and therefore empirical investigation needs to be open to learning through less structured observation. Finally, the aspect of virtual context attempts to capture organizational age, sort of business, history, etc. Are IT-intensive businesses more likely to organize as VO; is there any relevance to history of relationships between the people who come together to create VO? - these are some of questions that motivate the contextual variables.

The model is to be used for guiding empirical investigation that uses both quantitative and qualitative lenses. The latter implies that grounded theory-based learning could develop in the investigation process (Glasser & Strauss, 1967), which may result in discovery of new dimensions addable to the model.

References


Webster (1984), *Webster's Encyclopedic Dictionary*.

![Figure 1 Research Model of VO](image-url)