ADVANCING TO THE VIRTUAL VALUE CHAIN: LEARNING FROM THE DELL MODEL

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Introduction

Many analysts expect that the pace of change in the new, global economy will accelerate to the point where only the most flexible organisational structures will be able to withstand the stress. Intensifying competition from "giants around the globe and knowledge-based entrepreneurs around the corner" will drive corporations to seek out new sources of competitive advantage and new allies in the struggle to survive (Economist Intelligence Unit and Arthur Andersen, 1997: 1). The outer limits of every corporate structure will be stretched by outsourcing arrangements and strategic alliances and will ultimately create inter-firm networks or even "virtual" organisational forms. This trend towards "smaller" corporations reflects the growing uncertainties and the realisation that central control may not be adding enough value. Flexible organisational structures are seen to be a core driver of competitive advantage in the 21st century.

This paper examines the driving force facilitating the transformation of contemporary organisational structure. It charts the transformation of the corporate value chain from vertical to virtual and outlines the way in which, as this transition occurs, knowledge and relationships become increasingly important strategy variables (Figure 1).

Through a discussion and analysis of Dell Computer's approach to value chain integration, the paper analyses the transformation of corporate structure and strategy in the Internet era and comments on the evolution of the virtual organisation.

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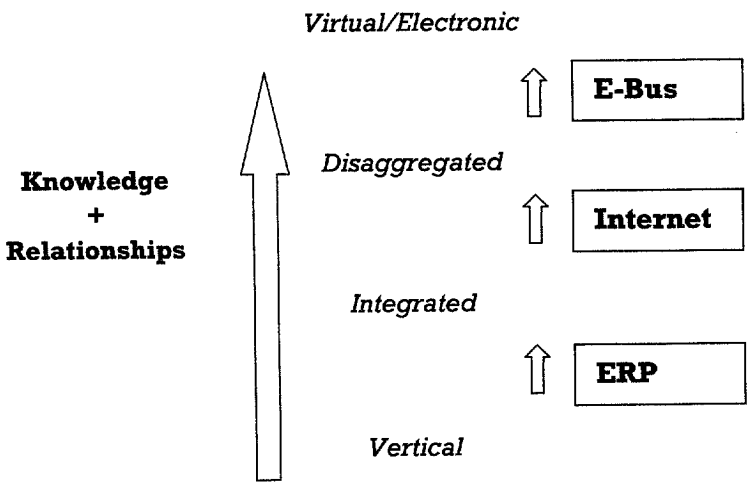
FIGURE 1: VALUE CHAIN STAGES OF TRANSITION



Two linked hypotheses are tested in this paper. These are as follows:

Hypothesis 1

The transition described in Figure 1 increases the importance of knowledge and relationships in the strategic management process. The value/supply chain has gone from being a tactical sequence of largely autonomous functions (often performed by different organisations) to being a knowledge-sharing strategic network of integrated activities. The strategic management process for a firm thus becomes more inclusive and less proprietary. Instead of firm strategy, network strategy becomes more relevant for market success.

Hypothesis 2

The electronic value chain structure, accompanied by a network strategy approach, facilitates strategic or virtual outsourcing. This encourages conventional firms to rethink their purpose and consider outsourcing activities considered core. Such an approach can result in significant cost savings and efficiency gains and enable an organisation to redeploy resources to strengthen and grow core competencies. It also results in increasingly decentralised or deconstructed organisations, whereby a company may outsource most, if not all,

value chain activities. The resultant company has, in essence, become "virtual", in terms of both physical location and ownership.

Before proceeding, we should clarify some terminology employed throughout. The terms "supply" chain and "value" chain are often used interchangeably in this paper. There are, however, subtle differences between the two concepts. Evans and Wurster argue that "supply chains link suppler and customer corporations together. They are shaped by the same kind of information logic as the value chains within companies, but in a weaker form" (2000: 10). Another way of distinguishing between the two concepts is that the supply chain should be conceptualised as the physical transport of goods, typically associated with logistics, manufacturing and so forth. The value chain, by distinction, incorporates supply chain operations as well as knowledge activities such as R&D and administration. Thus, the term "value chain" is broader and more inclusive. However, given the general ambiguity in management literature, we will generally use the words interchangeably.

