

WEB BASED ORGANIZING AND THE MANAGEMENT OF HUMAN RESOURCES

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Abstract	<p>The paper focuses on the consequences of web-based business-to-business transactions in medium and large old economy companies in particular and discusses the implications for HRM and HR professionals. Medium and large old economy companies can be involved in transactions within the new economy in different ways. First of all the paper gives an overview of the striking characteristics that distinguish web-based transactions from more traditional transactions. The paper continues with an overview of the different ways in which old economy companies are attempting to integrate elements of web-based organizing into their current business and the implications of it for human resources management. Three different ways of integration are distinguished:</p> <ul style="list-style-type: none"> -Seeing the Net as an extension of normal market channels for buying and selling. -Using the Net to expand and improve current co-makership relationships amongst key suppliers (section 4). -Totally re-thinking business models before deciding on e-commerce strategy and practice, which implies desegregation and organizational revolution. <p>Each of these areas will be highlighted and possible implications for human resources management and HR managers considered.</p>	
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Web based organizing and the management of human resources

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Web based organizing and the management of human resources

1. Introduction.

The so-called new economy has taken a beating over the past few years. The dot.coms have come - and many have gone again. Even the last great hope of the new revolutionary age, Enron, recently filed for bankruptcy. However, the phenomenon known as the Internet is not going to go away. It just keeps expanding (Kirkpatrick, 2001). Slowly but surely more and more individuals and companies are coming to rely on it for doing business. Maybe the changes will be more gradual than originally predicted. But the changes will surely, in the end, be just as radical - it will just take longer before we all realize what is happening.

The purpose of this paper is to look at some of the possible consequences of these current developments for HRM and HR-managers.

The Internet can be used for different purposes. Through the use of e-mail and similar derivatives, it is a messaging medium par excellence. However, it is more than mere communication: it is also a medium for transactions; for buying and selling. Moreover, it can be used as an entertainment or information medium. All the above have implications for the utilization of an organization's human assets, but in this article we will concentrate on the area that is likely to impinge closest on most organizations: the medium of *transactions*. Especially in old economy businesses web-based transactions have experienced a major growth and encouraged major investments (see textbox below for an indication). Moreover, it is in these companies that the majority of people are still employed and where the function of HR is subject to radical and dramatic change because of the possibilities of web-based organizing.

So we will focus on the consequences of web-based business to business transactions in medium and large old economy companies in particular and discuss the implications for HRM and HR professionals.

Medium and large old economy companies can be involved in transactions within the new economy in different ways. Firstly, by making investments in and even taking over new economy companies. Secondly, by starting up their own subsidiaries to operate within the new economy. Thirdly, by attempting to incorporate the new

economy into their old economy organization. It is this third area, which is probably the most interesting from the point of view of the utilization of human assets. This is because old economy companies, who start up their own new economy companies, normally run them as separate entities. Clearly financial reasons play an important part in this decision but so do organizational considerations. New economy companies require a different organizational structure and culture than the mother company. Running new economy companies as separate entities is felt to minimize any possible cross pollution from the new to the old or vice versa. However, if large and complex old economy companies do try to integrate business to business e-commerce into their own existing organization, then solving the problems that arise can provide new challenges and opportunities in the development of people. It is this particular area that we will focus on in our paper.

However, before we begin we will give an overview of the striking characteristics that distinguish web-based transactions from more traditional transactions (section 2). We will then continue with an overview of the different ways in which old economy companies are attempting to integrate elements of web-based organizing into their current business and the implications of it for human resources management.

A well-know approach towards integration is simply to see the Net as an extension of their normal market channels for buying and selling (section 3). In this approach, companies primarily use the Net in order to improve current customer relations and as a medium to sell more product or services and to buy cheaper. For every business the Net- at the very least- offers opportunities for reducing operating cost levels and / or enhancing services (Venkatraman, 2000).

A second way in which old economy companies attempt to integrate the new economy is by using the Net to expand and improve their current co-makership relationships amongst their key suppliers (section 4). As Timmers suggested the Net can encourage close integration between the partners through a total value chain integration (Timmers, 1999).

Finally, the third approach, which is much more fundamental, requires that old economy organizations should totally re-think their business models before deciding on their e-commerce strategy and practice. This third approach requires that management should re-examine why customers buy from them, look at all stages in the processes involved and consider how the Net could impact each stage in the

processes, and then, if necessary, develop new business models with their required re-organization. This will imply desegregation and organizational revolution (section 5). We will outline each of these areas in turn, and consider their possible implications for human resources.

Before proceeding, we must remark that there is a lack of reliable information about this whole area. Most publications to date at the time of writing have been based more on personal experience than research and they tend to focus on the same few companies who are often not only re-organizing to accommodate the new net economy but are also intimately involved in selling equipment or services related to it. This paper is therefore based on personal experience in working in the field, interviews with others more experienced than us, and a review of the available literature sources. Our comments must therefore be taken as ‘possibles’ rather than ‘probables’.

2. What is the effect of the internet on business transactions?

The Internet will have a major impact on business transactions because of the differences it brings. Timmers (1999) has pointed out three major characteristics that distinguish transactions using electronic industrial markets from what has gone before. The first distinguishing characteristic is globalization. The Internet increases an organization’s possibilities for global sourcing and for global selling. As Greenspan (2000) has said, by lowering the costs of transactions and information, technology has reduced market frictions and provided a significant impetus to the process of broadening world markets. This means that considerations about where to locate will become secondary, whereas price competition is likely to increase.

