

Virtual Organizations: A Definitional Framework

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Abstract

In recent years the concept of the virtual organization (VO) has received a great deal of attention in both the business press and academia. While a fair amount of research has focused on the virtual organization, very little agreement exists on how to define it, or even approach it as a concept or an organizational form. This has been further complicated in recent years by the increased trend towards outsourcing job functions by companies and the associated research that has gone with this. It is difficult to research virtual organizations, and the processes organizations follow to become virtual, without a good framework in which to place the research. It is impossible to relate or compare the research that has been done under various definitions of the VO, without a common structure to relate them to one another. The purpose of this paper is not to develop another definition of the virtual organization, but rather to provide a framework for understanding the virtual organization to assist researchers in this area.

Keywords: Virtual Organizations, definitions, frameworks, virtuality, outsourcing

1. INTRODUCTION:

With the advent of the Internet and other associated computer and telecommunications technologies, a great deal of attention has been paid to the new forms of organizing these technologies have enabled (Drucker, 1998; Hughes, O'Brien, Randall, Rouncefield, and Tolmie, 2001). The distributed and pervasive nature of the Internet, and the ease with which companies can now communicate across great distances, have made new forms of organizing possible for companies. These various forms of organizing have attractive benefits for firms, including cost savings and increased flexibility (Drucker, 1998). As companies have taken advantage of these new technologies to distribute their work and workers, they have moved towards being "virtual organizations".

But what is a virtual organization? Despite the widespread use of the term in the press since it's conception in the early 1980's

(Mowshowitz, 1994), there seems to be little agreement in the academic literature on what, exactly, this is. Some of the definitions try to be exclusive, trying to define the exact qualities of a VO (Rahman and Bhattachryya, 2002; Walter, 2000), while others tend to be more inclusive, viewing the VO as a trend or framework rather than a specific type of organization (Mowshowitz, 2002; Shekhar and Ganesh, 2007; Venkatraman and Henderson, 1998). Regardless of which definitions are used, the organizations in question are referred to as "virtual", both in the business and academic literature. This has lead to some confusion within the field and serves as a barrier for developing and applying theories to this phenomenon.

This situation is further complicated by the fact that outsourcing is closely related to the virtual organization. By outsourcing certain activities, an organization is becoming more virtual. The many concerns and challenges associated with outsourcing various business

functions are generating a great deal of interest within the literature, again both popular and academic, because of the possible benefits and pitfalls of following this strategy. This important area of study falls under the enormously broad umbrella of virtual organizations. Finding a way to align the concept of the virtual organization and outsourcing would be very valuable for research, as it would provide the field with a common point of reference.

A common basis for a study of the virtual organization would allow the academic community to have a common frame of reference and would also allow us to more easily establish the boundary conditions for the theories that are used to study these organizations. This is required for progress to be made in this area, as it does not seem reasonable to assume that a theory that works in a purely traditional organization would work in a purely virtual one or vice versa. And, again, the broad varieties of the definition of virtual cause problems here. If a study finds a certain factor contributes to one definition of the virtual organization, would it contribute to all of them?

Having a more detailed framework would allow researchers to explore the boundary conditions of various theories, as well as providing a link between the various studies of the virtual organization. Rather than saying the research is examining a virtual organization, it would be able to specify the type of virtual organization within a common framework. The purpose of this paper is to examine the existing literature on virtual organizations and then suggest a common framework for future research.

2. LITERATURE REVIEW

The term virtual organization was first introduced to the language in the early 1980's (Mowshowitz, 1994), though it did not receive much academic attention until the early 1990s. Since this time, the concept of the virtual organization has become firmly entrenched in the literature and in the minds of researchers and business professionals.

Many definitions of the virtual organization, especially those early definitions, showed some tendencies towards technological determination. These definitions assumed that

because the technology was available, there would be no more "traditional" companies in the future (i.e. (Rahman and Bhattachryya, 2002)). All products and services would be developed and delivered by joining unrelated entities together to use their specialized skills. These temporary organizations would stay together long enough to accomplish the task and then disband. This type of organization would, according to this line of thinking, completely replace the "old" form as individuals and organizations realized the enormous efficiencies to be gained (Rahman and Bhattachryya, 2002; Walter, 2000).

