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The informated individual - a consideration of importance to the business organisation

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Abstract

This paper starts by outlining the role that Downsizing and Business Process Re-engineering (BPR) can play in the creation of a flatter and therefore a more responsive organisation. The role of computer-based information technologies in the implementation of these strategies is considered. Owing to the level of importance IT can play in both Downsizing and BPR initiatives, the importance of ensuring alignment between the IT, organisational, and management strategies is discussed. This leads to a consideration of the profound human resource implications such initiatives have and the need to ensure these are recognised in the development of an appropriate human resource strategy. From this consideration arises a discussion about the contribution that empowerment, the Learning Organisation, and the informated individual can make in ensuring the success of such initiatives. The lack of literature detailing the exact nature of the informated individual, specifically the types of skills, characteristics and behaviours of such an individual, is raised. The importance of such factors, and their application to the evaluation of an information system's effectiveness and success, is discussed. The paper concludes with a call for the development of a model which both details these characteristics and behaviours and explains their interaction.

Introduction

Much debate has centred around the conventional form of company organisation as described by Anthony (1965). Fundamentally, the traditional organisation is seen as consisting of three layers: strategic, tactical and operational. In this traditional model, senior managers are responsible for determining company goals (strategic), middle managers are responsible for devising plans to achieve these goals (tactical) and line staff are expected to execute these plans (operational). The principles of scientific management dictate that the tasks given to workers are such that workers require only minimum skill levels. Furthermore, workers are discouraged from thinking about what they do or how they can best do it.

Recent management thinking has tended to argue that organisations should become "flatter", that is, by reducing the layers between senior management and the shop floor (Zuboff, 1988; Senge, 1994; Parker, 1993; Fitzgerald and Murphy, 1995 and Classe, 1993). It is claimed that such flattening will help the organisation to become more flexible and responsive through a reduction of bureaucratic levels (Bird, 1994). Balasubramanian (1995) then states what many seem to believe, that "The introduction of information systems flattens the structure of the organization and promotes greater dissemination of information to all individuals" (p.5).

Empowerment of workers has often been proposed as essential to the successful flattening of an organisation. Zuboff (1988) has argued that organisations need not only to empower their workers but to informate them, by providing them with the information (often through the use of information technology), and also with the responsibility and autonomy to make decisions which were formerly made by middle management. This concept was picked up by Senge (1993) who argued that if operational level workers took on the responsibilities of middle managers then that management level could be thinned. Both Zuboff and Senge recognised that worker empowerment and informating would fundamentally change the nature of middle management roles through delegation of tasks and blurring of boundaries between levels and functions. Such an organisational structure would require "workers" who are able to make and act on decisions: workers who can think.

This paper begins with a brief description of two organisational strategies, Downsizing and Business Process Re-engineering (BPR), for achieving the flatter organisation. The widespread deployment of networked computer-based information systems has allowed many companies to implement Downsizing and BPR initiatives, together or separately. With this in mind, the importance of aligning the business, organisational and information technology (IT) strategies is considered. It is noted that both Downsizing and BPR have major effects on the structure of the organisation. These structural changes affect the individuals who work within the organisation. Discussion therefore follows about the implications for the human resource strategy, and about empowerment, the creation of the Learning Organisation and the need to informate individuals. The lack of literature detailing the exact nature of the informated individual, specifically the types of skills, characteristics and behaviours of such an individual, is raised. The importance of informated individuals and their contribution to the effectiveness and success of information systems is discussed. The paper concludes with a call for the development of a model which details these skills, characteristics and behaviours and explains their interaction.

Downsizing and Business Process Re-engineering

Downsizing

Downsizing seeks to flatten an organisation through the removal of redundant levels. In the 1980s, many manufacturing companies downsized by purchasing computer-based technologies and applying them to automate all or part of production. Typically this meant that the company could reduce the number of unskilled or semi-skilled workers because machines were employed to perform their tasks. In the 1990s, with the introduction of more sophisticated office technologies, attention turned to middle management. It was argued that companies had become too "top heavy" and that too many managers were employed to "shuffle paper" and pass it from one place to another. The new technologies were seen as a means of automating this function, thereby ridding the organisation of excess "fat".