The second characteristic, Timmers notes, is a major increase in the possibilities for customization. Internet technologies facilitate specification design and pricing online, which again is likely to increase price competition

A third characteristic of doing business on the Internet is that it facilitates solving customer demands, because a group of business partners can be involved. The traditional linear model from producer to customer no longer holds, but value can instead often be delivered quicker and cheaper through a network of partners.

Other experts have argued that transactions using e-commerce come far closer to the economists’ ideal of perfect competition than transactions using traditional media do

in that barriers to entry are lowered, transaction costs are reduced and buyers have improved access to information. (See for example Shapiro and Varian, 1999 and Wyckoff, 1997).

Box 1. The growth of business to business transactions using internet

In America revenues from transactions using the Internet tripled in 1999; in Europe and Japan they rose faster still. The biggest growth was expected in the area of transactions between businesses; the so called business to business sector. The Economist (Feb. 26, 2000) reported that in 1999 global e-commerce was worth a little over \$150 billion with around 80% of these transactions being between one business and another. It is interesting to note that in this business to business sector, although the growth rate might have slowed, it is still continuing strongly. Forrester, a respected research organization in the field, expects this sector to reach nearly \$2.7 trillion in the US by 2004 (www.Forrester.com 8 Dec 2001) and to reach \$7 trillion or 27% of total US trade by 2006. Another respected market researcher Gartner (2001) forecast in March 2001 that by 2004, the global business to business e-commerce market will have continued growing and will be worth £4.8 trillion. As James (2000) has remarked it is hard to know how seriously to take these dramatic predictions but major growth in this area, despite the downturn both in the world economy in general and in Internet related stocks in particular, seems inevitable. This growth area will be very important for human resource management as well because it is expected to be concentrated in old economy companies employing large numbers of people. Forrester, for example reports that 79 percent of large companies expected to be trading on line by 2002. (Business 2.0 June, 2000, p. 156). Most human resource professionals are still concentrated in medium and large old economy companies. The new economy start ups, still remaining, hardly use the HR function in spite of the pro-claimed importance of their key people to success.

3. Companies buying and selling on the Internet

The first major developments in this area started in the mid 1990s and saw major firms such as Wal-Mart and General Electric moving buying and selling on line to cut costs and speed supplies. The aims of cutting paperwork and time may have been simple but the results were impressive (see *textbox 2* for a few examples)

Box 2: GE and IBM save time and costs by using the Internet

GE has built up a trading process network, which is a web based link to suppliers so that they can bid for GE components contracts. This global supplier network links 1500 corporate buyers and around 16000 suppliers. According to information issued by GE in 2000 the system cut procurement cycles in half, processing costs by one third and the cost of goods purchased by between 5 and 50% (Economist March 4 2000 p 85/86). In the 18 months up to December 2001 around 2000 E auctions worth 416 billion have been completed through this route. Every GE company now has targets for e auctioning of around 60-70 per cent of total spend and this e procurement model is applied not just to indirect spend but to many services as well. (FT 5 Dec 2001: 'GE sets new targets'; Supplement on Supply Chain Collaboration, p. X1). Indeed the GE CEO Jeff Imelt has been reported (Useem, 2001) as going even further in suggesting that his managers should either digitalize or outsource all parts of their business which do not touch the customer directly.

IBM provides another good example of the kinds of savings to be made. By 1999 IBM had plugged 6700 suppliers into its on-line procurement system and bought more than \$12 billion worth of goods over the Net. This eliminated around 5 million invoices. This, together with sharper purchasing as a result of increased transparency etc., resulted in IBM saving \$240 million on the \$11 billion it spends.

Customer support is another area where major savings can be made. For example, some companies put customer technical advice on line. IBM estimates that, for every service call handled through IBM Dot.Com, it saves 70 to 90% of the cost of having a person take that call. In 1999, IBM expects to handle 35 million online service requests, thus saving 750 million US dollars.

The initial rapid spread of business exchanges was followed by a realization by many large customers that if they combined their individual buying power with that of their larger competitors into a separate buying and selling exchange, then this might have a major effect on their procurement costs. For example, General Motors, Ford and Daimler Chrysler merged their individual exchanges in early 2000 to create Covisint, a virtual market place for the automotive industry which it is estimated will eventually buy \$240 billion worth of parts from tens of thousands of suppliers. The result, according to study by Goldman Sachs, would be cost savings averaging just over \$1000 per vehicle (Financial Times, June 14 2000). It is, therefore, hardly surprising that other major manufacturers moved to join this consortium with Renault/Nissan already committed. Perhaps even more surprisingly, some major tier-one suppliers (see Dyer,1996) like Delphi Automotive Systems, Johnson Controls, Dana, Federal

Mogul and Siemens who build major sub assemblies, are also reported to be interested. In 2001, Covisint already handled in total procurement transactions worth more than \$45 billion. (FT 13 Nov. 01 p 37).

