Abstract

Technological change initiatives driven by large amounts of capital expenditure and equally alarming failure rates have gained increased importance in the business sector. However often-overlooked areas with in such change initiatives are the role of human resource management and the role of the HR function. This thesis intends to explore the role of human resource management in workplace technological change. Despite the availability of large amounts of literature dealing with organisational change only a small fraction deals with the role of HR function in technological change. In addition majority of the available literature originates from overseas-based research (UK or US). This places doubts on the relevance of this literature in an Australian context. The thesis through use of both quantitative and qualitative research evidence will provide an Australian perspective on the topic. The results of the thesis will provide both general managers and specialist HR managers with guidance on better utilisation of human resources function in technological change projects.
Introduction

This paper examines the role of HR function in workplace technological change. It discusses the various approaches to technological change through review of current literature focusing attention to the role of HR with in these changes. The research aims to analyse whether human resource issues were considered in the planning, implementation and post implementation stages of workplace technological change. It also highlights the nature and level of delegation of human resource responsibilities during the technological change process. On the whole the research explores the level and nature of the involvement of the human resource function within workplace change.

Research Questions

Some the questions that will guide the research are:

- Who is delegated responsibility for the human resource issues arising out technological change projects? Specialist HR managers or line managers
- What are the perceptions of managers regarding the importance of HR issues in technological change?
- Role of HR in the various phases on the implementation

Motivation

Several reasons motivated to conduct of the research. Firstly, despite the availability of abundant amount of literature on organisational change only a fraction explores the role of human resource management in technological change. Thereby the research attempts to address this shortfall in the current literature. Secondly the majority of the literature available on HR and organisational change originates from overseas-based research (usually US or UK based). This raises the issue of the relevance of the literature when considered in an Australian context. Dunphy and Stace (1990) have stated, “the United States economy differs from the Australian economy in size and structure, also some United States social, corporate and workforce values and practices are different from our own” (Dunphy and Stace, 1990:5). Thirdly the literature on organisational change has shown varying levels of interpretation on the role of human resources function within organisational change. Normative HR literature has shown an increased strategic involvement of the human resource function (Anson, 2000; Baum & Farquharson, 2002). While critics of the strategic human resource management have pointed to a sidelining of the human resource function (Legge, 1989, 1995; Storey, 1992b, 1992a, 1995). This research will make a comparison of the findings of the literature with the results obtained through survey and interview data. Fourthly the increasing levels of technological change within organisations in terms of changes to work practices and levels of investment has shown that more attention has been paid to technological change. The increased impact of technological changes coupled with the relatively large failure rates of technological projects has warranted increased importance to be placed on the managing the human resource side of these changes.
Background: Business and Technological Change

Technology today has dramatically affected all aspects of business. In discussing role of human resource management in technological change it is important that attention be paid to the nature and scope of technological change within the business.

From early days information technology promised business with improved productivity, product developments and market life cycles. A catalyst for technological change was the development of information superhighway. Information superhighway resulted in business and governments making "massive investments in communications infrastructure, recognising that failing to move quickly may spell economic disaster in a knowledge based economy" (Lin, 1994:4). As far back as 1994 Lin (1994) predicted that information superhighway through its better communication and information infrastructure would bring significant benefits to organisations.

In discussing technological change it is important to understand the effect of technology on the firms. Chaya and Mitra (1995) identify two different effects of IT as the automation and information effect (Chaya & Mitra, 1996). The automation involves using IT to automate the clerical labour intensive aspects of business. Where as the information effect of IT refers to the improved information available to management that can in turn be used in managerial decision-making.

The staggering levels of investments made by organisations on IT have contributed to the importance of technological change within organisations. For instance in the year 2003 organisations in the UK on average spent a record 2576 pounds per employee on IT (Mitchell, 2004). These figures are expected to increase in the year 2004 with an estimated 8.6% growth in IT expenditure forecasted for the year 2004. This view has been confirmed by computer weekly IT expenditure report that reported 4.7% growth in spending in the first quarter of 2004 (Anonymous, 2004). Mitchell has stated "there has been a remarkable turn around in sentiment with in IT industry over the past six months as attention has turned from making most of systems in place to implementing new projects to improve business process" (Mitchell, 2004:34).

However another feature of technological change that warrants consideration is the alarming failure rates of technological investments. Rosser (1998) states "roughly 70% of all Information Technology application investments that companies make are either not completed or exceed cost projections by nearly 200 percent" (Rosser, 1998:50).

Some of the technologies that have contributed to the dramatic increase in technological changes for the organisations include Enterprise resource planning (ERPs), Customer Relationship Management (CRM) and Supply chain management (SCM).