As Downsizing has often been regarded as a cost-cutting measure, little attention was paid to its mid to long-term organisational implications. These implications tended to have two main ramifications. First, essential organisational knowledge was lost (Kiechel, 1990). Second, remaining staff at various levels were unable to perform their roles and tasks effectively as they lacked the direction and expertise previously provided by management (Zuboff, 1988).

Business Process Re-engineering

Since Hammer's (1990) article, a great deal of time and effort has been invested in the Business Process Re-engineering (BPR) movement. BPR directs attention to what a company does and why it does it to re-evaluate what it is doing. This often involves an organisation simplifying and shortening its processes (Fitzgerald and Murphy, 1995) but should go beyond merely streamlining activities undertaken within functional areas. Rather, the aim should be to take a holistic approach and focus on the overall process (eg. filling a customer order) across the entire organisation (Classe, 1993). BPR can be summarised as the difference between improving what is done and what should be done. For this reason it has been recommended that organisations start with a blank piece of paper and design their "ideal" process(es).

It has been argued (Fiedler et al., 1994; Classe, 1993; Hammer and Champy, 1993; Parker, 1993 and Davenport and Short, 1990) that IT has provided the means of achieving these ideal processes by removing traditional communication barriers. IT can provide the mechanism to move information around an organisation far more directly and quickly than was possible in the past. Theoretically all levels of staff, providing they have clearance, can have access to all information in the corporate database. Staff can then use this information to add value to the organisation. This enables staff who were "paper pushers" under the previous system to be redirected to other valuable work, or retired. In this manner the organisation is both downsized and flattened.

BPR is prey to the very real danger that IT is seen as something far more than the enabler – it becomes "the solution". This is particularly so if the organisation is keen to use BPR to reduce its workforce. The temptation is to use BPR to justify replacing people with technology, resulting in the organisation buying the technology first and designing its processes around that technology, rather than designing the processes first and then deciding the best way to implement them. This may go some way to explaining the 85 percent of unsuccessful BPR initiatives quoted by Bullen (1995).

Strategy Implications and the Need for Alignment

As the enabler of Downsizing and Business Process Reengineering, IT is closely interwoven with organisational change. Indeed, Huber (1990) predicted that IT would have a significant effect on organisation design, intelligence, and decision making. There have been many studies since on IT-effected organisational change (Fiedler et al., 1994; Hammer and Champy, 1993; Henderson and Benkatramen, 1993; Picot et al., 1994 and Yates and Benjamin,1991). Fuglseth and Gronhaug (1994) discuss the place of IT in complementing management communication and note the importance of ensuring that the IT strategy aligns with organisation strategy. Failure to do so is likely to result in conflicting aims, objectives, and actions, with corresponding reduction in organisational effectiveness.

As explained earlier Downsizing and BPR initiatives can result in the loss of personnel (in some cases ineffective personnel are retained while effective personnel are lost). This may be because Downsizing emphasises the reduction of hierarchical levels while BPR's foremost concern is with the process(es). Execution of both strategies can ignore the roles people perform within both the hierarchy and the process. These two strategies can also ignore the manner in which people interact. Checkland and Scholes (1990) argue passionately that this interaction forms the basis of the organisation's "social system". This is reflected by Unterweger (1988) who points out, "Technologies that ignore the role of social systems fail to deliver their intended benefits and might even be less effective than the technologies they replace" (p.38). This suggests that applying IT, no matter how

sophisticated it is, without considering people and their roles, can result in less effective performance at the individual and organisation level.

Despite being touted as an organisation's most valuable asset (Pfeffer, 1994 and Checkland and Scholes, 1990), people are often perceived as being problematic and expensive (Parker, 1993). It is this perception that can lead to organisations ignoring what their people can contribute. Rather than playing down the importance of people while highlighting the problems and expense that people can create, organisations should accept the associated difficulties and focus on making the most of what people can do and contribute (van der Pijl, 1994). This is a Human Resource issue and so has implications on the Human Resource Strategy (Wiggins, 1990) to the extent that IT-induced change should be accompanied by Human Resource strategy changes to ensure alignment (Penny and Bonner 1995; Bechet and Walker, 1993; Williams, 1993; Stalk et al., 1992; Swiercz and Spencer, 1992; Venkatramen, 1991 and Hudson, 1988).