While not all of the definitions had these tendencies towards technological determinism, some had a tendency to create narrow definitions of a virtual organization (i.e. (Walter, 2000)). A good example of a narrow definition comes from Travica (1997): "VO's (virtual organizations) refers to a new organizational form characterized by a temporary or permanent collection of geographically dispersed individuals, groups or organization departments not belonging to the same organization – or entire organizations, that are dependent on electronic communication for carrying out their production process" (Travica, 1998, p. 67). While this definition does not carry any type of technological determinism, it is a very narrow definition, and a reasonable example of a number of others. This does not cover any number of possible permutations of virtuality that organizations are exploring that have been categorized as virtual by other publications.

Other definitions tended to create overly broad categories, such that virtually any large multinational corporation would be defined as a virtual organization. For example, Rahman and Bhattachryya defined a virtual organization as "an organization distributed geographically and whose work is coordinated through electronic communication" (Rahman and Bhattachryya, 2002, pp. 39-40). There are a number of broad definitions of the virtual organization (Chutchian-Ferranti, 1999; Kishor and McLean, 2002; Zhuge, Chen, Feng, and Shi, 2002), which may have contributed to research moving away from categorizing the virtual organization as a single, definable thing, and lead to it being classified more as a movement.

For example, defining the virtual organization as an architecture, rather than as a specific organizational type (Venkatraman and Henderson, 1998) moves us away from the notion of a virtual organization as a single specific thing. While this provides a useful abstraction from overly narrow definitions, it also makes it difficult to talk about a single type of virtual organization, or what theories or management methods could be used at a given organization. While many VO's are unique, and make use of different aspects of virtuality, it seems likely that there would be some characteristics that would link them and enable some cross study.

Contributing to this line of abstracting the virtual organization, the virtual organization was introduced as a theory, rather than as a specific definition. In a recent book: "We refer to it variously as a paradigm or principle to emphasize the lack of any specific organizational form attaching to it." (Mowshowitz, 2002, p. 24) While the concepts and broad definition presented in this work can encompass the many permutations of the virtual organization, it's very flexibility makes it difficult to apply in research.

While one stream in the research on virtual organizations was moving towards defining the VO as a paradigm or framework, another was exploring the concept that companies exist along a continuum of virtuality (Burn and Ash, 2000; Goldman, Nagel, and Preiss, 1995; Hoffman, Novak, and Chatterjee, 1995). The concept that organizations can be more or less virtual has been introduced in several papers (Panteli and Dibben, 2001; Venkatraman and Henderson, 1998). There have been several approaches to this, but none have provided very clear definitions of how to measure the virtuality of the organization. While these articles agree that the organization can adopt many points along a line, they are still all classified as a virtual organization. This also causes some problems, as there will clearly be different challenges for organizations located at different points along the virtuality curve.

While research and interest in virtual organizations, and in making organizations more virtual, continues, little has been done to settle on a set of terms for the virtual organization. In fact, changes in the availability of skilled labor in a number of markets around the world has opened up new areas for re-

search and practice in the area of virtual organizations as more organizations experiment with various ways of achieving virtuality. Recently, the interest in outsourcing has added a new dimension to this debate. Clearly an organization that outsources portions of its work processes is becoming more virtual, so how should this be dealt with? How does outsourcing fit in?

Regardless of the definition used, the term is used frequently in both the business and academic press. This is due to the enormous implications of turning into a virtual organization (Coates, 2001; Koch, 2000; Staples, 2001). Many articles have noted the potential implications for the firm (Markus, Manville, and Agnes, 2000; Venkatraman and Henderson, 1998), the employees (Ariss, Nykodym, and Cole-Laramore, 2002; Coates, 2001; Koch, 2000; Parus, 1999) and society at large for the changes that these organizations are currently undergoing. The sheer implications of this new organizational form demand a great deal of research, but how does this research fit together? Do the theories examined in these various articles fit together? Can the findings from one article looking at the VO be applied to another, or only in certain circumstances?