Implications for organizational structure and systems

Big companies can use the internet like this to put themselves at the center of new e business Eco-systems that will transform their way of doing business and their way of organizing. The inter connectivity demanded externally will have a major influence upon the (internal) organization. For example, order taking systems have to be made very customer friendly and closely linked with planning and production systems in order to ensure just-in-time delivery and zero stocks. Marketing is likely to increase in status and power at the expense of Sales, as customer relationships become more important and more and more straight sales are taken over by the Net. Also, procurement will have to be online to ensure adequate supplies of whatever may be needed. Closer links with the total administrative system will also be required to ensure that, as far as possible, the whole paper chain from order to invoice and payment should proceed without using any man hours. Finally logistics and distribution must also be linked to the system since delivery windows agreed with customers have to be met as promised. These functions are also likely to gain heavily in status and importance.

Outsourcing

The recent growth of outsourcing will merely add to the complexity of the necessary systems integration. Over the past few years, as coordination costs have been cut with the help of information and communications technology, firms have been moving to outsource more of what was perceived as their non core competencies such as design, procurement, marketing distribution and after sales support as well as finance and HR (Sarkar *et al.*, 1995). Since the Internet reduces transaction costs between buyer and seller even more, the possibility of outsourcing is even greater. However, even if only non-core supplies are involved, organizations still need to ensure close and smooth running interconnectivity.

Implications for HRM

The implications for the Human resource function as far as doing business through E-hubs are concerned are becoming clearer. Many western companies will probably have to lower their costs since they will be competing with competitors from across the globe, many of which have lower operating costs. In order to avoid being classified as just another commodity supplier, they will also have to endeavor to add some unique value in their customer's eyes by being able to offer exceptional levels of customer service.

Companies aiming to reduce cost whilst at the same time increasing flexibility and speed of response to customers' wishes are virtually forced to adopt a lean production approach. By lean production, we mean a focus on minimization of buffers and a concentration on a just-in-time supply approach. The literature is not unequivocal on the matter and criticism of the original Japanese approach has been voiced (see Cusumano, 1994). What evidence there is suggests that, to achieve top level results, a lean production approach must be accompanied by High Performance Management using team based organizational change programmes (such as 6 Sigma, TQM, etc.) that emphasize process management, customer focus, organizational learning and self managed teams (Wood, 1999).

HR departments should, of course, use the Web in every way possible to save money and to speed up everything they do. Wright and Dyer (2000) studied seven organizations from variety of industries and looked at how moving their business-to-business transactions onto the Internet affected the role of Human resources within the company. One of their conclusions concerned a major change in what they referred to as the delivery of HR services. They reported that transactional activities, such as benefits administration and record keeping and staffing in general demand, the bulk of current HR time. Many HR departments are so bogged down in such activities that they have no time for higher value added services such as knowledge management, culture management, and strategic re-direction and renewal. Wright and Dyer conclude that we can expect a major change that moves transactional activities either to outsourcing or to E-HRM. This view-point is, needless to say, shared by those who supply such E-HRM systems and who predict that Employee Relations Management (ERM) packages market will soon be bigger than the current best seller, Customer Relationship Management package (Siebel, 2001).

A portent of things to come could well be in the field of *selection* where Capelli (2001) reports that 15% of the US workforce, some 20 million people, are registered users of the largest on line job board Monster.com. Peak job searching time is from noon to 16.00 on Mondays (after morning meetings) and job seeking is currently the second most popular activity on the Internet. Of course it is not just jobs that are peddled on the Internet, but job information as well. The company as a (future) employer no longer controls that information. For example, Vault.com is a web site that sells information to job seekers about what it is like to work in a particular company. Vault.com's information is based on interviews with company employees. Those interested can buy that information and can also visit message boards where current employees post their own opinions of the workplace.

Probably even greater savings can be made in the *training and development* field. The move to a web-based business will involve extensive training. Expenses can be considerably reduced and effectiveness often increased through web-based training. IBM for example estimates that for every 1000 classroom days converted to electronic courses delivered via the web more than \$400,000 can be saved. In 1999, IBM had no less than 30% of its total internal training materials delivered via the web. Recently, Honeywell went one step further. They set up the MySkills.com web site that not only trains internal staff but also is open, for a fee of course, to others. My Skills provides comprehensive training on the fundamentals of industrial process operations using a specially developed interactive simulation. In this way, Honeywell saves money on their own training and earns money selling training programmes to others via the Web. Honeywell knows the value of such a move and stresses the success of My Skills in its regular reports to financial analysts.

Again not only is the amount of training important but also *the speed of learning*. The pace of change in this world is fast. Job content changes so rapidly that by the time Human Resource specialists have developed a tailored training course, the job content has changed. Individuals need to be able to develop their own training programmes. and for this they need to be able learn fast. Therefore, Human Resource professionals should be looking at how to increase the pace of learning. Motorola set up experiments in their units across the world to see which of the major approaches, on how to increase the pace of human learning, produced the best result in a Motorola

work environment. They found a clear answer in Reuven Feuerstein's ideas. (Feuerstein *et al*, 1980). A training approach based on Feuerstein's ideas produced increases in learning speed across a wide spectrum of people ranging from unskilled shop floor employees up to PhD chemists. Similarly, a recent research report to the UK government (McGuinness, 2000) reported that although Feuerstein's methods were originally intended for slow learning adolescents, they are currently successfully used for a wide range of age and ability groups.