Changes in International Production

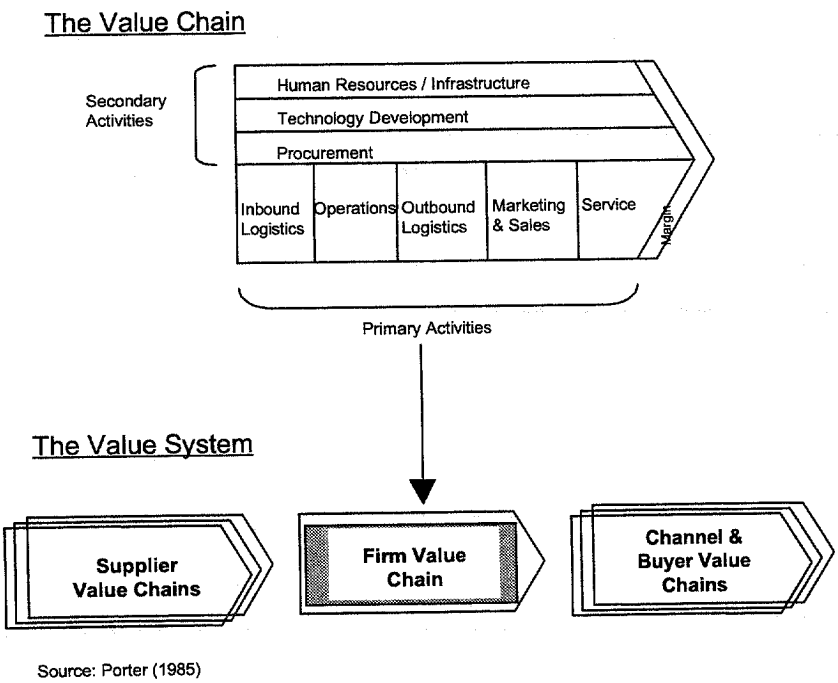
The past decade has witnessed many changes related to international production, caused by both political and technological factors. On the political side, the successful completion of the GATT Uruguay Round, the emergence of the World Trade Organisation, and a general trend toward deregulation and privatisation by governments around the world has created a favourable environment for global production and international trade. Technology has also shaped international production as a result of falling transport and communications costs, the onset of the Internet and e-commerce, and the emergence of a new breed of service sector transnational corporations (TNCs): global logistics suppliers. While the changes in international production are numerous, this paper emphasises the disaggregation or 'explosion' of the production value chain.

The Exploding Value Chain

A major trend in international production is the growing physical separation of activities defining the value chain of the firm. Building on our earlier definition, Porter describes the value chain as a collection of activities that are performed by the firm to design, produce, market, deliver, and support a product or service (1985: 36). The configuration of a firm's value chain – the decisions relative to the technology, process, and location and whether to "make or buy" each for

each of these activities – is the basis of competitive advantage. The value chain is, in turn, part of a larger value system that incorporates all value-added activities from raw materials to component and final assembly through buyer distribution channels (Figure 2).

FIGURE 2: PORTER'S VALUE CHAIN AND VALUE SYSTEM



Source: Porter (1985)

For much of the twentieth century, the value systems of many sectors were influenced by mass-production techniques pioneered by Henry Ford in the 1920s. These techniques emphasised scale, standardisation, and vertical integration to increase automobile production productivity. The epitome of Fordist production was the River Rouge (Michigan) production facility, which was co-located with a port and steel foundry. Most value-added activities were confined to a single facility to improve co-ordination and reduce the transportation costs of intermediate goods.

A direct challenge to this production model emerged in the 1950s and 1960s from the Toyota Motor Company in Japan (Womack, et al., 1990). In place of standard products with long production runs by self-reliant vertically integrated firms, Toyota emphasised rapid product

innovation, flexible production, and just-in-time inventory systems. Rather than vertical integration, Toyota emphasised strong relations with suppliers clustered near final assembly facilities. The productivity advantages of the Toyota lean production approach were significant, as Toyota could produce an automobile with less than half the labour hours of its American and European competitors. The Toyota model continued to evolve with falling transportation and communications costs in the 1970s and 1980s and soon it became feasible to co-ordinate large, extended supply chains on a global basis.[i] This production model, which some scholars have dubbed "post-Fordist",[ii] spread to other manufacturing sectors beyond automotive and facilitated ever-greater movement of intermediate goods and components across national borders.

As Figure 1 illustrates, the growing use of information technology in the 1990s brought further innovation to the post-Fordist model. The introduction of enterprise resource planning (ERP) software improved intra-firm co-ordination between frequently disparate functions as conceptualised in Porter's value chain. Prior to ERP, key functions of the value chain – such as inbound logistics, operations, outbound logistics, and marketing – frequently had separate organisations, with separate information systems that did not easily share information with each other. Each function was, in effect, in a "silo", performing its own task but not optimising overall operations. ERP created an "electronic nervous system" to link the functions together, improve decisions, and increase overall productivity. Consider the impact on the operations and inbound logistics functions of a typical manufacturing firm. Historically, the operations (manufacturing) function demanded high inventory levels to ensure smooth production and avoid costly production shutdowns. At the same time, the inbound logistics function was focused on minimising transportation costs. The result was excessive inventory levels that were replenished periodically in large batches by slow, inexpensive transportation alternatives. ERP broke down information barriers between "functional silos" to shed light on the relationship between transportation costs, inventory levels, and operations. In some cases, firms found that they could eliminate most inventories by shifting to faster but more expensive transportation alternatives (e.g. air cargo) that replenished supply just in time. Simply put, ERP allowed information to replace inventory.