This confusion calls for a clearer structure in which to discuss the virtual organization. It is clear that there is not a simple, concise definition that will both encompass the many potential forms for the organizations and allow the level of specificity required by the academic community to perform the type of research that must be completed to understand this phenomenon. What can be done to reconcile these various definitions?

3. DEFINITIONAL FRAMEWORK

While there are many different definitions for the virtual organization, several concepts are consistent across them. Specifically, the concepts of geographical dispersion, ownership of resources, the level of electronic communication, level of control over the organization and duration appear with great frequency in the discussion of virtual organizations. Each of these concepts is explored in turn, and then applied to the model proposed in this paper.

It is generally agreed that the virtual organization is more widely distributed geographically than the traditional organization. While the level of dispersion is not defined (i.e. from Brooklyn to Queens or from Indiana to India), the idea that the resources required for the production of goods or services are spread out in a virtual organization is broadly used. The geographical distribution of the organization adds certain challenges that "traditional" organization might not face. These challenges would include distribution of work across multiple time zones and cultures (Hughes et al., 2001).

It is also common for definitions of virtual organizations to state or imply that the organizations have a lower level of ownership of resources than is typical for the traditional view of the organization. One example of this would be outsourced manufacturing (Ariss et al., 2002). The concept of ownership also encompasses the notion of control. In the case of the open source software movement, there is no central control over the organization, and there is no ownership of the "organization" that is writing the software (Markus et al., 2000). In fact, the term organization is used very loosely here, as it is really an assembly of individuals with a common interest and skill set who work together to achieve a common goal.

The level of electronic communication is assumed to be high in virtual organizations, because it is this technology that enables the organizational form (Drucker, 1998; Mathias, 1999; Venkatraman and Henderson, 1998). However, not every organization will use the same level of electronic communication, because not every organization is as virtual as every other. Those organizations with low electronic communication would be of less interest to the IS research community as they have already been extensively studied as "traditional" organizations.

The open source software movement is used as a good example of a virtual organization with little or no centralized control over the means of production (Markus et al., 2000). The level of control exhibited by a virtual organization does help to define how virtual it is, but it seems that this concept could be usefully combined with that of ownership of the resources. It would be reasonable to expect that a company, which owns or employs the means of production, would have a

greater level of centralized control over them than an organization which did not own or employ them.

Finally, duration is a consideration for many of the definitions of the virtual organization. In some of the more radical definitions of the VO, groups come together for short periods of time, perform a task and then disperse (Byrne, 1993; Katzy, 1998). This can be very common when looking at temporary partnerships formed by organizations (Malhotra, Majchrzak, Carman, and Lott, 2001). For the purposes of this model, time is a fourth, and temporarily unexplored, dimension. While this is a concept for some of the definitions of the VO, even these definitions can be related using the model presented below. This is discussed in more detail later in the paper.

For this model, the concepts of Ownership, Electronic Communication and Geographic Dispersion are used. By combining these three concepts, the model presented in figure 1 can be derived (see Appendix 1). By placing each concept along a continuum, we allow for varying degrees of virtuality along multiple dimensions. We also arrive at natural dividing lines between different types of virtuality by looking at the eight quadrants formed by the three dimensional representation of the model.

This framework provides a method to relate both the definitions that have been presented in the literature, and to relate the various studies that have been performed on VOs. This is not intended to be a comprehensive list all of the theories that apply to each quadrant, but rather a starting point. Likewise, this is not intended to be a comprehensive list of organizational forms, but it does provide some examples of what could be expected within each of these quadrants.

Quadrant 1:

High Dispersion, High Ownership, High Electronic Communication

This could apply to any traditional multinational organization. They are highly dispersed, own their plants, and frequently use electronic communication as the only means of communication. An enormous amount of research has taken place in this quadrant in both Management and Information Systems.

