Analyzing Change: Demand, Organizational Structures and Supplier Relationships

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"Companies that are successful will have cultures that thrive on change...In the end, you might just have speed, talent, and branding....There will be nothing in the 10-year window except e-companies...click-and-mortar will become the only means to survival."

John Chambers, CEO, Cisco Systems, *Business Week*, August 28, 2000, p. 210.

In "Strategies of Subversion", Parthasarathi Banerjee offers an ambitious and provocative analysis of corporate interactions in the world of software. His central point, as I understand it, is that meeting the software needs of corporate customers alters the organizational structures of the supplier as well as the customer. In particular, if a software firm wishes to actively manage the demand for its products or services, it must engage with, and alter, the organizational structures of its customers. There is much more to Dr. Banerjee's analysis, which is presented in a challenging and erudite manner. However, I shall focus on these simple points, and relate them to some general trends as I see them.

To illustrate the main thesis as I see it, consider some concrete examples. First, business software, by its nature, tends to replace manual, human-centered internal processes with automated, machine-centered processes. Any change in part of the firm's internal value chain has ramifications for the rest of its value chain. This is partly why the productivity gains from the use of information technology take time to show up – until all the key parts of the value chain are overhauled, the gains to a partial change may be negligible. The required overhaul of the value chain may change not only processes, but also structures. Going beyond the boundaries of the firm, the use of information technology opens up the possibility that the extended value chain (encompassing the internal value chains of all firms along the supply chain) will also have to be reconfigured. Thus, changes in procurement by the buying firm affect the outbound logistics of the supplier, and so on. In this case, the structural impacts of the use of new software spill over beyond the customer, and into the customer's extended value chain. The general principle, then, stated in slightly different terms from Dr. Banerjee's own, is the following:

Managing demand for your business software requires understanding – and managing to the extent possible – your customer's value chain and organizational structure

The second concrete illustration for Dr. Banerjee's general thesis flows partly from the first point, which was that using new information technology impacts the customer's organization and relationships. This is because the impact requires software vendors to have an ongoing and deeper involvement with the customer than is true for many other kinds of products. Of equal significance is the fact that this involvement changes the nature of the contractual relationship and the method of capturing value. Software has high fixed costs of development and low marginal costs (the basis for increasing returns). This implies that standard competitive pricing will not enable value capture commensurate with the value created by the software. Maintenance contracts are a partial answer to this ongoing problem, but as software improves in reliability and self-healing capabilities, simple 'maintenance' is not the answer.

The solution is providing software as a service. Of course this cements the relationship between software supplier and customer, provides more assured revenues to the software provider, and also extends the structural impact of the software use. More and more functions can be outsourced in this case, not just peripheral ones, but even those that are core. While the latter should never be done lightly, if security and reliability concerns are met, it may satisfy strategic as well as tactical economic criteria. In this case, the demand for business software is expressed in a most dramatic restructuring of organizational architectures and redrawing of boundaries. This also illustrates Dr. Banerjee's thesis in its most extreme form, giving the following general principle.

Extracting maximum value from your business software requires new contractual relationships that can fundamentally alter your customer's organizational structure

Of course not just software firms are subject to these forces. Any firm, from Wal-Mart to Cisco (see John Chambers' apposite quote at the head of this piece), can use information technology to change the nature of its own organization, as well as those of its suppliers and customers. Information technology is most powerful when it allows not just storage and processing of information, but also its efficient communication or sharing. While there is no need for asset ownership boundaries to match information sharing boundaries (and indeed they never do), the freer flow of information does change the kinds of organizational structures that are most efficient or profitable. In particular, freer information flows within organizations have started to flatten out hierarchies, by increasing the span of control of each layer of management, which is now (potentially) able to handle a wider input of data from a larger array of subordinates.

To extend this discussion, I offer some additional, more general thoughts on the boundaries of the firm. One fashionable idea has been that of the firm as the "center of a network of relationships, rather than...owners of a clearly defined set of capital assets." This description by Bengt Holmstrom and John Roberts, a pair of leading economic theorists, is similar to management writers' ideas of network organizations and virtual corporations. The term "network organization" was originally used to describe long-term

relationships among Japanese firms and their suppliers. These relationships provided much of the benefit of vertical integration (or a wider presence in the value chain), without actual merger. Implicitly, the reasoning is that the incentives of a small group of such suppliers are stronger than if they were part of the firm. Such suppliers may also be able to avail of economies in production that the larger firm could not. The Cisco model (and that of Dell) certainly has features of this characterization of the networked organization, but this relationship model is not something that relies strongly, if at all, on electronic flows of information, or even perhaps on information technology, though these certainly help.

The virtual corporation model generalizes the network organization, allowing for shorter-term relationships and explicitly for geographic separation. In this case, electronic information flows, and information technology in general, become more important, for monitoring and tracking are of much greater concern. In some definitions, the virtual corporation may still be a network of firms:

> "The Virtual Corporation is a temporary network of independent companies linked by information technology. The Virtual Corporation shares skills, costs, and market access and involves suppliers, customers and maybe even rivals."[1]

In other conceptions, the virtual corporation is a single legal entity, but one that dispenses with a physical location and its own permanent employees. Thus physical proximity and long-term association are both removed as characteristics of components of the firm. Constituents of the virtual corporation may still be firms, or they may be individuals. The virtual corporation concept begins to shade into more mundane partnership or strategic alliance.

However, people like Andy Grove, of Intel, are unenthusiastic about the 'virtual corporation'. In fact, Clayton Christensen, a Harvard Business School Professor, argues[2] that Cisco runs risks in moving down the same path. As it enters the area of optical networks, it can no longer rely on modular architectures and outsourced components, but has to coordinate the requisite product design and manufacturing activities internally. The creation of unique assets through innovation itself requires combinations of unique assets. This is the ultimate source of value creation and capture, and the ultimate limit to virtualization or dismantling of corporations, no matter how much information can be exchanged, or how complex the transactions that can be conducted, over the Internet and the World Wide Web. Thus I offer this general principle, as a delimiting proposition for Dr. Banerjee's radical thesis of subversion, echoed in the words of John Chambers.

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[1] Richard Brandt, John A. Byrne and Otis Port, "The Virtual Corporation", *Business Week*, February 9, 1993.

[2] Clayton Christensen, "The Limits of the New Corporation", *Business Week*, August 28, 2000, pp. 180-181.

Effective combinations of unique physical and human assets are at the core of successful organizational structures.

In conclusion, therefore, we are seeing important changes in organizational structures and customer-supplier relationships. Software firms are not only enablers of these changes, but can sometimes drive them to their advantage. However, there are also fundamental forces at work that provide stability, and limits to disequilibrium. Andy Grove's view of this situation, while possibly erring on the side of conservatism, sums up this caution.

"Yes, there are changes in the ways corporations will organize among each other and how they will organize inside, how supply chains are managed...But these have been gradual changes. They may accelerate some, but I don't think we're seeing a phase transition like ice turning to water."

Andrew Grove, Chairman, Intel, *Business Week,* August 28, 2000, p. 214.