Together with the alignment of the appropriate strategies, IT provides the means to promote "… greater dissemination of information …" (Balasubramanian, 1995, p.5). The effects of this dissemination can be enhanced through the empowerment of individuals at all levels of the organisation (Goss, Pascale and Athos, 1993 and Shrednick, Shutt and Weiss, 1992). Crucially, empowerment enables employees to be *actively* involved in, for example, planning and decision-making. This marks a distinct departure from the traditional "chain of command" mentality. Goss et al. (1993) go on to argue that by moving away from this mentality, companies are effectively reinventing themselves. This is something more fundamental that simply re-engineering because this shift represents not a case of changing "… what is, but creating what isn't" (p.98).

The reinvented organisation requires people who are capable of thinking critically and holistically about what they do at both the local and global levels, resulting in changes in beliefs and attitudes by the individual and the organisation (Driscoll, 1995). To describe an organisation that is constantly undergoing such change, Senge (1993) and Zuboff (1988) used the term "The Learning Organisation".

Empowerment and The Learning Organisation

As noted in the introduction a company organised according to Anthony's (1965) conventional model tends to be dominated by a "chain of command" mentality: those at the top say what will be done and those at the bottom will do it. Under the principles of scientific management workers are discouraged from thinking. Yet the literature relating to learning organisations, BPR, and downsizing stresses the importance of empowering individuals to think and act autonomously, often requiring them to become much more information driven and to view their work in a far more abstract manner. To be effective, these individuals must be freed from the restrictions of such traditional bureaucracies as the chain of command.

Whilst it has been suggested that technology can empower individuals (Balasubramanian, 1995), it should be noted that true empowerment goes beyond simply making information available to all, regardless of status. It requires a company with a culture and a structure that actually puts control in the hands of people other than traditional "managers". It requires people to be given the responsibility (and opportunity!) to make decisions and take action. Furthermore, the company should not try to "supervise" them every step of the way but "trust" them. Such an organisation is a "Learning Organisation".

However, true empowerment radically shifts the locus of control in an organisation. It moves control out of the hands of the "traditional" manager and into those of the operational staff. This move requires a dramatic change in traditional roles since operational staff will now be required to make decisions (formerly middle management's role). Of course this means that responsibility for those decisions must rest with the staff who made them.

This devolution of responsibility in turn requires a radical shift from the view of middle managers as leaders, in the decision-making sense, (Driscoll, 1995) to a view of them as teachers or, perhaps better, as facilitators (Shrednick et al., 1992). Their new and most important skills will be the ability to work with those around them, creating a holistic view of operations, and to engineer creative tension. Additionally, middle managers will have to delegate decision making to the workers while encouraging those workers to take on that

responsibility. Kiechel (1990) believes that the Learning Organisation provides a means for furthering the empowerment movement.

A learning organisation requires people who are capable of thinking about what they are doing all the time. This may well require them to individually step back from the task and reflect on it. Unfortunately, as Kiechel (1990) points out, many companies do not consider reflection to be a productive use of time. Senge's (1993) words therefore take on extra relevance: "Learning is too important to leave to chance; that's why efforts must focus on developing infrastructures for learning" (p.7). Thus it is not merely enough to require people to think; the organisation must provide the environment to encourage and nurture their thinking.

Senge (1994) believes that an important pre-requisite for enabling effective individual contribution to the Learning Organisation is "creative tension". Creative tension requires an individual to have a compelling picture of a desired future and an accurate picture of the current reality. Recognition of the difference, or gap, between the two pictures creates the tension. This tension in turn motivates the individual to devise multiple solutions (the creative aspect) for effecting the change from the existing state to the desired state. Senge (1994), Kiechel (1990), and Driscoll (1995) believe that a learning organisation must ensure that everyone, regardless of rank, has this motivation. Kiechel (1990) points out that middle managers are the key to it. He quotes Paul Barnes (responsible for Ford's corporate employee development): "Middle managers have a wealth of information that needs to be spread throughout the organisation" (p.136). It is the sharing of both this information and the middle managers' knowledge that can help others at different levels in the organisation to learn.

Balasubramanian (1995) says that, "... information systems ... [promote] greater dissemination of information ... Increased availability of information helps members share information thereby increasing learning" (p.5). Kiechel (1990), however, sounds a warning that this view is too simplistic and that learning requires more than just making information available. He believes that learning organisations require people who can think and manipulate information, "Which is approximately the difference between putting the

information out there for the folks to pick up, and encouraging them to puzzle, wonder and figure things out on their own" (p.134).