Quadrant 2:

High Dispersion, Low Ownership, High Electronic Communication

This could be an example of a company that has off-shored some of its operations. It is highly dispersed, does not own the operations and uses electronic communications extensively. Examples could include Dell and Apple, which have both outsourced their manufacturing. Dell could be an even better example, based on the number of operations they have outsourced. The open source movement (i.e. Linux) could also fall within this category (Markus et al., 2000). This quadrant would also encompass those more radical definitions of the VO.

Quadrant 3:

High Dispersion, Low Ownership, Low Electronic Communication

It seems unlikely that many organizations would fall into this category. It could be argued that some organizations that are widely dispersed, but rely on face to face communication could fall into this quadrant. While examples of this type of organization are rare, it could be argued that certain areas of intelligence gathering would fall into this category.

Quadrant 4:

High Dispersion, High Ownership, Low Electronic Communication

This could be an example of an old line manufacturing company that did not make extensive use of electronic means to communicate with its various divisions or plants. While this would have been a very common example 40 to 50 years ago, it would seem likely that this model has since fallen by the wayside. However, this would still provide a way to relate to studies performed on these models and see how they relate to studies of more recent organizational forms.

Quadrant 5:

Low Dispersion, High Ownership, High Electronic Communication

This quadrant would contain companies that are located in a smaller geographical region, own their operations and use electronic communications extensively. There are any number of companies that would fall into this category, as most modern organiza-

tions, whether distributed or not, use electronic means of communication.

Quadrant 6:

Low Dispersion, Low Ownership, High Electronic Communication

This could be an example of a company that has "near shored" its operations, possibly even outsourcing them to a company locally. This has been occurring with greater frequency, especially in Europe. This quadrant shares some properties with quadrant 2, but would not be as likely to have some of the problems with cultural norms and time zones that organizations in quadrant 2 would.

Quadrant 7:

Low Dispersion, Low Ownership, Low Electronic Communication

Again, it seems likely that not many organizations would fall into this category, although perhaps organized crime could. There is low ownership, operations are local and electronic communications are not used. Perhaps a local organized crime family that was concerned about eavesdropping would qualify.

Quadrant 8:

Low Dispersion, High Ownership, Low Electronic Communication

This would be an example of a small town operation. They have very few locations, own all of it, and have little need for electronic communications. Of course, even this model would be challenged by the fact that many suppliers now have their order entry systems on line and could be requiring their customers to use that means of communicating with them.

Many of the definitions currently in the literature are good for pure VO's, or work well at a high level. However, narrow models leave us to conclude the virtual organization is a rare beast indeed, while high level definitions leave a great deal open to interpretation. By setting up a three dimensional model, this paper helps establish some boundaries that can be recognized when talking about Virtual Organizations, and provides a way to classify and compare the research that has taken place under the varied definition of VO. While a broad definition of a VO would allow a company to fall into any

quadrant, looking at the factors presented in this model would enable the researcher to restrict the organization to a single area. Doing so would allow the researcher to determine what theories might apply to companies within those quadrants or help companies trying to move between them and to determine what strategies should be employed and what skills will need to be developed to be successful in these endeavors.

4. FUTURE WORK

One of the things that may need to be developed in future iterations of this model is the concept of time. Clearly the duration of the organizations existence will have an impact on which theories are applicable, especially if those working in the organization have foreknowledge of the duration, as would be the case in temporary partnerships formed in industry. This poses an interesting set of questions that should be explored in future research.

Another area for future work in this area will be the development of reliable measures for each of the axes presented in the model. This would allow for an easy comparison of results across multiple studies and would also define what the break points are for each axis in the model. While work has been done on each of these measures, it is beyond the scope of this paper to try to integrate them into a unified whole.

Examining which theories will hold in each of these quadrants is also a rich area for future study. While there is certainly a great deal of research out there that could be classified as belonging to one quadrant or another, determining which theories can go between these would be a worthwhile endeavor.