HR departments should also be aware how interactive multimedia approaches could be used to *increase cognitive abilities*. Pilot projects at the Federal Aviation Administration, at the US Naval Academy as well as at a number of poorly performing elementary schools in Washington, have shown the effectiveness of new tools for assessing a human being's multiple intelligences and not just the increasingly discredited static ability or IQ. Children and adults using this software will be informed of the areas in which they are weak and those in which they are strong. The programme will then suggest customized interactive exercises intended to reinforce these cognitive strengths and to shore up weaknesses (Leebaert, 1998: 21).

To sum up, old economy companies adjusting to the net economy by buying and selling more on the net means for Human resources professionals developing a high performance management approach wherever possible. At the same time, they can save money by moving as much as possible of their own functional work onto the Net; and try to do everything they do, not just better, but also faster.

4. Extending co-makership into virtual communities or total value chain integration

Another way in which old economy larger companies will react to the new challenges and opportunities posed by the growth of business transactions using the internet is to attempt either to set up or to join supply chain communities. Most often these will be a vertical chain of all the key suppliers involved in servicing one major customer.

Bovet and Martha (2000) estimated that the supply chain accounts for sixty to eighty per cent of many companies' total costs and so it is highly likely that they will focus on extracting greater value from these operations. The ultimate aim of any manufacturer of complex equipment is to build to order and not to stock since the

financial savings are so large. This goal has probably only been attained by a few companies such as Dell Computer and Cisco Systems (*see Box 3* for more details), (Hartman and Sifonis, 2000). However, it has been reported that although it takes on average between 60 and 100 days to make a car and deliver it to the customer, manufacturers such as General Motors and Toyota are planning systems to bring this down to 5 days. (Economist Jan. 8 2000, p. 68). Car manufacturers expect cutting cycle time to this extent will result in taking around 50% out of overall inventory. With at least \$20 billion in parts on hand at any one time to support assembly systems, the savings on carrying costs alone could add up to several hundred million dollars per year. (Economist Aug. 26 2000)

It is obvious that such revolutionary change requires innovation not just in a firm's own systems, but also in their whole supply chain. It will require forming Web based links not just between internal departments but also between suppliers and customers right down the chain. It also means integrating the whole value chain into what different experts have given different names, although they appear to be describing the same phenomenon. For example Timmers (1999) calls them a virtual business community; Rayport and Sviolka (1995) a Virtual Value Chain and Bovet and Martha (2000); Value Nets.

Box 3: Cisco and Dell using total value chain integration

Cisco Systems is a classic example of a manufacturer using such a network. Cisco, develops and manufactures high performance networking products that link geographically dispersed local and wide area networks. The company has created an elaborate web of partners on the net, including manufacturers, assemblers, distributors, OEMs strategic partners, and sales channels. Products are conceived, designed, developed, manufactured, sold serviced and enhanced from multiple locations all on the web. Cisco transfers its strategic knowledge (customer requirements and company strategy) and product knowledge assets to its strategic partners. In turn Cisco receives system design input and planning knowledge from these partners. With Cisco's active encouragement, participants lubricate the system by freely exchanging knowledge and opinions. On an hourly basis the net is the channel for these exchanges. This community enables dramatically low cycle times, reduced costs and fast innovation. Cisco's value network is drenched in intangible value exchanges which create its strategic advantage in the market. (Tapscott et al, 1999) At Cisco, the whole process of ordering, outsourced contract manufacturing & shipping, payment, help-desk and support centre has been automated. 64% of all Cisco orders passed through the system without being touched by anyone in 1999 (Venkatraman,

2000). According to the finance director the company can close its books now in 1 day instead of 10 and it saves \$4500 million a year by using the Web. (Hartman and Sifonis, 2000).

Dell, a major producer of computers and user of the direct selling method, is pursuing a similar policy. Many of Dells business customers use the Internet to order computers. A process that automatically spawns the design, manufacturing and shipping of customized products. Although Dell still carries out some of its own manufacturing, if manufacturing assets are looked at in dollar terms, they are small, roughly six to seven weeks of cash flow. But Dell is connected with capital intensive suppliers like Intel and Solectron, who supply Dell's factories in real time. This system leads to Dell making returns on invested capital in early 2000 of 292% and each Dell employee has been reported as generating more than \$750,000 in revenue, compared to an industry average of around \$525,000. (James, 2000)

Close, trusting co-makership type collaboration between the partners is essential. No business involved can afford to have even one weak link in the chain because, increasingly, the competitiveness of firms will not depend on their resources and capabilities alone but will be decided by their ability to mobilize their whole value chain. It is value chains or constellations rather than businesses that will compete against each other (Cool, 1997). In a virtual supply chain community, the relationship between partners will be one of co-makership, based on long term relationships and involvement in joint new product development. As Van Alstyne (1997) has suggested value chain constellations are critically dependent on affiliation, loyalty and trust. Shared values and social norms of loyalty as well as frequent trading and collaboration, are essential in setting up such constellations.

The importance of trust

If an organization is to, successfully, become a member of a virtual supply chain network then it will have to maintain its High Performance systems, while continue to develop in other areas as well. What is needed is a rational and orderly organization resulting from the High Performance systems combined with a willingness to constantly consider change and, where necessary, to implement innovation fast. This balance between strong routines on the one hand and the freedom to experiment and innovate on the other is difficult for any organization to achieve. Yet, it is not impossible. For example, the most definitive study of why Toyota was able to achieve such a dominant position in the world automotive market has concluded that this balance was the major reason for its success (Fujimoto, 1999). The willingness to

consider change and innovation in the context of a virtual supply chain is complex. It requires the development and maintenance of *a climate of trust* between network partners, both internally and externally. *Learning* both at individual and at organizational level will have to be of a high order in order to facilitate the needed continuous improvement and innovation. It is not enough for an organization to know how to develop and support trust relationships or a learning climate. This has to be done at one and the same time, as the basic routines are constantly being updated and improved. It is the balance, which seems to be important.