It is in this context that Zuboff's (1988 and 1990) work takes on significance, for she argued that companies use IT on the basis of the paradigm born from the industrial revolution: that technology (of whatever type) is a means of replacing many, skilled workers with fewer, unskilled workers, while increasing management control. This view now appears incorrect. Indeed, Zuboff (1988) argues that that companies should seek to "informate" their employees, rather than "automate" their processes. The next section explores the concept of informating and also outlines some of informating's major implications.

The Informating Concept and its Implications

Zuboff (1988) argues that the concept of automating through IT is inappropriate because IT is different from other technologies. IT not only automates business processes but also generates information about them and, in many cases, provides information that was not previously available. Under the automation paradigm, a worker is just another "mechanical" part and would not be expected to critique the information generated by the technology. However, introducing IT can have major cultural repercussions on the organisation. Zuboff (1988, 1990) maintains that, since IT tends to generate more information, it actually requires people who can utilise that information. She quotes the case of the managers at Piney Wood, an automated pulp mill, who "... began, reluctantly, to question some of their assumptions regarding ... the new technology" (1990, p.6). This questioning arose out of a recognition that employees actually required new intellectual skills rather than a reduction in skills. Such skills were required to critically analyse the new information available. Piney Wood had, however, "... cut out so many people there is no one to do the neat things we could use the information for. It's like a vast crop and no one to harvest it" (p.7). This provides a telling example of the dangers associated with poorly thought-out downsizing.

The fact that people will have to be more concerned with the manipulation of information than with the physical handling of materials has developed from the idea that work itself has

become far more abstract (Peters, 1993; Underwood, 1993 and Miller, 1988). This concept of abstract work led Zuboff to call for companies to "informate" their workforce as opposed to merely "automating" their processes. She sees an informated person as somebody who is not only empowered but can view their organisation holistically and has a good grasp of present and future information needs (both their own and those of others).

Organisations like Piney Wood also run the risk that the creation of a completely automated environment will eventually lead to the depletion of knowledge in the organisation (Jaikumar, 1986). Such knowledge is crucial to an organisation's value-adding activities. In support of this view, Keen (1993) argues that organisations should allow their staff to use information to add value through innovation and process improvement. Such organisations would thus be "informated". Similarly, it can be argued that, to be successful, the strategies of downsizing and BPR require informated individuals (ie. those who have the ability and the empowerment to make and act on decisions). Under this model, information technology becomes simply a worker's tool, one which is used to gain greater insight into the operations of the organisation. The worker, not the information technology or its related procedures, is responsible for criticism and insight, for teaching and learning.

It is important to realise that the strategies of deploying IT to automate and IT to informate are not mutually exclusive - "Automating is a necessary but not sufficient condition for informating." (Zuboff, 1988, p.11). IT should be seen as a means to enable workers to act upon information and learn from it rather than as a means of "driving" the workers. As Keen (1993) points out, "... information technology has moved from being an important but separate element of business management to being at the core of everyday business and social life. What is still lacking is a reliable way of fusing it into everyday management life" (p.22).

The move towards middle managers becoming facilitators together with the need for senior management to consider the informated organisation as an entirety, instead of as a collection of discrete elements (Carey, 1993 and Peters, 1993), means that the implications for organisational operations are profound. Peters (1993) describes such an organisation. The

consulting company McKinsey is very different from the conventional organisation and actively encourages its members to act in an informated manner..

Peters (1993) writes of McKinsey,

> "McKinsey is a huge company ... But there's no traditional hierarchy. There are no organization charts. No job descriptions. No policy manuals. No rules about managing client engagements. No rules about setting budgets for such engagements (which could easily run to millions of dollars). No guidelines that tell you how to get promoted or how to go about firing somebody. No set procedures for the all-important recruiting process. And yet all these things are well understood - make no mistake, McKinsey is not out of control!" (p.143).

It is, Peters maintains, a company whose business is knowledge. McKinsey brings this knowledge to bear on the clients that it is servicing. Individuals are rewarded for what they achieve - not how many hours they work or their "utilisation". The company is deliberately unstructured (from the traditional point of view) and individuals are expected to make their own way by thinking and doing. They have to collect relevant information, seek out appropriate people and make something happen. Very different from the "chain of command" model! McKinsey is an example of an organisation that requires thinking individuals who grasp opportunities to initiate and achieve something. Organisations like McKinsey have to be staffed by people who have the necessary intellectual skills (Zuboff, 1990) to think and make decisions effectively. Indeed Peters (1993) believes that all organisations, be they service or manufacturing, profit focused or non-profit focused, will need to become more like McKinsey.