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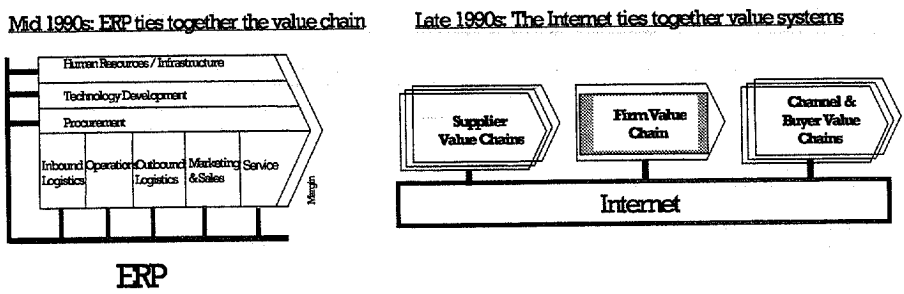
[i] For a discussion of Toyota's lean production approach, see Womack et al. (1990).

[ii] For a discussion of post-Fordism, see Kaplinsky (1993), p. 112.

FIGURE 3 THE IMPACT OF ERP AND THE INTERNET ON VALUE SYSTEMS



Revolutionary advances in communications technology spurred further evolution of the production model in the late 1990s. The emergence of the Internet as a low cost conduit for sharing vast quantities of data facilitated more and more information sharing between firms, extending the benefits of ERP from the *value chain* of an individual firm to the entire *value system* of firms and their suppliers and customers (Figure 3). If implemented correctly, ERP can be a vital component in controlling complex supply chains and in the fast developing world of e-business and B2B electronic exchanges. Dell Computer's phenomenal success in squeezing out inefficiencies establishes it as a model for many other companies, both within the computer industry and beyond.

The Dell Model

One of the early pioneers of the ERP model and of its value system advantages was Dell Computer Corporation. Along with the likes of Coca-Cola and Wal-Mart, Dell's success is based on realising the strategic power of the supply chain (Evans and Danks, 1998: 20). The core of the Dell model is to deal directly with and sell directly to the customer, and build products to order. In so doing, Dell collapses the value chain and eliminates two significant cost components: the retailer's mark-up and the costs and risks associated with carrying large inventories of finished goods.

Texas-based Dell is the world's second largest personal computer maker. Founded in the mid-1980s by a university student, Michael Dell, the company leads the sector with annual growth rates of 30 to 40 per cent. Dell has achieved its success in large part due to its highly efficient value chain integration approach, supported by ERP and – more recently – by the Internet. Dell produces custom-made

computers "just in time" for orders received directly from the customer via telephone or the Internet. As Dell receives an order, it shares production requirement information electronically with its suppliers world-wide for immediate delivery to a Dell production facility, where the computer is assembled and shipped directly to the customer within a week. The Dell model relies on demand side pull rather than supply side push – no computer is produced unless there is corresponding demand in the marketplace. Thus the massive queues of inventory usually sitting idle within retail stores, distributors, and factories are virtually eliminated. The productivity advantages of this production model are profound. Dell is able operate with half the number of employees and one-tenth of inventory of its traditional computer competitors. Return on invested capital reached 195 per cent in 1999, compared to 10–20 per cent for traditional manufacturing firms.[iii] Companies from around the world have been flocking to Austin, Texas to understand the Dell production model, much as firms had flocked to Tokyo and River Rouge earlier in the century. The opportunity for productivity improvement was enormous; in the USA alone, the cost of goods in inventory of all value systems was nearly $1 trillion in 1997.[iv] As the 1990s closed, the 'Dell model' (Figure 4) began to spread from high technology to traditional manufacturing sectors such as automobile production. Recently, General Motors, Ford, and Daimler Chrysler announced they were moving to electronic supply chain management systems similar to Dell Computer. If successful, the Dell Model could be every bit as revolutionary to the production structure as Ford's vertical integration and Toyota's lean production models were in earlier eras.

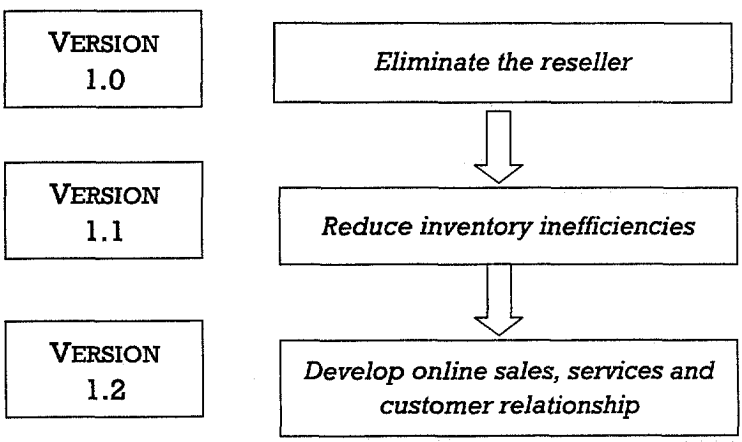
The direct model employed by Dell is not original. Cutting out the retail chain – the intermediary – and selling directly to the customer was a tried and tested business approach long before Dell was founded. In the late nineteenth century USA, Sears and Roebuck Company supplanted many clothing and hardware retailers with the launch of their mail order catalogue. Evans and Wurster (2000) describe Dell's approach as "disintermediation" and assert that bankers used the term in the 1970s to describe how securities markets displaced corporate banking (2000: 70). Dell's innovativeness was that it was the first personal computer manufacturer to sell PCs direct to the consumer, eschewing dealer networks. Dell's originality therefore lay

