



Strategic Use of Virtual Organization

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INTRODUCTION

In the modern business world, it is very common to use Internet technology to create e-businesses, implement e-commerce, etc. However, what is completely missing is the rethinking of the concepts of time and space in virtuality. What we are shaping in the Internet is essentially different from the conventional concepts of time and space after removing the constraints of time and space in business activities in the network. Without knowing this fact, all activities in virtual space will be redundant to what we have done in the real world, resulting in the Internet bubble economy.

This paper introduces 'desocialization', a new premise of timelessness and spacelessness in virtual organization. Our efforts now focus on imposing the strategic use and adoption of virtual organization. We must clearly state that the foundation of this study is to emphasize the roles of human players in business organizations. Therefore, virtual organization in this study is best described as a socio-technical product of the social activities of human players. With this newly defined virtual organization, it is fairly simple to re-construct strategies to manage virtual organization.

Most studies in strategy posit that the goal of strategy is to gain and sustain competitive advantages for a long haul (Ginsberg and Venkatraman, 1985). Accordingly, organizations with rare, valuable, and costly-to-imitate resources may enjoy a period of sustained competitive advantage in choosing and implementing their strategies and subsequently achieve extraordinary economic performance (c.f., Barney, 1997). Note that sustained competitive advantages denote something that cannot be displaced by strategic imitation by others or by substitutes. In this study, we introduce resource-based views to gain insight into the sustained competitive advantages in virtual organization. Thus, the purpose of this paper is to find the strategic use of virtual organizations in the context of the new premise, desocialization.

RESOURCE-BASED VIEW AND IT

Resources were formerly represented only by the organization's physical assets and capital (Barney, 1997). However, the term 'resources' has been broadened to an extent that encompasses all of the organization's assets (e.g., capabilities, competencies, organizational processes, organization attributes, information, and knowledge) that enable the organization to conceive and implement strategies that improve its efficiency and effectiveness (Daft, 1983). Hence, this study employs the latter perspective of resources, because virtual organization's resources are mainly focused on organizational processes with human players and formal and informal structures of organizations.

The resource-based view of organizational strategy has two key assertions: resource heterogeneity and resource immobility (Mata, et al., 1995). The organization is said to have sustained competitive advantages if it possesses unique resources (resource heterogeneity), and places a significant cost disadvantage to competitors when they attempt to obtain, develop, and use the resources (resource immobility). In other words, the organization has sustained competitive advantages, when it executes a unique (set of) strategy that requires resources and capabilities, which adds values and enforces competitors to face significant disadvantages in acquiring them (Mata, et al., 1995). Essentially, a strategy is based on the internal analysis of the organization in terms of resources and capabilities, and value, rareness, imitability, and organization of resources (VRIO) determine resource heterogeneity and immobility. Hence, the organization should be able to answer a series of questions to

ensure a sustained competitive advantage: is a resource valuable?; is it heterogeneously distributed across competitors?; and is it imperfectly mobile? Then, a good understanding of the use of internal resources and capabilities may provide organizations direction in terms of implementing (a set of) strategy (e.g., Teng, Cheon, and Grover, 1995; Andreu and Ciborra, 1996; Duhan, Levy, and Powell, 2000).

What is the role of Information Technology (IT) in the process of implementing strategy? Many studies found that while implementing their strategy, organizations exploit IT as a valuable resource that captures sustained competitive advantages (e.g., Brown and Magill, 1994; Das, Zahra, and Warkentin, 1991; Karimi, Gupta, and Somers, 1996; Teng, Cheon, and Grover, 1995). For instance, among IT-related/generated resources, proprietary technology and technical/managerial IT skills are found to be potential sources of sustained competitive advantage for organizations (c.f., Mata, et al., 1995). This is in line with three strategic roles of IT proposed by Johnston and Carrico (1988). According to them, IT can be deployed strategically in three different roles: traditional, evolving, or integrated, which will be elaborated later.