We have suggested how a high performing organization can be developed. Additionally, in order to maximize the contribution of human resources to the effectiveness of the organization, trusting relationships need to be developed internally and externally, as well as an environment in which learning and innovation can thrive.

The academic literature on trust amongst individuals has a distinguished history and, recently, because of the growth in mergers alliances, joint ventures and outsourcing etc, interesting work has also been carried out at the organizational level (For example Blois, 1999 and Child and Faulkner, 1998).

A major reason why trust is important in the context of a virtual supply chain is as a possible governing device. Traditionally the most popular governing device in relations between customer and supplier has been the legal contract. Unfortunately, legal contracts rely for their effectiveness on being able to prescribe what should happen in all the possible important eventualities. Thus, the more unpredictable the situation, the more difficult it is to foretell all eventualities, and therefore the less effective any legal contract will be (Nooteboom, 2000). Virtual supply chains, in particular, often operate within unpredictable dynamic situations.

Legal contracts, of course, have a role to play, but so do other methods of governance such as trust. If a partner relies on methods of governance other than legal formality, this sends a clear message to the other partner. To trust someone or something is to accept risk, vulnerability and uncertainty. It is not a state to be entered into lightly. As Nooteboom (2000), after a review of possible definitions concludes; 'To trust is to accept or neglect the possibility that things will go wrong'. Nevertheless, a relationship of trust can also be economically sensible because, as currently realized,

the opposite – mistrust may, in fact, add to the transaction costs involved in a relationship.

There is an important distinction in organizational trust between technical or competence trust and intentional or motivational trust (Nooteboom, 1996) This distinction is somewhat similar to that made by McAllister (1995) who, at the individual level, has split trust into affect based and cognition based trust. Affect based trust is primarily dependent upon a personal emotional relationship, whereas cognition based trust is related to confidence in the partners' technical work related abilities.

Affect based trust involves individuals personally. They will feel a sense of personal loss if they can no longer work together. They feel they understand each other. If this affect based trust is broken; then the deep emotion of betrayal is felt.

Cognition based trust effects individuals at a less powerful level. If the partner proves incapable of doing the job, delivering as promised on time, quality and price, then a mistake has been made in assessing their technical capacity. There has been no personal betrayal. Partners will seek to heighten both kinds of trust so that the relative value of the partner is raised and thus increasing the switching costs, that would be incurred by moving to another different partner.

Affect based trust, on the other hand, takes longer to develop. It is increased by involvement of the partner, by open communication, by empathy or showing understanding of the others problems. It takes longer to develop- and but it more resilient. However, it brings far more dangers. If emotional trust develops then the partner becomes a member of the in-group. If members of the in-group exhibit positive behavior then this will be thought to be because of their personal attributes. If they exhibit negative behavior then it will not be seen as their fault. It is more likely that they will be absolved from any blame and that the situation will be seen to be at fault. It thus becomes difficult to have any objective as opposed to emotional assessment of the relationship. (see also Pettigrew, 1979 and Weick, 1995)

The dangers are clear. As Braunschvig (1998) has pointed out, alliances between individuals and groups develop more intensely in an unstructured situation, such as a virtual supply network, than in a clear command and control environment.

So how can a partner's performance be objectively measured and monitored if the relationship within such a network is so close. The rules of the game must be clearly defined and the regulatory system must be perceived as balanced and trustworthy, or the trust necessary for the network to function will dissipate. Some writers have shed light on this dilemma. Simons (1995) concentrating on internal organizational control systems designed a model of management control for effective strategy implementation based on the notion that any new concept of control must balance freedom and constraint, empowerment and accountability, top down directives and bottom up creativity. Spekle (2001) also produced some interesting thoughts in this area but could only conclude that alternative suppliers always need to be kept available (if possible) so that comparisons of performance can be made.

Implications for HRM

Any new emphasis on trust relationships between organizations can hardly develop without similar trust relations also blossoming within organizations. As the organizational becomes less hierarchical and structured so the manager's role changes. As a consequence of having to rely on the people to get the best out of themselves, managers have to become facilitators. They must create the conditions under which employees can and want to give optimum performance. Their role lies often in mediation and arbitration. There is, clearly, a major challenge for training and development in this area.

The HR function can play a similarly important role regarding the developing of learning within the organization. For example, learning both within and between organizations has proven difficult to encourage. Many organizations are still struggling to realize any value from knowledge exploitation. (see *Releasing the Value of Knowledge*. Microsoft survey of UK Industry. Cranfield; School of management; 2000). And as Seely Brown and Duguid (2000) point out, experience has shown that knowledge and best practice is hard to disseminate even within the same organization let alone along a supply chain, unless very closely guided and encouraged.