[iii] Data from speech by Michael Dell to Detroit Economic Club, 1 November 1999

[iv] See Colography Group, 1997.

in the approach that it adopted in implementing the direct business model. In particular, unlike other computer manufacturers, Dell sells directly to all of its customers and not just to large corporate clients. Through developing a direct relationship with all of their individual clients and building its computers to order, Dell was able to build a highly efficient just-in-time process, eliminating most of its inventory in the process. A further advantage to the Dell approach is the instant, current and continuous market research that it produces. In knowing exactly what individual customers want in a personal computer or computer network, Dell is able to anticipate market demand and shape the technological and competitive parameters of the computer industry. Dell argues that the direct model creates the most compressed PC supply chain by eliminating all intermediaries. Moreover, compared to a traditional supply chain structure, the direct model can reduce inventory investment by 50 to 70 per cent (Magretta, 1998: 198).

FIGURE 4: THE DELL DIRECT MODEL: STAGES OF DEVELOPMENT



Based on Dell (1999), pp. 21–2, 78–9, 91.

The concept behind Dell's drive to reduce inventory inefficiencies "has nothing to do with stockpiling and everything to do with information" (Dell, 1999: 80). Due to its made-to-order approach, Dell is able to see on a daily basis if, for instance, customer preference is shifting to larger PC monitors. The company can also discern whether this is happening for certain customer segments or across the market. Dell immediately relays its assessment of this information to its suppliers, allowing them to adjust their inventory accordingly and rapidly

meet demand. It stands to reason that the more information a company has about what a customer wants and how much he/she requires, the fewer inventories the company needs to maintain. Less inventory means less inventory depreciation. In an industry such as computer manufacturing, component prices are constantly falling – typically 15–25 per cent per annum. Six days of inventory (Dell's norm) compared with 34 days (standard at Compaq) can therefore result in significant cost savings on inputs. Furthermore, reduced stockpiles can offset the risk of being caught with large amounts of obsolete inventory if technology shifts and there is a transition to a next-generation product – as often happens in high technology sectors. It therefore comes as no surprise to learn that Dell's competitors such as IBM and Compaq are constantly striving to cut their inventory levels but have yet to match Dell's success in this area.

The Dell Direct Model and Virtual Value Chain Integration

The notion of 'linkages' between supply chain participants is not new and was traditionally referred to as 'vertical integration'. Unlike the Dell model, though, vertical integration implies ownership of both upstream suppliers and downstream distributors. Firms such as Ford habitually controlled all elements of the value sequence, vertically integrating the information, decision, financial and operational dimensions of the strategic supply chain (Evans and Danks, 1998: 31).

The spread of Internet-based commerce during the 1990s resulted in the emergence of "virtual" supply/value chain linkages. This approach was perceived by many companies as a way of realising the benefits of supply chain integration while avoiding the perceived negative impact of integrating vertically (Evans and Danks, 1998: 31). By seamlessly integrating supply chain suppliers, manufacturers, distributors, and retailers into a single virtual enterprise serving the customer, companies are achieving huge competitive advantages. As Greis and Kasarda (1997) argue, the emergence of the virtual value chain – or "extended enterprise" – has brought about a rethinking of traditional supply chain relationships and has fundamentally transformed the nature of competition. Companies such as Federal Express, Proctor & Gamble and Wal-Mart have used the networked supply chain to transform dramatically the competitive landscape of their markets.

In addition to the previously discussed inventory and disintermediation costs saving, there are other advantages associated with the direct business model. In particular, as Michael Dell states, 'you actu-

ally get to have a relationship with the customer' (Magretta, 1998: 73). A direct link to the individual customer provides a manufacturer such as Dell with a wealth of marketing and product development information. This information enables the company to build a position of strength relative to both its customers and its suppliers. When that information is combined with the technology of the Internet, it allows a company to develop a revolutionary new value chain infrastructure and business model. This is what Dell has done through its "*virtual* integration of the value chain" approach. "Virtual integration" means a blurring of the conventional value chain boundaries and roles between suppliers, manufacturers and end users. Michael Dell defines "virtual integration" as "the idea of interweaving distinct businesses so that our partners are treated as if they're inside our company" (Dell, 1999: 185). This results in gains of efficiency and productivity, as well as significant gains in return to investors. Higher returns on investment are gained by concentrating resources on activities where value can be added for the customer and not in activities that simply need to be done (Magretta, 1998: 74). By this logic, Dell argues that a computer company, for instance, does not have to actually make computers. If fabricating semiconductor chips or even placing them on motherboards does not result in significant profit margins, then the computer company should consider outsourcing such activities. In Dell's case, this meant focusing instead on its distinct core competency – delivering solutions and systems to customers.