In sum, resource-based views imply that IT is a potential source of sustained competitive advantages and creates idiosyncratic capabilities and definitive core competencies. We apply the resource-based view to virtual organizations in an attempt to seek more effective and strategic ways to operate the virtual organization. Specifically, the resource-based view of strategy is applied to the life cycle and dynamic view model of virtual organization proposed by Lee and Jayatilaka (2002).

DESOCIALIZATION - THE NEW PREMISE OF VIRTUAL ORGANIZATION

Many studies attempt to explain virtualization, but none of them gives us a complete explanation. Here, we discuss virtualization as *desocialization* due to its unique characteristics of timelessness and spacelessness. Since virtual organization started from the interconnected computer networks with high-speed data transmission, it removes distance boundaries and time constraints (c.f., Mowshowitz, 1997). Desocialization, in this context, means it becomes less frequent to interact with other human players in traditional settings. Thus desocialization does not mean individualism. Rather, it implies the alternative way of socialization, virtualization, in virtual space.

The most important fact of desocialization is the rapport between members of the organization. Unlike in traditional organization settings, members of virtual organizations build pure essence and trust. Biased impressions and thoughts are hardly exchanged due to the characteristics of open environment. Another aspect of desocialization is "emptying of organization" where emptying of information and knowledge has already occurred (Giddens 1984, 1990). Every effort is made to convert business data into information systems (IS). Thus IS generates information that helps in the emptying of information in organizations. IT made this phenomenon possible that leads to the separation of information from its organizations. Recently, knowledge, a supposedly higher format of information, is managed by knowledge management systems (KMS), another evidence of the separation of knowledge from its organizations. Because data, information and knowledge of organizations are emptying from their organizations, the separation of the organization from its four dimensional entity is implemented in the form of virtual organization (Giddens 1984,

1990). Desocialization will explain the life cycle of virtual organizations and the dynamic view of virtual organizations in terms of social norms, cultures, and values (Lee & Jayatilaka, 2002).

Life Cycle of Virtual Organization

Lee and Jayatilaka (2002) proposed that the three stages of virtual organizations emerged from metaphorical analysis in virtual organization literature. The first stage is the *formation* of the virtual organization (conceptualization). This is a stage where the organization comes into existence as a formal organization. After the initial formation, the organization goes through a process of *virtualization* where social mechanisms develop. Finally, the virtual organization goes through *expansion*. This theory imposes the meanings of ontology and epistemology of virtual organization. The metaphors of science and technology become the foundations for virtual organization and they set its properties – formation, ontological establishment. The virtual organization becomes a possibility due to technology. After the virtual organization is formed, the next step is to embellish it as a meaningful organization with the metaphors of culture and relationship – virtualization and epistemological establishment. Finally, it becomes a balanced virtual organization. Then conflicts occur within the organization to compete and survive among members that leads to the metaphor of war, expansion.

Dynamic View of Virtual Organization

We, as a society, possess enough IT capabilities to convert our imagination into a possible form – virtual organization – as we discussed in the previous section. The IT capabilities make the formation of virtual organizations feasible in practical use. Although IT plays a crucial role in the formation of today’s virtual organization, there are other factors (which are conceptualized as virtualization and expansion) that interact with the concept of formation through IT. Therefore, we can take an alternative view of virtual organization. Lee and Jayatilaka (2002) proposed Figure 1 to show the dynamic view of virtual organization. It is a dynamic view because it proposes the relationship between each component of the virtual organization.

In Figure 1, there are two types of lines: continuous lines and discontinuous lines. Continuous lines represent structuration (Giddens, 1984) between each component. Structuration is divided into institutionalization interaction and engineering interaction (Barley and Tolbert, 1997). Line a is an engineering interaction because there is no human player (members of virtual organization) involved. Instead, designers or developers of virtual organization mainly participate in this process. Line b, c, d, and e are institutionalization interactions since these are structured by the interaction between human players and institutions (Giddens 1984). Line f, g, and h are neither institutionalization interactions nor engineering interactions. These are the special forms of human interests exchange (human interfering interaction) that explain why members of virtual organizations compete (line g and h) or cooperate (line f).