*Enterprise resource planning (ERP)*: One of new growth areas of IT during the nineties has been Enterprise Resource Management Systems (ERPs). The Chemical Market reporter
has stated that The ERP market is today valued at $US16 billion. Davenport (1998) has further stated "business worlds embrace of the enterprise systems may in fact be the most important developments in the corporate use of technology" (Davenport, 1998:122).

ERPs through automating and integration of information from different departments and functions enable better data flow from one part of the organisation to another (Hall, 2002). Present generation of ERPs enable the communication of data through utilising a combination of logistics, financial, sales and human resource applications (Hall, 2002).

However despite the benefits of ERP systems there are several drawbacks. Many organisations experience severe problems in the implementation phase of these technologies. Some of the more recent disasters relate to errors with Goodyear Tyre and Rubber Co financial systems which expected to lower profits by US$100 million and Australia's Crane groups ERP failure which has cost the firm A$11.5 million budget overruns (Songini, 2003, 2004). Several commentators have placed these failures under a combination of both organisational and business problems (Al-Mashari, 2003; Davenport, 1998).

**Customer relationship management (CRM):** Along with ERP systems another technological initiative embarked on by the organisations is customer relationship management (CRM). CRM involves the process gathering and managing the information about customers of the company. Hughes (2001) has described this process as integrating “customer data coming in from various channels into a single system to provide a decision making platform" (Hughes: 2001:34). A survey conducted by the data warehousing institute in 2000 shows that 91% of companies either have already invested in CRM technology or plan to do so in the near future (Goodhue, Watson, & Wixom, 2002).

While CRM promise benefits such as better understanding customer needs CRM systems contain several drawbacks. One such draw back relates to the difficulty in measuring return on investments of CRM investments (Hughes, 2001). Another problem relates to the large failure rates associated with CRM technology (some sources put the failure rate even high as 70%).

**Supply Chain Management (SCM):** Advances in technology, globalisation and increased competition in the market place has lead organisations to think beyond improving their internal systems. The situation has resulted in increasing number of organisation getting involved in improving upstream and down stream supply chains of a business(Reyes, Raisinghani, & Singh, 2002). While ERP systems and CRM systems focuses on integrating organisations internal systems, supply chain management (SCM) focus on integration external stakeholders of a business. Supply Chain Systems could be considered an emerging trend among business. Although a AMR Research survey of 509 organisations showed that 54 per cent did not have any form of SCM system in place 20 % planned to implement SCM in the coming years (Anonymous, 2002).

The above discussion on the levels of technological change faced by business has shown that increasing level of importance needs to be placed on the change management process.
The levels of investments, staggering failures rates justifies the need to examine the management of human resources within the change process.

**Literature Review**

The role of human resource management in organisational change has been an area of long-term academic interest. In recent years the rapid pace of technological change, particularly in the areas of information and computer technologies (ICT), has reinvigorated the issue of the human resource role and implications of organisational change. The analysis of the literature identifies four key streams of writing. These are literatures which (i) examine the general role of HRM in organisational change (ii) outline various HRM implications of ICT change (iii) deal with the criticisms of the general role of human resource management (HRM) in organisations; and (iv) analyse the process of organisational and technological change from a project management perspective.

The increasing complexities and importance of organisational change coupled with the importance of managing ‘people’ issues has resulted in an increasing amount of literature written about the role of human resource management in organisational change. It is argued by a number of writers that the advent of Strategic Human Resource Management (SHRM) has resulted in a changed role for the human resource function within the process of organisational change. The strategic outlook requires HR to play a role in maintaining a degree of fit between the organisation and its environment. According to Oglive and Stork (2003) HRM has always been involved in organisational change although “its role in design and implementation of change has varied at different times in its history” (Oglive and stork, 2003),

Some authors have suggested that there is no universal human resource strategy for organisation facing change but rather should depend on the circumstances of the organisations (Dunphy and Stace, 1991; Storey, 1992). For instance Dunphy and Stace (1991) based on research conducted on Australian organisations advocate situation approach to change management based on four different types of HR strategies. These are Task focused, developmental, turnaround, and paternalistic. According to Mabey et al (1998) once an appropriate HR strategy need for change is identified they can implemented by either top down, bottom up or sideways (Mabey, Salaman, & Storey, 1998). Top down change required the support of senior management while bottom up change is should be both initiated and implemented from the lower levels of the organisation (Mabey et al., 1998). Sideways-in involve implementing HR policies in an localised manner such as through a pilot scheme (Mabey et al., 1998).