Guiding and encouraging knowledge exchange between organizations must be based on the premise that both individuals and organizations learn best from those who are

similar to them. (Garvin, 2000; see also for a similar point but from a different perspective Rogers, 1995). To learn most effectively, individuals must have sufficient prior knowledge. They must be able to understand the complexity of the new situation. Otherwise they will be slow to process and retain new facts and concepts because they will lack an ability to interpret and classify information based on pre existing schemas and frameworks. (Cohen and Levinthal, 1990). In other words, as another more recent theorist (Baumard, 1999) has suggested, one must belong to a world in order to know it. Immersion in the appropriate practice is the only way to access tacit knowledge.

Therefore, guiding and encouraging knowledge exchange between organizations is a three stage process. The first stage is to find out where possibly interesting experience is available. Human Resource departments need to be aware of where to find companies to which their own organization can relate, that have useful experience in facing and overcoming the issues in which they are interested. So if the corporate aim is to develop and maintain more trusting relationships with suppliers and customers, then HR should be aware of other relevant organizations from whose experience they could learn.

The second stage is obtaining access to this experience. The third stage is deciding if and how the experience can be adapted to fit your organizational situation. The latter can best be done using communities of practice; that is similar people with similar interests facing similar problems. (Seely Brown and Duguid, 2000).

Box 4: How the HR function can help to develop communities of practice

A typical example of how the Human Resource function might operate in this context would be as follows. The company aim is to switch a portion of its current investment in R&D to more venture capital type activities. That is it aims to take stakes in or take over young start up companies with innovative ideas and technologies relevant to the basic business, instead of trying to grow them in house. However, the success rate of mergers and acquisitions is known to be low and especially troublesome are take overs where the objective is the obtaining of technological expertise. (Economist, August 5 2000). So the company wants to learn how to improve its success rate in this important field. The Human Resource function has as part of its remit to advise the Board in the areas of organisational structure and development. So it is aware of what lessons might be learned in this context from other companies' experiences. It will therefore know that Cisco Systems has been practicing for some time a highly successful strategy based on growing primarily through acquisitions, many of whom have been

small innovative start ups. Much Information about the Cisco approach is in the public domain. For example Bunnell (2000: 64-76) outlines the Cisco acquisition process in some detail showing the importance of the many different systems used. But no story, however well told, can cover the whole situation. In order to fill out the total picture, contact needs to be made between relevant individuals in both companies; the learner and the example company. Relevant individuals need to be able to talk with their equivalents, thus forming a community of practice. And it is of course the development of precisely such communities which has been facilitated by the growth of the Internet (Seely Brown and Duguid, 2000)

The Human Resource function should know where interesting practice is to be found, inside or outside their own organization or network, and then be able to facilitate both initial contacts and the, subsequent, setting up of relevant communities of practice. By so doing, they will be playing a powerful role in the development of organizational learning.

A word of warning can be found in Wright and Dyer (2000). The moves we have outlined towards a new balance between openness, trust and learning on the one hand and new forms of discipline and control on the other, will not be easy. They will require a change in role for Human Resources. Ulrich (1998) outlined the four possible roles for HR; strategic partner, change agent, administrative expert and employee advocate. Many have suggested that the role of strategic partner took priority in the 1990s. However, according to Wright and Dyer's study (2000), the growth of virtual supply chains has resulted in a shift towards the role of change agent. Given, the speed and uncertainty at which challenges have to be faced within organizations, this is not surprising. But, Wright and Dyer go on to warn that, particularly in bricks-and-mortar firms that are beginning to use virtual supply chains, there is very little distinction between the two roles. In essence they suggest, one cannot separate acting as a strategic partner from acting as a change agent. Those in positions of power have achieved their status through competence and expertise relevant to different aspects of the value chain. Moving to a virtual chain means that the power structure will have to be dismantled and re-arranged. Therefore, institutional systems and political power structures are hardly likely to be in favor of the new moves. Change agency as well as high-level strategic advice are likely to be required.

5. Desegregation and organizational revolution

The third possible reaction of old economy companies to the growth of the net economy is to step back and re-assess how this might affect their business. Schwartz (1997) indeed argues that the major opportunities posed by the Net economy lie first in de-constructing the value chain in order subsequently to re-assemble it, if necessary with new roles and new business actors. Companies are thus being counseled to re-think the strategic fundamentals of their business.

Evans and Wurster (1997) argue that information defines supplier relationships. Having a relationship means that two companies have established certain channels of communication and information. When information is transported physically, for example, by car, by a salesman or a by letter, it goes to a certain location and no further. In contrast, once everyone is connected electronically, information can travel by itself and is widely dispersed. The traditional link between the flow of product related information and the flow of the product itself is broken. The Net enables information to be unbundled from its physical carrier.

This means that information can reach many people cheaply in a form, which can be easily made personally appealing to them. This changing economics of information, as Evans and Wurster, (1997) call it, threatens to undermine established value chains requiring many companies to re-think their strategies fundamentally; a process that often results in unraveling vertically integrated value chains.

Re-thinking always starts with the customer. It involves going right back to the basic value proposition and understanding what motivates end-customers to buy from your organization and not from the competition. Once this is established, every aspect has to be distinguished, such as for example, the goods or services involved, the key business processes, the financial and human resources required, the organizational structures and the major systems and procedures. These are the building blocks that can be re-designed, added to and re-configured to transform the value proposition. What needs to be examined is how transacting business using the Net can help add new forms of value at each step on the way.