5. CONCLUSION

In this paper, the past literature on Virtual Organizations has been briefly reviewed and an operational framework for future research in the area has been presented. The purpose of this paper was not to create another definition of what a virtual organization can be, but rather to provide a framework on which to build future research and to provide possible boundary conditions for theories of the virtual organization.

6. REFERENCES

- Ariss, Sonny, Nykodym, Nick, and Cole-Laramore, Aimee A. (2002). "Trust and technology in the virtual organization". *SAM Advanced Management Journal*, 67(4), 22-25.
- Burn, J. M., and Ash, C. (2000). "Knowledge management strategies for virtual organizations". *Information Resources Management Journal*, 13(1), 15-23.
- Byrne, J. (1993). "The Virtual Corporation". *Business Week*, 36-41.
- Chutchian-Ferranti, J. (1999). "Virtual corporation". *Computerworld*, 33, 37, 64.
- Coates, J. F. (2001). "The HR implications of emerging business models". *Employment Relations Today*, 27(4), 1-8.
- Drucker, P. F. (1998). "Management's new paradigms". *Forbes*, 152-177.
- Goldman, S. L., Nagel, R.N., and Preiss, K. (1995). *Agile competitors and virtual organizations: Strategies for enriching the customer*. New York: Van Nostrand Reinhold.
- Hoffman, D. L., Novak, T. P., and Chatterjee, P. (1995). "Commercial scenarios for the web: Opportunities and challenges". *Journal of Computer-Mediated Communication*, 1(3), <http://www.ascusc.org/jcmc/vol1/issue3/hoffman.html>.
- Hughes, J. A., O'Brien, J., Randall, D., Rouncefield, M., and Tolmie, P. (2001). "Some "real" problems of "virtual" organization". *New Technology, Work and Employment*, 16(1), 49-64.
- Katzy, B. R. (1998). *Design and implementation of virtual organisations*. Paper presented at the HICSS, Hawaii.
- Kishor, Rajiv, and McLean, Ephraim R. (2002). "The next generation enterprise: A CIO perspective on the vision, its impacts, and implementation challenges". *Information Systems Frontiers*, 4(1), 121-138.
- Koch, C. (2000). "Collective influence on information technology in virtual organizations - Emancipatory management of technology?". *Technology Analysis & Strategic Management*, 12(3), 357-368.

- Malhotra, Arvind, Majchrzak, Ann, Carman, Robert, and Lott, Vern. (2001). "Radical innovation without collocation: A case study at Boeing-Rocketdyne". *MIS Quarterly*, 25(2), 229-249.
- Markus, M. L., Manville, B., and Agnes, C. E. (2000). "What makes a virtual organization work?". *Sloan Management Review*, 13-26.
- Mathias, C. J. (1999). "Virtual = Real: The distributed workplace opportunity". *Connecting the Distributed Workforce*, 3-6.
- Mowshowitz, Abbe. (1994). "Virtual organization: A vision of management in the information age". *The Information Society*, 10(4), 267-288.
- Mowshowitz, Abbe. (2002). *Virtual Organization: Toward a Theory of Societal Transformation Stimulated by Information Systems*. Westport, CT: Quorum Books.
- Panteli, N., and Dibben, M. R. (2001). "Revisiting the nature of virtual organizations: Reflection on mobile communication systems". *Futures*, 33(5), 379-391.
- Parus, B. (1999). "A new deal to attract and retain talent in the virtual workplace". *ACA News*, 29-32.
- Rahman, Z., and Bhattachryya, S. K. (2002). "Virtual organization: A strategy". *Singapore Management Review*, 24(2), 29-45.
- Shekhar, Sandhya, and Ganesh, L. S. (2007). "A Morphological Framework for Virtual Organizations". *IIMB Management Review*, 19(4), 355-364.
- Staples, D. S. (2001). "A study of remote workers and their differences from non-remote workers". *Journal of End User Computing*, 13(2), 3-14.
- Travica. (1998, April 27-28). *Organizational virtualness*. Paper presented at the Vo-Net Workshop.
- Venkatraman, N., and Henderson, John C. (1998). "Real strategies for virtual organizations". *Sloan Management Review*, 40(1), 33-48.
- Walter, D. (2000). "Virtual organizations: New Lamps for old". *Management Decision*, 38(6), 420.
- Zhuge, Hai, Chen, Jian, Feng, Yulin, and Shi, Xiaoqing. (2002). "A federation-agent-workflow simulation framework for virtual organisation development". *Information & Management*, 39, 325-336.