A virtual organization is not a mere technical foundation to substitute the real world counter part, but is an organization that exists in our ontological and epistemological recognitions. Its ontological meaning enforces membership of associated organizations and its epistemology enhances the social realization of being a member of virtual organizations. For instance, trust among members explains the new phenomenon of virtual organizations. Members of

virtual organizations build trust based on impersonal information/communications such as person’s background, exchanges of emails, fax, postings, etc. This is not the lack of a socialization process but is an alternative way of compensating the lack of a traditional communication channel of trust building - virtualization. It is believed that not every virtual organization has similar ways of replacing traditional communication channels with desocialization. Virtualization implies that each virtual organization is expected to determine the most appropriate way of facilitating a desocialization process of its own. In addition, dissemination and sharing of information and knowledge (e.g., knowledge management) within virtual organizations can be another example. Virtual organization which is used to leverage the expertise of each diversely-located member can be a good example of desocialization. The above examples are good sources of sustainable competitive advantages explained in the next section.

In the next section, we emphasize on how effectively and efficiently virtual organizations can be operated in terms of utilizing or deploying resources to create a sustainable competitive advantage.

STRATEGIC USE OF VIRTUAL ORGANIZATION

Strategy and Life Cycle of Virtual Organization

As mentioned earlier, IT can be deployed strategically in three different roles: traditional, evolving, or integrated (Johnston & Carrico, 1988). In a traditional role, IT performs mere back office functions in a way that automates, maintains, and supports office routines, inventory control, and cost-saving administrative operations. IT has evolved to support organizational strategy. However, its competitive potential is not explicitly incorporated. That is, once a strategy is established, IT is deployed to champion that strategy so that the organization can achieve its intended goal. In an integrated role, IT is indispensable to organizational strategy. IT enables the organization to seek opportunities by creating new products and services, and to alter linkage with suppliers and customers. That is, organizational strategy is driven by IT and IT should be capable of changing the structure, processes, and scope of organizations in a way that facilitates the competitive use of IT. Figure 1 shows the relationship between strategic deployment of IT and the virtual organization life cycle.

A *formation* is a stage in which a virtual organization comes into existence as a formal organization. That is, a virtual organization is formulated and structured to accomplish the shared goal of participants (science). Organizations on virtual space become possible due to advanced information and communication technologies (technology). At the stage of formation, Virtual organizations deploy IT in a traditional role such as supporting and improving administration of member activities/tasks and decision-making. IT is deployed focusing on establishing linkages and operations between functions and members/participants (c.f., Johnston and Carrico, 1988). Hence, goals and technologies cannot be the source of sustained competitive advantage because they are not heterogeneous and immobile. At best, a virtual organization can achieve (temporary) competitive parity being the first to use technology (first-mover advantage). Eventually, competitors can catch up by accessing the necessary resources such as capital and technology.

Virtualization is a stage and process in which social mechanisms develop. Virtual organizations flourish by establishing their own culture (shared

Figure 1: Dynamic View of Virtual Organization

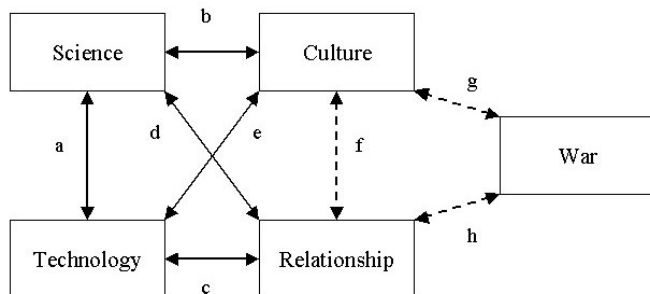
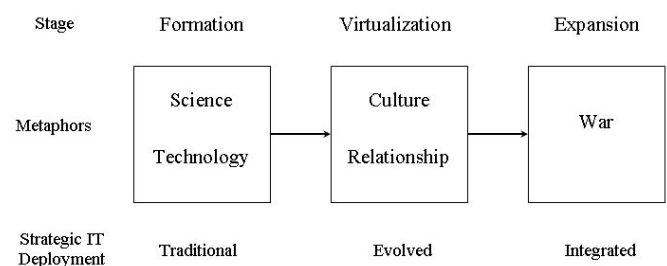