Such desegregation can be a highly threatening exercise for many senior managers. They may need strong encouragement before they are willing to undertake such an exercise. For example, in 1999, General Electric recruited an estimated 100 external top e-commerce experts to be used as 'black belts' or team leaders of 'Destroy your

business teams'. These teams were set up in every GE Unit with the objective of desegregation; of examining how the Net could be used to annihilate the units mainstream business. The task proved very difficult. Many units were run by senior managers who, for years, have successfully run businesses under pre-Net conditions. Such individuals often had little understanding of e-commerce, and had difficulty in envisioning that the Net could have any impact on their thriving businesses.

The need for this radical re-thinking of strategy and unraveling of vertically integrated value chains is greatest in the distributive networks according to experts such as Tapscott *et al*, 2000. Distributive networks are the key organizations supporting business transactions on the web. They allocate and deliver goods - whether information, objects, money or other resources - from providers to users. They facilitate the exchange and delivery of information goods and services.

Box 5: The transformation of a distributive network: Federal Express

A distributive network uses mediating technologies to facilitate exchanges across time and space. (Stabell and Fjelstad, 1998). So transportation companies used to use trucks and roads. Then Federal Express moved ahead with an intelligent software enabled air / truck network. Then in late 1998 Fedex decided that its physical distribution system of trucks and airplanes was less valuable than its internet worked information resources; its digital capital was gaining value over its physical capital. Fedex decided to focus on value added context services like on line package tracking and logistics outsourcing and leave the actual driving jobs to outsourcers. Essentially the company started to move away from physical capital in favor of relationship and structural capital. It began selling its transport network, marshalling a web of truck and air transporters to handle the physical delivery.

In Europe, distributive networks such as power companies, postal and telecommunications services, and railroads, used to be government-regulated monopolies. They reflected a physical capital asset based mind set: a view that to deliver value to a customer the company should own its entire value chain, for example in the case of electricity supply, generating facilities, transmission lines, local distribution networks, and access to end-customers. Re-thinking strategy by concentrating on the opportunities and threats posed by transactions using the Net raises the likelihood of desegregating the businesses of generation, transmission and marketing.

It is clear that desegregation can be a radical revolution. Thus, despite the enthusiasm with which some consultants propagate it, it is a high-risk strategy, as Enron found out to its cost. However, for some businesses doing nothing may mean a higher long-term risk. The key to success for high-risk strategy such as desegregation lies in the way the whole process of desegregation and subsequent re-positioning of the business is managed. This is likely to be highly threatening organizational change leaving many managers and employees facing an unpredictable future in comparison to the security of what they were accustomed.

HRM implications

Although there is little previous experience to draw on in this area, some logical conclusions can be drawn. In this revolutionary situation maximizing human resources will depend not only, as in the previous stage, on the effectiveness of the organizational change programmes, but also on individuals being able to capitalize upon the major opportunities that such a revolutionary situation can bring for management and individual development

Managers learn most, not from any classroom based courses but rather from their own practical experience. This experience has to pose special challenges. The situation must be important for the individual and they must have had no previous experience of managing it successfully. So people learn best from new situations. Situations can include cross-boundary movement, being involved in task forces or special projects, managing a downsizing operation, switching from a series of staff jobs to being a line manager. As long as the situation is important- and is new- then learning will be optimal (McCall, 1988).

The process and the result from a desegregation process, as described above, must be a totally novel situation for most of the managers involved. It is clear that this stage can have major potential for individual development. Therefore, the choice of who is to take part in such an exercise is extremely important not just from a business but also from a human asset development point of view.

However, the most important change for the HR function in a desegregation situation is probably the sea-change of their own function. Traditionally, according to Wright and Dyer (2000), the Human Resource function has focused on delivering almost

perfect quality HR systems and services to the organization. To do so required that they spend considerable amounts of time gathering and analyzing information, garnering political support and soliciting input from multiple sources at each stage in the development process. Such a process also used pilot rollouts in small groups to get feedback to allow any problems to be ironed out before any corporate wide launch.

To reach such perfection takes a long time- and a large deal of labor. It was hardly surprising therefore that Wright et al (1999) found the design and implementation of HR systems takes on average between 18 and 20 months. Given the rapid pace of the almost permanent change involved in any desegregation situation, firms can no longer afford to wait this long-or to pay the cost of such an elaborate development and implementation process.

In the desegregation situation HR has to deliver solutions as close to real time as possible lest the firm loses its advantage to competitors that are more agile. As Wright and Dyer (2000) remark, “to deliver solutions quickly requires refocusing HR attention from comprehensive optimal solutions to simpler but satisfactory ones”. A culture change of no small size.

6. Summary and conclusions.

As our brief overview has pointed out, the uncertainties, problems and complexities for many organizations of moving business-to-business transactions onto the Internet will mean that the pace for many will be slow even if it is sure. To start with, both Internet based and non Internet based systems are likely to be kept running in parallel. For example, business-to-business selling in many companies will exist side by side with a more traditional approach. Selling through the Net may have major cost advantages, but it does not give much opportunity for developing personal contacts, nor for the flexibility sometimes needed to clinch the sale. For example it is hard to enquire about a customer’s family during an ordering process on the Net. Moreover, the Net is often inflexible in quoting a delivery date, whereas a good salesman knows how to twist the system so that the customer gets the goods within his desired time frame. So the human resource function will have to move in the directions we have suggested whilst at the same time, continuing to fulfill its more traditional roles.