Francis (1998) through a case study in an British Telecommunication Company undergoing change showed that HR function was also shown to have an important role convincing the need for change and building support among members for change (Francis, 2003). An increased role of HR in organisational change has also been supported by the case study research conducted by Anson (2000). Anson (2000) through case study research on a Hospital has analysed the role of HR function in bringing about a new patient care delivery system (Anson, 2000). The research showed as a strategic partner in the change process
HR was able to successfully bring about a culture change. Baum and Farquharson (2002) through a case study analysis of the British Airports Authority (BAA plc) provide another example of the role of HR in bringing about culture change (Baum & Farquharson, 2002). The case study analysis led the authors to conclude, “HRM can play a key role in enacting organisational change” (Baum & Farquharson, 2002:249). The literature while highlighting the role of HR as a driver of culture change and facilitator of communication failed to analyse the delegation of human resource responsibilities within specific stages of projects. Most importantly the literature does not indicate how the role of human resource management would be affected in a technological change situation.

Beyond those who argue that the HR function now enjoys an increased strategic role in organisational change, other writers have stressed the role of HR managers as ‘change agents’ within their organisations (Caldwell, 2001; Storey, 1992; Ulrich, 1997). In terms of the concept of the HR function acting as a change agent, Storey (1992) has outlined four different roles played by the HR professionals; Advisors, Handmaidens, Regulators and Change makers. The various roles of HR professionals place the change agent role in a broader context. A survey conducted by Caldwell (2001) (that revealed that 68% of the survey participants considered themselves as change agents) supported the notion of HR as change agent (Caldwell, 2001).

While the literature addressing the role of HR as change agent has shown an increasing HR involvement in organisational change in general it contains several drawbacks. Firstly the change agent literature by advocating a specific approach fails to develop situational approach to organisational change. Secondly change agent literature fails to acknowledge the limited role human resource management in organisations. Thirdly while change agent literature addresses the benefits HR professionals can contribute to change it fails to provide a viable path of becoming and change agent

However, whilst the SHRM literature provides a normative model of how the HR function should be involved in the management of organisational change, other writers have questioned the strategic involvement of the HR function in business decision-making (Legge, 1989, 1995; Storey, 1992b, 1995). Guest and King (2004) with reference to Legge (1978) have identified three ambiguities that have contributed to downplaying of the HR function within organisations. Firstly it relates to the question of assigning HR responsibilities within organisations. According to Legge (1978) ambiguity exists where responsibility for HR is considered in the domain of both line managers as well as that of a centralised human resource/personnel department. Second ambiguity stems from the inability to attribute effective performance measures to human resource departments. Thirdly the dual responsibility of human resource departments to address the interests of management and that of employees created further ambiguity. The above three ambiguities have limited the power and influence of the HR function in organisations.

Guests and King (2004) have stated “the ambiguities in the personnel role combined with its lack of power led to what Legge identified as a three vicious circles” (Guest and King, 2004:402).
Legge (1995) has criticised the rhetoric and reality of strategic HRM through categorising HR policies according to ‘Hard’ and ‘Soft’ HRM. Hard HRM emphasises on the alignments of HR with business strategy and seen as a factor of production. While Soft model of HRM “involves treating employees as values assets, a sources of competitive advantage through their commitment, adaptability and high quality” (Legge, 1995:35). A related issue in analysing the strategic involvement human resource department is the delegation of HR responsibilities to the line management. The flattening of organisations has seen many of the HR functions being delegated to line managers, project managers and other specialists (Clark, 1993; Cunningham & Hyman, 1995; Storey, 1992b).

The above discussion analyses the application of human resource management and the level of involvement of the human resource function within organisations. In doing so literatures provides a broad understanding of the theory and rhetoric of human resource management in today’s organisations. However it does not present an analysis of the role human resources management in bringing about workplace technological change.

Despite the availability of large amount of material on organisational change and strategic HRM there is only a limited amount of literature dealing with the role human resource management in technological change. However several authors have identified the need for changes in human resource practices in the light of technological change (Clark, 1993; Siegel et al, 1997; Cardy and Miller, 2000; Snell and Dean, 1992). Clark (1993) analysed the role human resource managers and line managers in enacting technical change. The research by Clark (1993) provided an interesting insight in to the role human resource management in technological change. However research did not analyse in detail the role of human resource management in the different stages of the change process. Further to this relatively small number cases analyses create doubts as to the representative of the finding of the research.