Figure 2: Strategic IT deployment and VO life cycle



belief and value system), norms, and standard operating procedures (SOP), etc. Culture, norms, and SOPs are institutionalized within virtual organization through relationships. In other words, virtual organization at this stage defines and develops strategies at the corporate and business levels so that IT is evolved to facilitate, support, and/or capitalize on the strategies (c.f., Johnston and Carrico, 1988). This can be interpreted as an establishment of guidelines/directions that ensure building relationships among members, which is socially complex and ambiguous to figure out. That, in turn, leads to sustainable competitive advantages. A collaborative and cooperative working environment that results from uniquely embedded cultures in virtual organization can be another source of sustained competitive advantage.

Expansion is a stage in which a virtual organization is expected to develop and grow for the next level. Virtual organizations become organizations in which conflict and cooperation among members/participants become a part of organizational norms in an attempt to be a complete organization. In doing so, virtual organizations deploy IT in more proactive and integrated ways to better manage conflict and encourage cooperation. Integrated IT can provide a better communication channel and linkages among members/participants and ultimately establish new relationships and SOP in its newly defined boundary. In this regard, a virtual organization may continue to ensure the competitive use of IT to achieve benefits in managing conflict and cooperation (c.f., Johnston and Carrico, 1988). For instance, conflict has two opposite effects, depending on how it is managed. If managed better, it creates productive discussion and stimulates creative thinking (i.e., cognitive c-type conflict; Amason, et al., 1995). Otherwise, it becomes detrimental to the virtual organization by fostering cynicism and distrust among involved members (i.e., affective a-type conflict; Amason, et al., 1995). Well-managed c-type conflict (while minimizing the effect of a-type conflict) would be a key to the successful expansion of virtual organization. This c-type conflict could be achieved by facilitating frank communication and open consideration of different alternatives and opinions. The way of resolving/managing conflict (c-type conflict) can be a unique know-how that is heterogeneous and hard to imitate (immobile) tacit asset (c.f., Amason, et al., 1995).

Strategy and Dynamic View of Virtual Organization

As mentioned, resources and capabilities include an organization's financial, physical, individual, and capital attributes that enable the organization to coordinate and exploit its other resources to generate competitive advantages (c.f., Hitt and Jones, 1992; Stalk, Evans, and Shulman, 1992; Prahalad and Hamel, 1990). We investigate the dynamic view of virtual organization in terms of VRIO analysis.

Value of resources means the ability of the organization's resources and its capabilities to respond to external competition. In order for resources to be of value, they must enable the organization to seize opportunities or neutralize external threats. Engineering interaction, which happens between the goal of virtual organization and the instrument (technology), can be valuable, but not necessarily the source of sustained competitive advantages because it can be imitated and is easily obtainable (homogeneous and mobile). It is a pure interaction between the goal and the instrument that excludes members of the virtual organization. This interaction can either be technology-driven (by advanced communication technology) or goal-driven (by organizations in need of formulating the organization) in virtual space. For example, an organization can find a communication platform suitable for the concept of work-at-home in the virtual setting, or a network platform suitable for virtual organizations, which aims at leveraging expertise from each member/participant through the exchange and sharing of information and knowledge. However, institutionalization interaction increases the value of resources through structuration in terms of the use of systems and ease of use. As members of virtual organizations use the systems, they extend the knowledge of systems. As members use the system thoroughly, they build new communication channels between members, accept the new organizational structure, and trust each other, thereby making systems valuable.