The Informated Individual and IS Effectiveness

A major difficulty with the concept of the informated person is that nobody really appears to have addressed what is meant by it. Zuboff (1988, 1990) provides some valuable insights but does not clearly spell out all the skills, behaviours and characteristics required by such a person. She does list the necessary intellectual skills as: "... abstract thinking and problem solving, conceptualisation, analysis, theory-based reasoning, the ability to

perceive patterns and relationships, as well as a procedural and functional appreciation of the information systems" (1990, p.15). Such skills should also mean that individuals have "... a better understanding of the business and its context" (1990, p.15). She does not, however, develop this list further nor does she discuss which skills are applicable in which situations.

The lack of attention in the information systems literature to the role of people (Compeau and Higgins, 1995) is of concern in the light of Davenport's (1994) assertion that it is how people use information that is important, rather than how they use the technology that provides that information. If, as Ballantine et al. (1996) believe, the most important players in information systems are the people rather than the technical systems then it is necessary to identify the desired skills, behaviours, and characteristics of those players. Furthermore, the contribution these factors will make towards the success/effectiveness of an information system needs to be considered.

Despite the belief that people are the most important part of an information system (in its broader sense), consideration of their desired skills, behaviours, and characteristics is currently sadly lacking. Where studies do include consideration of the user they relate only to user involvement in system design (Seddon and Kiew, 1994; Hepworth et al., 1992 and Miller and Doyle, 1987), user satisfaction (Raymond, 1985 and Srinivasan, 1985), user skill/ability in using the technology (Compeau and Higgins, 1995), user attitudes towards the technology (Igbaria and Parasuraman, 1989, Igbaria, Pavri and Huff, 1989, Lucas, 1978 and Igersheim, 1976) or a passing mention that people are important (DeLone, 1988; Lees and Lees, 1987 and Snitkin and King, 1986). This limited consideration of people is reflected in the models that seek to explain factors contributing towards IS success (Delone and McLean, 1992; Cragg and King, 1992; Weill, 1992; Pitt, Watson and Kavan, 1995 and Goodhue and Thompson, 1995).

Bonner (1995) details a case which looks at individuals' impact on the effectiveness of an information system. He argues that the one individual who used the case company's (very poor) computer-based information system most effectively, both at the individual and organisational level, was the one who had the greatest appreciation of his own role, and

the greatest understanding of others' roles, in the company's activities. However, Bonner fails to investigate the skills, behaviours, and characteristics exhibited by this individual.

There is therefore a need to research the skills, behaviours, and characteristics of the informated individual. Such a need is particularly apparent when considering Semco, a Brazilian manufacturing company which "... has grown sixfold despite withering recessions, staggering inflation and chaotic national economic policy. Productivity has increased nearly sevenfold. Profits have risen fivefold. And we have had periods of up to 14 months in which not one worker has left us" (Semler, 1993, p.7). Given the economic conditions in which Semco has thrived, this is a remarkable achievement. To have done so without the benefit of highly sophisticated management information systems is extraordinary. The explanation appears to have been Semco's informated workforce. Interestingly this seems to contradict Zuboff's (1988) belief that automating is essential for informating.

Proposed Future Research Direction

The amount of money that has been, and continues to be spent, on IS within organisations is staggering. In the manufacturing sector, IT investment grew "...from 1.6% in 1970 to 10.6% in 1988" (Weill, 1992, p.308). Sethi, Hwang and Pegels (1993) note that "Expenditures on computer resources now amount to nearly 40% of the capital investment made by US businesses each year ... Another estimate is that firms spend between 1.5% and 3% of their revenue on IT" (p.194). The literature provides conflicting information as to which factors are most likely to determine the level of IS success/effectiveness (as outlined by Cragg and King, 1992 and Weill, 1992), which suggests that there is poor understanding of the best way to spend those limited IS dollars. For example, Cragg and King (1992) found that the financial performance of 120 small, computerised engineering firms in the United Kingdom was inversely related to the degree of their information systems' sophistication.