Appendix 1 – Figure 1

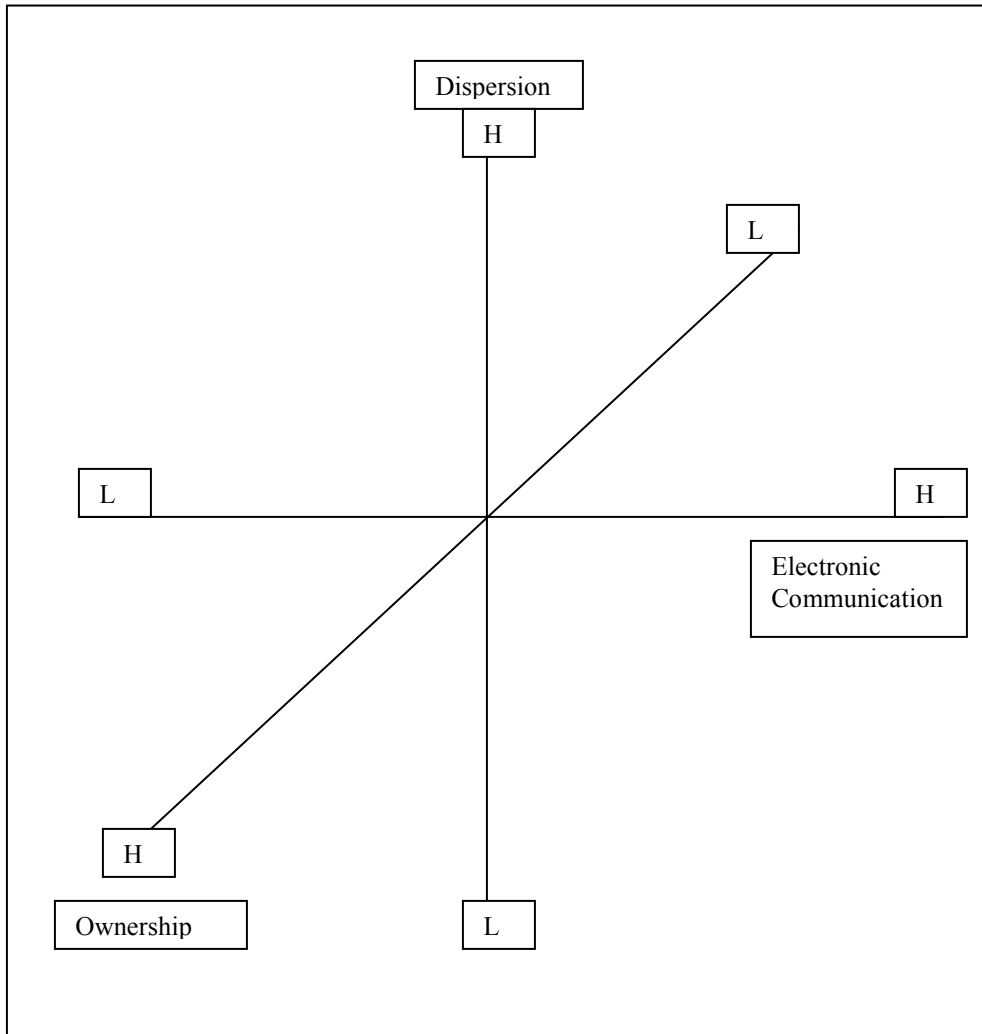


FIGURE ONE – A Framework for the research of Virtual Organizations