Aldrich (1999) refers to Dell's virtual integration model as "the digital value chain". By this he means the use of technology/the Internet to create a faster, more efficient and more flexible version of the traditional supply chain. Within a digital value chain, one company serves as the "anchor", i.e. "the power player around which the digital value chain is organized and often optimized" (Aldrich, 1999: 93). The "power player" is identified as such because it either provides the major share of the value delivered to the customer; it is the dominant supplier; or it is the owner of a product or service that cannot be replicated by any other member of the value chain. Dell is a classic digital value chain anchor. Through its control of the consumer relationship, it establishes the rules and shapes the competitive dynamics of the value chain.

Virtual Value Chain Integration at Cisco Systems and Nortel Network

Cisco Systems employs a similar structure to the Dell model that it calls "networked supply chain management". The Cisco solution

fuses supply chain constituents – suppliers, distributors, retailers, and customers – into what Cisco refers to as "a networked extension of a single enterprise to serve the customer" (Cisco Systems, 2000). Cisco Systems, Inc. is the global leader in networking for the Internet. As with Dell, Cisco was founded in 1984 and emerged from a college campus – Stanford University in this instance. The business plan developed from the efforts of a group of computer scientists seeking an easier way to connect different types of computer systems. By the year 2000, Cisco had emerged as the fastest growing and most profitable company in the history of the computer industry and possessed one of the top ten market capitalisations in the world. Cisco Systems saves $75 million annually as a direct result of its networked supply chain. As with Dell, Cisco's supply chain starts with the customer – more than 80% of Cisco product orders are now placed via the Internet. This results in over $35 million in business per day (up from $10 million in the late 1990s). Customer satisfaction ratings have soared since the company implemented this online ordering process.[v]

Nortel Networks has also developed strategic supplier partnerships with a number of manufacturing and logistics service companies to provide those functions previously carried out internally (Elwood and Holland-Fox, 2000: 5). Nortel has moved from being a vertically integrated company, where almost everything was manufactured and controlled in-house, to a virtually integrated organisation that takes maximum advantage of its supplier capabilities.

As Mangan and Hannigan (2000: 241) argue and as our examples illustrate, management of the supply chain has emerged as a key source of competitive advantage for firms *vis-à-vis* their rivals. Managing a supply chain more cost efficiently and with greater strategic effectiveness than competitors can ensure sustainable market leadership for companies such as Dell and Cisco. Thus, success in modern markets is increasingly premised on the performance of a network of companies, rather than on the performance of an individual corporation. As a senior Oracle manager puts it:

> The battle taking place in today's market is no longer company against company . . . what we're seeing now is supply chain competing against supply chain.[vi]

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[v] Data is derived from the Cisco Systems website, http://www.cisco.com

[vi] Lou Unkeless, senior director of applications marketing, Oracle, cited in Mann (1999).

This concurs with Hypothesis 1, outlined at the beginning of the paper, and sustains our argument that the virtual value chain structure – based on a knowledge-sharing strategic network of integrated activities – transforms the fundamental premises of strategic management and market competition.

From Virtual Value Chain to Virtual Organisation

In the previous sections we have argued that market success in the Internet age is premised on a virtual (electronic) value chain structure, accompanied by a network strategy approach. We will now take our line of argumentation one step further in contending that virtual value chains can lead to the emergence of virtual organisations. This process occurs via virtual outsourcing. Virtual outsourcing refers to the devolution of cost incurring and revenue generating business functions, via e-business, to strategic partners and even to the customer (in the case of Internet sales). This means in effect that although the cost and responsibility are outsourced, control remains with the company. The company is therefore in charge of the value chain and in a position to achieve revenue growth while concurrently minimising costs.

Virtual outsourcing encourages conventional firms to rethink their purpose: should they focus only on that which is a genuine core competency[vii] and contract out the rest? For example, if a car company such as Fiat has a core competency in design but not in manufacturing, would it not be more time and cost efficient to outsource the latter? This may ultimately result in increased competitive advantage and market share. Companies such as Dell, Cisco and Qualcomm fundamentally challenge business taboos and industry norms: they outsource assumed core but cash draining activities such as manufacturing and/or distribution and maintain strategic control through the electronic value chain. This allows the organisation to free up resources that can be redeployed to strengthen and grow the company's core competencies.