Rareness measures the discrepancy between the organization and the others with regard to the possession of valuable resources and capabilities. As desocialization indicates, implementing Knowledge Management Systems (KMS) is necessary for virtual organizations. Without proper KMS, virtualization is meaningless because there is no way of sustaining core competencies. As members use systems, their expertise and knowledge is accumu-

Table 1: VRIO Analysis of Virtual Organization

Strategic IT Deployment	Interaction Type	VRIO Analysis	Activities	Heterogeneity	Immobility	Competitive Advantages
Traditional	Engineering	Value	Technology-imperative VO; Goal-driven VO	no	no	No sustained competitive advantages; temporary competitive parity at best
		Rareness	Knowledge Management	yes	yes	
		Imitability	Core competencies; SOPs	yes	no	
		Organization	Systems analysis & design	no	no	
Evolved	Institutionalization	Value	Use of systems; ease of use; trust	no	yes	Sustained competitive advantages on resource heterogeneity
		Rareness	Expertise; Upgraded systems; SOPs	yes	no	
		Imitability	Abstraction; Security	yes	no	
		Organization	KMS; DSS	yes	no	
Integrated	Human Interfering	Value	Communication channel; Organization boundaries; Trust	no	yes	Sustained competitive advantages on resource immobility
		Rareness	Culture; Interpersonal relationship; SOPs	no	yes	
		Imitability	Conflict management	yes	no	
		Organization	Autonomy; Empowerment	no	yes	

lated. In this stage, it is common to upgrade the systems to tune their business processes and this is a proof of structuration. With this system configuration, SOPs are built and internalized. The culture and working environment of virtual organizations are formed in this open, innovative, decentralized, or relationship/person-oriented manner. Simultaneously, interpersonal relationships commonly resulting from a large number of small decisions and actions among members/participants are constructed and can be hard to imitate.

Imitability assesses if other organizations without a particular resource face significant cost disadvantages in obtaining it compared to organizations that already possess it. Core competencies and SOPs initially provide hard-to-imitate business processes. Because core competencies and SOPs are embedded in the systems, members eventually acknowledge and attach symbolic meanings to the systems. Human interfering interactions manage conflicts and facilitate cooperation, institutionalized as norms and their consequences.

Organization measures if the organization is "organized" to fully exploit the competitive potential of its resources. From the initial systems analysis and design processes, a virtual organization is built. However, key success factors of systems lie in the use of KMS and decision support systems (DSS). Numerous components of the organization are relevant to this aspect, including organizational structure and policies such as a reporting system, a management control system, and bonus/compensation policies. When combined, these components¹ enable the organization to realize its full potential for competitive advantages (Amit and Schoemaker, 1993). Human interfering interaction is the special form of member exchange that explains why members of virtual organizations compete or cooperate to resolve the balance of power between them.

CONCLUSION

IT can be a critical resource to attain competitive advantages by providing information for better decision-making and implementing innovative new processes to create products and services (Teng, Cheon, and Grover, 1995). IT can also be deployed in a way that transforms internal resources and capabilities into an organization's core competency. For instance, IT can improve work practices. The improvement can be shared, and embedded across the organization via communication, which in turn develops into core competencies. (i.e., organizations can be leveraged by making capabilities rare, valuable, difficult to imitate and with no strategically equivalent substitutes). In so doing, IT evolves from being a key resource to an enabler to achieve competitive advantage stemmed from core capabilities (Prahalad and Hamel, 1990; Andreu and Ciborra, 1996; Bharadwaj, 2000; Duhan, Levy, and Powell, 2000). Table 1 summarizes the strategic use of virtual organization. In the stage of

engineering interaction, virtual organization barely creates competitive advantages, however, resource heterogeneity is added in institutionalization interaction and resource immobility is equipped during human interfering interaction.