Several other commentators have discussed the need to alter or introduce new HR polices in light new technological changes(Cardy & Miller, 2000; Siegel, Waldman, & Youngdahl, 1997). These relate to unique working arrangements of Information technology workers and impact of Advance manufacturing technologies. The literature by dealing with new HR policies as a by-product of technological change has sidelined the HR function to a reactive rather than strategic role. The research has also underplayed the strategic contribution the human resource function can make to technological change through greater involvement in the change process.

The increased importance of technological changes in business organisations (particularly information and communication technology changes) has resulted in an increasing amount of literature written from project management perspective aimed at managing technological change (Benjamin & Levinson, 1993; Carlopio, 1998; Kuruppuarachchi, Mandal, & Smith, 2002). Although the project management approach discusses employee impact of the change process such as resistance to change and training, the authors have given minimal consideration to the role human resources function in an organisation undergoing technological change process. The absence of HR from the strategy table in technological
change initiatives limits HR as a reactive role. In other words HR functions would be required to formulate policies that are compatible with the preconceived change plans.

A range of literature was discussed to present different perspectives on the role human resources and workplace technological change. Several different schools of thought were identified. Firstly the normative models of HRM where it was argued the advent of strategic HRM has resulted in increased involvement for HR in organisational change. This was followed by discussion on the need to alter human resource practices in light of technological changes. Literature that questioned the normative models of Strategic HRM placed doubt on the overall status and involvement of HR in organisations. Finally literature addressing technological change from a project management perspective was discussed. On the whole it was apparent that despite the claims made by the normative models of HRM that HR has been sidelined in the organisational change process. The sidelining of HR function was further supported by project management literature. Both groups of literature indicate a delegation of HR responsibilities to the line management. This view was strengthened by literature that has advocated a change to existing HR polices to deal with technological changes. By advocating changes to existing HR policies it can be said that HR has been dealt as a by-product of technological change rather than role requiring strategic consideration. In addition there is a considerable lack of research analysing the overall involvement of HR in developing and implementing technological change. The available literature indicated that the Human resources was not given consideration during the planning stages and was dealt in a reactive manner in later stages. The literature also highlighted a difference between the rhetoric and reality between what was discussed in change agent and normative literature and actual involvement of HR within organisations.

Methodology

The research methods employed for this thesis are a combination of quantitative and qualitative methods. The research will make use of surveys and follow up interviews to explore the issue. A survey method was chosen over a case study approach due difficulty in accessing a suitable organisation. The survey enabled to explore the role of human resource management in technology related organisational change in an Australian context. The survey aimed to obtain attitudinal data on employee and management reaction to management of technological change, delegation of human resource responsibilities and the management of human resources during the various stages of the project. The target population for the survey was students following Master of Business Technology at University of New South Wales during session 1 2004. The survey was a self-completed questionnaire delivered through the subject website. A self -completed survey method was selected due to administrative simplicity and the need to ensure confidentiality of the participants. The students of the MBT program were selected as the population based on data that showed student composition and industry experience of the population. The sample consisted of postgraduate students with industry experience (not necessarily from the HR discipline) and was representative of the wider industry practitioners.
The use of follow up interviews will enable in depth analysis of key questions identified through the survey data. The interviews will be used in order to counteract the relatively small response rate archived through the survey. Approximately 7-10 interviews will be conducted with independent change consultants and HR practitioners with experience in workplace technological change. The follow up interviews will be in the format of semi-structured interviews with majority of the questions open ended. Semi structured interviews are used as they provide “greater flexibility than the close ended type and permits a more valid response from the informants perception of reality” (Burns, 1997:330).

Analytical framework

Both survey and interview data will be analysed to according to the research questions and themes emerging from the literature. At the time of writing this paper the survey analysis has not commenced and is difficult to comment on the exact analysis tools that will be employed. However it can be expected that statistical tools will be employed to make generalisation from the small data. Analyses will be conducted in order to identify any patterns such as variation in involvement of HR function according to size of organisation etc. Data analysis will be conducted using specialist statistical computer programs such as SPSS and Microsoft Excel.

The interview data will be initially coded according to various issues and themes emerging from the data. As with survey data these patterns will be compared with both the survey data and themes emerging the literature.

Research to date

The research that has been conducted so far is the analysis of the literature and completion of an online survey. A survey response of 35 per cent was obtained. While the survey has been now been collected at the time of writing the results remain to be analysed. It is expected that several semi-structured interviews will be conducted with HR/ change practitioners. To date two semi structured interview have been conducted with senior HR practitioners from a large retail sector organisation and multinational IT solutions company. The survey results and interview data will be analysed with reference to the literature to determine the nature of involvement of HR function in technological change in an Australian context.
Bibliography