Defining a "Virtual Organisation"

When an organisation is described as "virtual", this can have two different meanings. First, an organisation can be physically or geographically virtual. It can imitate its competitors without having the

[vii] For further details of the 'core competency' concept, see Hamel and Prahalad (1994).

physical proximity to market that is normally considered necessary (Alexander, 1997: 122). Examples of this type of virtual structure abound; we think instantly of e-business enterprises that compete directly with traditional high street companies. This type of organisation is not unique to the Internet age, though: physically virtual companies have existed for several generations under the label of mail order firms.

Second, an organisation can be virtual because of its very low levels of direct ownership (Alexander, 1997: 123). Such an organisation functions more as a "broker" – as an organiser or facilitator of activities and processes – than as an actual producer of goods or services *per se*. This type of company specialises in getting things done rather than in doing them itself. Sun Microsystems is an example of such a firm. The airline sector is another area where this type of virtual organisation is increasingly prevalent.

These definitions are not mutually exclusive and, in many cases, both serve to describe a particular organisation. In the case of Dell, both definitions apply. Dell is physically virtual, transacting all of its business via telephone and the Internet. Dell is also a virtual owner and manufacturer, sourcing its parts and services from other companies.

Virtual organisation may also be conceptualised as a strategy. Venkatraman and Henderson (1998: 34) argue that a virtual organisation is not a distinct structure: rather it is a strategic characteristic applicable to every organisation. These authors define virtual organising as a:

> . . .strategic approach that is singularly focused on creating, nurturing and deploying key intellectual and knowledge assets while outsourcing tangible, physical assets in a complex network of relationships. (Venkatraman and Henderson, 1998: 34).

This would indicate that 'virtuality' can be deployed by organisations as both a structure and a strategy. It also highlights the centrality of strategic outsourcing to organisational direction and change.

Strategic Outsourcing and Organisational Change

Outsourcing was traditionally considered a strategically peripheral issue, or merely a natural extension of the 'make or buy' decision. In the early days of the outsourcing movement, it was a step taken by companies that needed to restructure their balance sheets with activi-

ties largely confined to relatively menial functions such as housekeeping, catering, or data processing.

Outsourcing has more recently moved beyond this conceptualisation and is seen by many as a core business strategy that can change the shape of organisations and facilitate far-reaching transformation. A 1995 study conducted by the Economist Intelligence Unit and written in co-operation with Arthur Andersen found that:

> Outsourcing's greatest benefit . . .is its ability to free management time to focus attention on core issues (p. 9).

Thus, the argument is that outsourcing helps an organisation create or maintain competitive advantage and a strong value chain by allowing it to focus on its core competencies, while a world-class provider looks after the non-core activities.

Some commentators may still insist that outsourcing does not warrant attention – after all, "outsourcing" options have always existed. What renews interest in outsourcing and demands our attention today is the change in its nature and the rapid increase in levels of outsourcing and how this affects organisational structures and the way companies compete.

The emergence of strategic or virtual outsourcing, facilitated by the growth in e-business services, will further fuel this explosion of outsourcing activity. Outsourcing has become the norm rather than the exception. In particular, outsourcing of business processes (BPO)[viii] is taking hold. A survey of 303 senior executives from global business throughout Europe and North America indicated that 85 per cent of these companies outsource at least one business-critical function previously performed in-house (Economist Intelligence Unit and Arthur Andersen, 1995). More importantly, companies now outsource a much wider range of sophisticated functions, including accounting, finance, IT, customer support services and logistics. Clearly, the concept of outsourcing has developed beyond the simplistic notion of sub-contracting into a widely applicable business strategy.

Many innovative types of outsourcing have emerged, such as client organisations and vendors engaging in strategic relationships with risk and reward sharing contracts. A newer trend is the use of multi-

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[viii] Business process outsourcing – here, the provider takes over total management of critical processes, rather than non-core functions; these include finance and accounting, human resources, logistics, customer care, and others. By assuming complete responsibility, the provider can turn an internal function into a more efficient, effective and customer-oriented service.

vendor sourcing, whereby several suppliers combine their individual strengths and core competencies to ensure that the business function is run in the best possible way. These dramatic shifts can mean upheaval and new opportunities. For management and employees outsourcing can be a traumatic experience, but for the company it can means substantial savings and new strategic initiative.

Virtual Integration vs Outsourcing

The Dell model is very different from the classic sense of outsourcing. Dell does not attempt to get rid of a problem that it cannot solve in-house through subcontracting it to another company. Instead, Dell establishes data linkages with its "service providers" in order to create a more time and cost efficient and customer responsive service. As Michael Dell states, 'The supplier effectively becomes our partner' (Magretta, 1998: 75). The same is true for logistics firms such as UPS that help to realise value chain integration. Dell relies on such firms to ensure the rapid transfer of components from suppliers to Dell's manufacturing facilities and from there to the end user. As Christopher argues, Dell competes not as an independent business but as a uniquely configured network of alliances and partnerships (1998: 272). In essence, the Dell approach is the epitome of "strategic" outsourcing.