For these reasons this paper suggests that now is the time to consider a new model. This model should have as its specific focus the skills, behaviours, and characteristics exhibited by *information effective* or *informated* individuals. Otherwise it will be impossible to devise and test instruments to measure the impact an individual has on the level of IS effectiveness. Such a model, together with its related measuring instruments, is likely to contribute greatly towards a much better understanding of IS effectiveness factors.

Conclusion

This paper has sought to trace the relationship between the many different strands running through the information systems and management literature. Attention has been directed towards an examination of the importance of the relationship between IS, business, organisational, and human resource strategies and the need for alignment between them. It has been suggested that this is especially important with two relatively recent strategies: Downsizing and Business Process Re-engineering. As IT is often seen as the enabler of these strategies it is not surprising there have been calls to ensure alignment. However, the implications of these strategies transcends mere technology for they impact on what people do at work and how they do it.

A critical problem has been that IT has been seen as the cure to many organisational ills, often via Downsizing or BPR, under the paradigm of automation. This view has effectively ignored the human factors that can contribute to, or indeed solve, many of the organisational ills. The result has been the aggravation of these ills rather than their cure. One approach to using the factors to advantage is through empowerment of individuals within the organisation. However, this empowerment requires a critical realisation that it is not enough to merely provide information through IT or otherwise. Individuals need to be informated and have well developed intellectual skills (the ability to understand, think, and reason) so that they know how to use information and can recognise the opportunity to use it.

It is argued that the literature has not addressed the contribution of informated individuals, particularly in the area of research relating to IS success and effectiveness. It is proposed

that such research could go a long way to explaining the conflicting results obtained in IS success studies. This paper argues that the time is now ripe to focus on the skills, behaviours, and characteristics of an *informated* individual and to develop a new model.

References

Anthony, R.N. Planning and Control Systems: A Framework for Analysis. Harvard University Press. Cambridge, MA. 1965

Balasubramanian, V. "Organizational Learning and Information Systems." Internet article. 1995.

Ballantine, J., Bonner, M., Levy. M., Martin, A., Munro, I. and Powell P. "Information Systems Success: The Quest for the Dependent Variable Goes On." *Proceedings of the 1ˢᵗ UKAIS Conference.* 10-12 April 1996. pp.221-248.

Bechet, T.P. and Walker, J.W. "Aligning Staffing with Business Strategy." *Human Resources Planning.* 1993. Volume 16. pp.1-16.

Bird, J. "Senior Service." *Management Today.* May 1994. pp.84-88.

Bonner, M. "DeLone and McLean's Model for Judging Information Systems Success - A Retrospective Application in Manufacturing." *Proceedings of the 2ⁿᵈ European Conference on IT Investment Evaluation.* 11-12 July 1995. pp.218-226.

Bullen, C.V. "Reexamining Productivity CSFs: The Knowledge Worker Challenge." *Information Systems Management.* Summer 1995. Volume 12. Issue 3. pp.13-18.

Burnes, B. "Integrating Technology: Integrating People." *Production Engineer.* September 1988. pp.54-55.

Carey, D. "Nine I.T. Executives Tell You How To Get Reengineering." *I.T Magazine.* November 1993. pp.12-20.

Checkland, P. and Scholes, J. Soft Systems Methodology in Action. Wiley. Chichester. 1990.

Classe, A. "Don't Tinker With It: BPR It!" *Accountancy.* July 1993. pp.64-66.

Compeau, D.R. and Higgins, C.A. "Computer Self-Efficacy: Development of a Measure and Initial Test." *MIS Quarterly.* June 1995. Volume 19. Number 2. pp.189-211.

Cragg, P.B. and King, M. "Information System Sophistication and Financial Performance of Small Engineering Firms." European Journal of Information Systems. September 1992. Volume 1. Issue 6. pp. 417-426.

Davenport, T.H. and Short, J.E. "The New Industrial Engineering: Information Technology and Business Process Redesign." Sloan Management Review. Volume 31. Issue 4. Summer 1990. pp.11-27.

Davenport, T.H. "Saving IT's Soul: Human-Centered Information Management." Harvard Business Review. March-April 1994. pp.119-131.

DeLone, W.H. "Determinants of Success for Computer Usage in Small Business." *MIS Quarterly*. March 1988. Volume 12. Number 1. pp.51-61.

DeLone, W.H. and McLean, E.R. "Information Systems Success: The Quest for the Dependent Variable." Information Systems Research. March 1992. Volume 3. Issue 1. pp. 60-95.