This study explored how competitive advantages are gained in virtual organizations. Several benefits have been identified. Firstly, the new meaning of desocialization in this study re-illuminates the meaning of ontological and epistemological existence of virtual organization. Thus it resets the benefits, values, strategies, cultures, etc. to operate virtual organizations with their full potential, giving better positions than other competitors. Secondly, with the introduction of the framework of virtual organizations (Lee & Jayatilaka, 2002), it gives the sense of current positioning of virtual organizations. Figure 1 (life cycle) helps top managers recognize their current positions and the desirable positions. The dynamic view of virtual organization (Figure 2) shows the progress of its institutionalization processes. With its three different types of interactions – engineering, institutionalization, and human interfering interactions, top managers can organize its structure very efficiently and effectively to achieve its goals. Finally, top management can strategically deploy IT to focus heavily on the stages and dynamics of the virtual organization in ways that fully exploit its potential to create sustained competitive advantage. This in turn leads to organizational economic performance.

FOOTNOTES

¹ They are often called complementary resources (Barney, 1997)

REFERENCES

- Amason, A., Thomson, K., Hochwarter, W., and Harrison, A. (1995). Conflict: an important dimension in successful management teams. *Organizational Dynamics*, 24 (2), 20-35.
- Amit, R. and Shoemaker, P. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, 14 (1), 33-45.
- Andreu, R. and Ciborra, C. (1996). Organisational learning and core capabilities development: the role of IT. *Journal of Strategic Information Systems*, 5 (2), 111-127.
- Barley, Stephen R. and Tolbert, Pamela S. (1997). Institutionalization and Structuration: Studying the links between Action and Institution. *Organization Studies*, 18 (1), 93-117.
- Barney, J. (1997). Gaining and sustaining competitive advantage, Boston, MA: Addison-Wesley Publishing Company, Inc.
- Bharadwaj, A. (2000). A resource-based perspective on information technology capability and firm performance: an empirical investigation. *MIS Quarterly*, 24 (1), 169-196.
- Daft, R. (1983). *Organization Theory and Design*, New York: West.
- Duhan, S., Levy, M., and Powell, P. (2000). Information systems strategies in knowledge-based SMEs: the role of core competencies, *European Journal of Information Systems*, 10, 25-40.
- Giddens, A. (1984). *The constitution of society*. Berkeley, CA: University of California Press.
- Giddens, A. (1990). *The Consequences of Modernity*. Stanford, CA: Stanford University Press.
- Hitt, C. and Jones, G. (1992). Strategic management theory: an integrated approach. Boston: Houghton Mifflin.
- Johnston, H. and Carrico, S. (1988). Developing capabilities to use information strategically. *MIS Quarterly*, 12 (1), 37-48.
- Lee, J. and Jayatilaka, B. (2002). *The Discovery of Virtual Organization: Metaphorical Analysis*. Working Paper.
- Lee, J., Jayatilaka, B., and Kwok, R. (2002). Virtual Organization: Duality of Human Identities in Consciousness and Entity. *Proceedings of Information Resources Management Association International Conference (IRMA)*. Seattle, WA.
- Mata, F., Fuerst, W., and Barney, J. (1995). Information technology and sustained competitive advantage: a resource-based analysis. *MIS Quarterly*, 19 (4), 487-505.
- Mowshowitz, A. (1994). Virtual Organization: A Vision of Management in the Information Age. *The Information Society*, 10, 267-288.
- Mowshowitz, A. (1997). Virtual Organization. *Communications of the ACM*, 40 (9), 30-37.
- Prahalad, C. and Hamel, G. (1990). The core competence of the organization. *Harvard Business Review*, May-June, 79-93.
- Teng, J., Cheon, M., & Grover, V. (1991). Decisions to outsource information systems functions: testing a strategy-theoretic discrepancy model. *Decision Sciences*, 26 (1), 75-103.

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