To summarize, we have suggested that there are three main ways in which old economy companies are attempting to integrate the new economy as extensions of their current businesses.

The first way is by treating the net as an extension of their normal market. They use it primarily to sell more products or services and to buy cheaper. This will involve many organizations operating primarily through business-to-business exchanges. The transparency and global reach of these exchanges will put major pressure on suppliers' costs and speed and flexibility of response.

We have suggested that the major accepted way for Western companies to achieve necessary cost savings and performance increases is to adopt a lean management approach combined with a high performance organization. This implies a clear role for the HR function that is expected to be highly cost-efficient in the way in which it operates in order to support the implementation of high performance high involvement work systems.

The second way in which old economy companies attempt to integrate the new economy is by using the Net to expand and improve co-makership relationships amongst their key suppliers. We envisage many business-to-business suppliers becoming members of fully integrated virtual supply chains, with a need to develop trusting relationships between all the partners in the network combined with the necessity of constant improvement in performance and innovation.

In such a situation, what is needed is a combination of the High Performance systems rational and orderly organization with a willingness to constantly consider change and, where necessary, to implement innovation fast. This balance between strong routines, on the one hand, and the freedom to experiment and innovate, on the other, is difficult for any organization to achieve. It requires the development and maintenance of a climate of trust both internally in the firm and externally between network partners. In addition, learning both at individual and at organizational level will have to be of a high order in order to facilitate the necessary continuous improvement and innovation.

So again the role of the HR is clear. Not only must they ensure development and maintenance of a high performing organization but they must also assist in the development of trusting relationships and learning and innovation.

Finally, as we suggested, there is also a third way which may be temporary, but is much more fundamental. This approach requires that old economy organizations should totally re think their business models before deciding on their e-commerce strategy. It requires old economy organizations to re-examine why customers buy from them, look at all stages in the processes involved and consider how the Net could impact each stage in the processes, and then, if necessary, develop new business models with their required re organization.

Again the HR role is clear. They must help manage the multiple change processes involved and also help those involved in this process to gather whatever learning is available as effectively as possible. And satisfying rather than striving for perfection will be the order of the day.

7. Final remarks

Web-based organizing is a complex issue. Few companies can easily be slotted into the three ways we have just described. Sub-units of many companies may well be spread across different categories, and some may be moving from one category to another. The speed of change will vary across business sectors. Also there are many and varied problems involved in the moving of business-to-business transactions onto the Net. Whatever happens, the move of business transactions to the net is inevitable. There is, therefore, a need to act fast in order to be ready.

HRM is concerned with people and people are becoming more important. The relative value of fixed assets such as property and factories is declining whilst the value ascribed to intangible assets is increasing. Many of the newly valuable intangible assets involve people; people's ideas, people's contacts, people's ability to manage in the midst of chaos, people's vision and experience, people's intuition or understanding of markets; and so on. However, people are free agents. Although people may be central to many of the new assets, they can, and do, change employers frequently. Moreover, the people most important to an organization's success may actually be employed elsewhere. Therefore, HRM should not just concentrate on people as individuals. People are mobile and cannot be regarded as tangible assets. However, what can be regarded as much more fixed are the systems that underpin people's successful behavior. That is to say the systems that stimulate and support the

new desired behaviors. These systems are what HR-managers need to identify so that they can then guide management in adapting and improving these systems to fit their own organization.

This important message seems to have reached more than just the HR function. There are now signs that the finance community is beginning to value an organization's ability to change internal systems, an area in which the HR function plays an important part. In the past valuation has mainly depended on external aspects such as technology and market strategy and mergers and acquisitions; matters on which the influence of HR has seldom been strong. Currently this seems to be changing. The internal improvements, necessary for successful transference of business to the Internet, may at last enable the HR function to justify its existence in financial terms.

Typical of this new approach by financial experts is work by Braunschvig (1998) writing from his position as a managing director at Lazard Freres in New York. He suggests that productivity increases can have a impact on how companies are valued. He suggests that recent unfortunate experiences with the Internet sector have resulted in the investment community becoming increasingly sensitive to a firm's capacity to generate earnings. Any company that clearly adopts initiatives to promote productivity growth should appeal to them.

Methods that measure a company's ability to leverage its resources, human, financial or technical, in order to expand its output while controlling its use of inputs could be used alongside growth driven valuation approaches. Braunschvig (1998) foresees, that investors will end up spending much more time than they do now assessing the internal systems, both technical and managerial, of the enterprise. These systems will be seen as drivers of productivity growth, thus of earnings potential and therefore of valuation.

This focus on productivity appeals particularly to companies in economies now approaching the margin of their present efficiencies and facing increasing competition from foreign players in domestic markets and abroad. Until now, USA-based companies have been protected from the world wide commercial environment by advantages arising from the commercial environment in which they operate. These include, the size and scope of the internal US market, its openness, relatively benign

government interference, the willingness to invest and the strength of its innovation processes. Although these advantages still hold, it is clear that technological innovations of production processes are being carried out with increasingly short time lags in places such as South East Asia.

A fitting end to this paper is perhaps provided by Braunschvig's conclusion that both American and especially European economies have to leverage their human and technological resources with higher productivity growth. *'This could well be the opportunity of last resort for mature economies challenged by companies from younger hungrier cultures and countries'* (Braunschvig, 1998:178).

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