Forging the Virtual Company: Strategic Outsourcing through E-Business Partnerships

The age of electronic commerce has fundamentally revolutionised business strategy, structure and competition. Andersen Consulting points to the crumbling of many fundamental assumptions that underpinned corporate success in the industrial age. These include the diminution of physical assets as central features in value propositions; the lowering of interaction and collaboration costs; the effective removal of size constraints on growth prospects and revenue returns; the increased ease with which organisations and customers can gain access to information; and the accelerated pace and extent of corporate globalisation.[ix] What matters is the intellectual property of firms and customer relationships. It is here that core competencies are embedded in the electronic economy (e-economy).

[ix] These points were taken from the Andersen Consulting website, document entitled "Andersen Consulting's Point of View", September 1999.

IBM argues that e-business is not about reinventing an organisation but about streamlining existing business processes to improve operating efficiencies. This in turn strengthens the organisation's core competencies and the value provided to the customer. It is here that strategic outsourcing comes into its own – offering an organisation a tool to achieve cost reduction, competency enhancement and revenue generation/growth. The primary transformational aspect of e-business is the paradigm shift away from a relatively indirect (even remote) relationship between the firm and its consumers and towards a direct interface between the organisation and its customers.[x] This shift opens up tremendous opportunities for companies. For instance, in terms of cost savings which e-business can bring, research shows that firms can provide products and services via the Internet at a fraction of the previous price (Andersen Consulting, 1999). Examples include banking, where the typical business cost of a transaction at a branch is $1.07, versus $0.01 via the Internet. Similarly, the business cost of a brokerage transaction is $150 for a full-service broker, as opposed to $10 for an online broker. Even more interesting are the value creation and revenue generation opportunities which e-business provides. These can come about through the increased market reach and individualised customer service which e-business facilitates. It can also occur through the effective 'outsourcing' of sales to the customer and the ability to respond immediately and directly to the needs of the client base. Such developments lead inevitably to the emergence of veritable virtual organisations. The traditional industrial age company managed and operated its own research and development, logistics, accounting, marketing, sales and so forth. Outsourcing allowed many of these organisations to contract out certain non-core functions such as IT and accounting. The most successful of these outsourcing agreements involved long-term partnerships between the client outsourcer and the outsourcing vendor. E-commerce has enabled this process to go much further. Key functions such as sales can be outsourced but co-ordination and control of the value chain is easily achieved via networked computer systems. A company can in fact outsource all of its functions and operate as a totally virtual organisation. Ultimately, companies will not actually need to outsource physi-

[x] The consultancy firm, USWeb, argues that e-commerce has transformed distribution chains, not eliminated them. Traditional wholesale and retail distributors have simply been replaced by a different type of intermediary, which provides value added through information aggregation rather than logistics aggregation. Examples include search engine companies Yahoo! and AltaVista and retailers such as Amazon.com.

cally. Virtual outsourcing, not actual outsourcing, is likely to become the norm, i.e. using Internet and e-technology to outsource functions but not the control of functions. Organisations will keep value adding activities within the business but outsource the paperwork and other associated non-revenue generating functions.

Emerging Organisational Structures

> Every business today competes in two worlds: a physical world [the marketplace] of resources that managers can see and touch and a virtual world [the marketspace] made of information. The latter has given rise to the world of electronic commerce, a new locus of value creation (Rayport and Sviokla, 1995: 75).

Witness for instance the value that Federal Express created by allowing customers to track packages via the Internet. This service innovation served to strengthen FedEx's customer loyalty. This is an example of a "virtual" value adding activity achieved in the marketspace.

Due to relentless global competition, or so-called "hypercompetitive environments" (Quinn at al., 1996), core processes and support processes must all function at the highest possible level. Firms cannot compete solely by emphasising one advantage (e.g. cost, flexibility, or quality), and they cannot fall very far behind world-class standards on any key competitive dimension (D'Aveni, 1994). Firms must simultaneously be efficient and flexible and endeavour to compete in both the marketplace and the marketspace.

As we previously argued, in the fluid global marketplace, it is no longer possible or desirable for single organisations to be entirely self-sufficient. Collaboration is the value of the future; networks are the structure of the future. Companies have to seek partners that can share costs and risks, and swap skills and competencies, forming a network that is larger and stronger than any stand-alone company could ever be. Companies increasingly face up to these new challenges through the strategic use of outsourcing. As outsourcing options continue to multiply, executives move towards re-engineering their entire value chains by assembling sets of processes and core competencies from multiple companies around the core activities of the anchor company. As they put these pieces together, they are creating a new kind of organisational form – the hyper-efficient network organisation. This organisational form is hyper-efficient since it eliminates all non-value added work and is very flexible due to the unprecedented choice of combining various capabilities to create new

products and services. These constellations of strategic outsourcing relationships helps customers improve their processes together with vendors, and the two can then take their acquired knowledge into the marketplace as a joint venture. Together they are able to reduce costs, improve the quality of services (thus improving value added), which in turn leads to enhanced customer preference and cost recovery, which should result in reinvestments and ultimate competitive advantage. Thus, strategic sourcing contributes to the transformation of the nature of competition by creating new organisational forms that should be more effective in the competitive game than single vertically integrated firms.