Driscoll, M.C. "Never Stop Learning." *CFO*. February 1995. pp.50-56.

Fiedler, K.D., Grover, V. and Teng, J.T.C. "Information Technology-Enabled Change: The Risks and Rewards of Business Process Redesign and Automation." Journal of Information Technology. 1994. Volume 9. pp.267-275.

Fitzgerald, B. and Murphy, C. "Research and Application of a Methodology for Business Process Reengineering." Research and Discussion Papers. University College, Cork. 1995.

Fuglseth, A.M. and Gronhaug, K. "Information Systems as a Secondary Strategic Resource: The Case of Bank Credit Evaluations." International Journal of Information Management. 1994. Volume 14. pp.269-280.

Goss, T., Pascale, R. and Athos, A. "The Reinventing Roller Coaster: Risking the Present for a Powerful Future." Harvard Business Review. Volume 71. Issue 6. November/December 1993. pp.97-108.

Goodhue, D.L. and Thompson, R.L. "Task-Technology Fit and Individual Performance." *MIS Quarterly*. June 1995. Volume 19. Number 2. pp. 213-236.

Hammer, M. and Champy, J. Reengineering the Corporation: A Manifesto for Business Revolution. Harper Business. 1993.

Hayes, R.H. and Jaikumar, R. "Manufacturing Crisis: New Technologies, Obsolete Organizations." Harvard Business Review. Sep/Oct 1988. Volume 66. Number 5. pp.77-85.

Henderson, C. and Venkatramen, N. "Strategic Alignment: Leveraging Information Technology for Transforming Organizations." IBM Systems Journal. 1993. Volume 32. pp.4-16.

Hepworth, J.B., Vidgen, G.A., Griffen, E. and Woodward, A.M. "The Enhancement of Information Systems through User Involvement in System Design." International Journal of Information Management. 1992. Volume 12. pp.120-129.

Huber, G.P. "A Theory of the Effects of Advanced Information Technologies on Organizational Design, Intelligence and Decision Making." *Academy of Management Review*. 1990. Volume 15. pp.47-71.

Hudson, R. "Good Jokes and Bad Management" in England, P. and Farkas, G. (eds), Industries, Firms and Jobs: Sociological and Economic Approaches. Plenum Press. New York. 1988.

Igbaria, M. and Parasuraman, S. "A Path Analytic Study of Individual Characteristics, Computer Anxiety and Attitudes Toward Microcomputers." Journal of Management. Volume 15. Issue 3. September 1989. Pp.373-388.

Igbaria, M., Pavri, F.N. and Huff, S.L. "Microcomputer Applications: An Empirical Look at Usage." Information and Management. Volume 16. Issue 4. April 1989. Pp.187-196.

Igersheim, R.H. "Managerial Response to an Information System." *AFIPS Conference Proceedings, National Computer Conference*. 1976. Volume 45. pp.877-882.

Jaikumar, R. "Postindustrial Manufacturing." Harvard Business Review. January-February. 1986. pp.??

Keen, P.G.W. "Information Technology and the Management Difference: A Fusion Map." IBM Systems Journal. 1993. Volume 32. Number 1. pp.17-37.

Kiechel, W. "The Organisation That Learns." Fortune. March 12, 1990. pp.133-136.

Lees, J.D. and Lees, D.D. "Realities of Small Business Information System Implementation." Journal of Systems Management. Volume 38. Issue 1. January 1987. pp.6-13.

Lucas, H.C. "Empirical Evidence for a Descriptive Model of Implementation." MIS Quarterly. June 1978. Volume 2. Number 2. pp.27-41.

Miller, E.A. "CIM And Survival." Information Strategy - The Executive's Journal. Fall 1988. Volume 5. Number 1. pp.9-13.

Miller, J. and Doyle, B.A. "Measuring the Effectiveness of Computer-Based Information Systems in the Financial Services Sector." MIS Quarterly. March 1987. Volume 11. Number 1. pp.107-124.

Oliver, J. "Shocking to the Core." Management Today. August 1993. pp.18-22.

Parker, J. "An ABC Guide To Business Process Reengineering." Industrial Engineering. May 1993. pp.52-53.