When looking at these growing webs of strategic relationships, one can get a sense of what the organisation of the future may look like. It seems that many companies are heading in the direction of viewing themselves as organisers of activities and process. Some processes and activities will be performed in-house, others will be performed through a host of relationships with other organisations. As Reich (1993) argued, there will be no "insiders" or "outsiders", only different distances from the corporate strategic core. Charles Handy describes these companies as essentially being managers of contracts and relationships that are bundled in such a way as to produce the good or service that the company is providing to customers. Thus, companies may look like the old form of organisation from the outside, but inside all is different. Reich (1993) further argues that famous brands adhere to products and services that are cobbled together from many different sources outside the formal boundaries of the firm. Their dignified headquarters, expansive factories, warehouses, laboratories, and fleets of trucks and corporate jets are leased. All of this to adapt to rapidly changing environments and to stay competitive.

One could argue that the organisation of the future will be chameleon-like, or a very adaptable organism whose shape and appearance changes as its environment and needs change. Clearly, companies tomorrow are going to have even shorter windows of time in which to predict the needs of the market. They will also have to be more customer-centred than ever because increasingly, customers will not tolerate products or service that do not meet their needs as they have defined them. In order to be viable, companies will have to have the ability to shift rapidly to meet customer demand. In this context, the Dell model is ideally suited and likely to remain an important benchmark for modern corporations seeking to adapt to the new rules of market competition.

The strategic use of outsourcing will be a very important part of this adaptation process because the chameleon organisation will have neither the time nor the resources to invest in non-core processes. Instead, it will pull the additional capabilities and competencies it needs in from other organisations, and, when things change, it will alter its relationships or find new partners. This will give it tremendous flexibility in meeting market needs and as the market changes, restructuring and changing itself to keep pace with the market.

As corporations strive to remodel themselves for the next century, one type of structure is fast becoming redundant – the traditional, vertically integrated organisation which is becoming too unwieldy to survive. Its replacement will be a leaner corporation, depending on a complex network of external relationships that complement its internal resources. Thus, the emergence of network, if not virtual, organisations is attributed to contemporary pressures for speed and responsiveness without sacrificing efficiency. Network organisations combine the advantages of centralisation with decentralisation. They are organisational forms that hold the key to survival in hypercompetitive environments and are highly dependent on partnerships such as those brought about through strategic outsourcing.

Conclusions

The paper's subtitle is 'Learning from the Dell Model' and the text has illustrated why Dell Computer is an organisation worthy of emulation. Moreover, the Dell business model has cross-industry relevance; its lessons should not be confined to the computer industry or even to the high technology sector. The virtual integration of the value chain approach evolved out of Dell's need to garner better information from its customers and to enhance logistics management with its suppliers. Therefore, through what Michael Dell describes as 'information partnerships' with both suppliers and customers, his company has gained the benefits of tightly co-ordinated supply chain management normally associated with vertically integrated companies. At the same time, Dell has accrued the benefits of speed and flexibility associated with a virtual integration structure. This is the essence of Dell's success and these are the lessons that can be learned from studying the Dell case.

On this basis, we can draw some conclusions relating to Hypothesis 1. The evolution of the organisational and industry value chain, facilitated by ERP and the Internet, has resulted in dramatic time and cost efficiencies and customer satisfaction levels for those companies

willing and able to adapt. The resultant virtual value chain is a highly flexible and extremely competitive structure. To function effectively, the virtual value chain privileges both knowledge and relationships. Thus, an organisation's corporate strategy must also change, becoming a more open, less secretive process. Virtual value chains succeed only if information (about customers, technology, markets, etc.) flows freely between all of the associates and if the value chain anchor firm keeps its partners within the strategic decision-making loop. Thus, although the core power player determines strategy, all members of the value chain network are tied into the value chain's common strategic purpose.

With regard to Hypothesis 2, we have argued in this paper that organisations need to focus on their core competencies and activities, while contracting out other work that the market can carry out more cost-effectively and efficiently. As a result, companies transfer entire business functions and strategically important processes to partner vendors and redirect their energies and resources onto greater value adding activities and areas of core competencies. This indicates that there has been a general shift in outsourcing from the service bureau and facilities management – tactical outsourcing – towards more complex and strategic outsourcing partnerships. As this paper illustrates, strategic or virtual outsourcing is facilitated by electronic or virtual value chain structures and their related network-based strategies. Outsourcing can in turn play an important role in supporting and strengthening an organisation or network's value chain and in increasing its competitiveness by leveraging and combining the competencies of several firms.

Finally, the implications for organisational structure are enormous. Strategic outsourcing allows a company to devolve all but its core activities, while maintaining effective control over its disparate business functions. This means that many firms can progress towards an almost virtual structure, secure in the knowledge that their outsourced marketing, IT and finance are all designed to support their core competencies and market strategies.

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