Penny, P. and Bonner, M. "Aligning Information Systems Strategy and Human Resource Strategy: An Integrative Model." *Proceedings of the Information Technology for Development Conference, University of Witwatersrand, South Africa*. 6-7 July 1995. pp.119-126.

Peters, T. "Liberation Management: Necessary Disorganization for the Nanosecond Nineties." 1st edition. Pan Books. Australia. 1993.

Pfeffer, J. "Competitive Advantage Through People." *California Management Review*. Winter 1994. pp.9-28.

Picot, A., Neuburger, R. and Niggl, J. "Management Perspectives of Electronic Data Interchange Systems." *International Journal of Information Management*. 1994. Volume 13. pp.243-248.

Pitt, L.F., Watson, R.T. and Kavan, C.B. "Service Quality: A Measure of Information Systems Effectiveness." *MIS Quarterly*. June 1995. Volume 19. Number 2. pp. 173-187.

Raymond, L. "Organizational Characteristics and MIS Success in the Context of Small Business." MIS Quarterly. March 1985. Volume 9. Number 1. pp.37-52.

Seddon, P. and Kiew, M-Y. "A Partial Test and Development of the DeLone and McLean Model of IS Success." Proceedings of the fifteenth International Conference on Information Systems. 14-17 December 1994, Vancouver, British Columbia, Canada. pp.99-110.

Semler, R. Maverick. Century. London. 1993.

Senge, P. "Learning Infrastructures." Executive Excellence. February 1995. p.7.

Senge, P. "The fifth discipline : the art and practice of the learning organization." Century Business. London. 1993.

Senge, P. "The Leader's New Work." Executive Excellence. November 1994. pp.8-9.

Sethi, V., Hwang, K.T. and Pegels, C. "Information Technology and Organizational Performance." *Information and Management*. 1993. Volume 25. pp.193-205.

Shrednick, H.R., Shutt, R.J. and Weiss, M. "Empowerment: Key to IS World-Class Quality." MIS Quarterly. December 1992. pp.491-505.

Snitkin, S.R. and King, W.R. "Determinants of the Effectiveness of Personal Decision Support Systems." Information and Management. 1986. Volume 10. pp.83-89.

Srinivasan, A. "Alternative Measures of System Effectiveness: Associations and Implications." MIS Quarterly. September 1985. Volume 9. Number 3. pp. 243-253.

Stalk, G., Evans, P. and Shulman, L.E. "Competing on Capabilities: The New Rule of Corporate Strategy." Harvard Business Review. Volume 70. Issue 2. March-April 1992. pp.57-69.

Swiercz, P.M. and Spencer, B.A. "HRM and Sustainable Competitive Advantage: Lessons from Delta Airlines." Human Resources Planning. 1992. Volume 15. pp.35-46.

Unterweger, P. "Let Workers Manage Automated Manufacturing." Information Strategy: The Executive's Journal. Fall 1988. Volume 5. Number 1. p.38.

van der Pijl, G.J. "Measuring the Strategic Dimensions of the Quality of Information." Journal of Strategic Information Systems. 1994. Volume 3. Number. 3. pp.179-190.

Venkatraman, N. "IT-Induced Business Reconfiguration" in Scott Morton, M.S. (ed) The Corporation for the 1990s: Information Technology and Organizational Transformation. Oxford University Press. Oxford. 1991.

Weill, P. "The Relationship Between Investment in Information Technology and Firm Performance: A Study of the Valve Manufacturing Sector." Information Systems Research. December 1992. Volume 3. Number 4. pp. 307-333.

Wiggins, R.E.. "Document Image Processing - New Light on an Old Problem." *International Journal of Information Management.* 1990. Volume 10. pp.297-318.

Williams, A. Human Resource Management and Labour Market Flexibility. Avebury, Aldershot. 1993.

Yates, J. and Benjamin, R.I.. "The Past and Present as a Window on the Future" in Scott Morton, M.S. (ed) The Corporation for the 1990s: Information Technology and Organizational Transformation. Oxford University Press. Oxford. 1991.

Zuboff, S. "Breaking The Power Barrier: A New Direction For Corporate Leadership In The 21st Century." British Computer Society/Unisys Annual Lecture, 8th October 1990.

Zuboff, S. "In the Age of the Smart Machine: The Future of Work and Power." BasicBooks. USA. 1988.

Zuboff, S. "New Worlds of Computer-Mediated Work." Harvard Business Review. September-October 1982. pp.142-152.

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