STRATEGIC CHOICE PERSPECTIVE TO TECHNOLOGICAL CHANGE

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Abstract

In today's work organizations, managing technology – and its role in organizational processes – attracts great attention due to its core significance for the success of the organization life as a whole. In attempting to understand technology-related organizational change, involving complex interactions between management, technology and organization structure, one should not interpret it as solely the adaptation process of organizations to the impact of the technology itself instead organizational actors' intervention in shaping the direction of technological change.There has been a long debate between economists and organizational sociologist about the analysis of technological change. When the literature is reviewed, the most crucial result that emerges is the interdependence of technological change on many subjects and thus its complexity. It is not only that change is solely driven by technological and competitive pressures, but also it is influenced by social and political factors. Additionally, organizations are inherently in a constant state of change behind their stable appearance. Technological change is the product of this chronic unpredictability and uncertainty of organizational life; therefore, it is as well a very complex and uncertain process. This volatile and multifaceted nature of the change process is the challenge that demands a greater emphasis on non-technical aspects of it. In this paper, people in organizations are the starting point to discuss inherently complex and uncertain nature of technological change process with reference to case studies in the context of the political nature of the organizations. Instead of assuming that technology-related organizational change is mainly an adaptation to 'the inherent and unavoidable requirements of technology' as in the case in technological determinism, it is suggested that strategic choices within adopting organizations and negotiation processes between dominant coalitions and other organizational actors affect the organizational outcome of technological change. This further indicates the importance of the idea that there is no best way for all organizations rather there are organization-specific ways for each due to the variance in their cultures, structures and

power relations. The stress will be on the argument that technological change, far from being an 'event', is a social and political process and divergent stakeholder interests within organizations shape the outcomes by their strategic choices, decisions and negotiations.

Keywords: Technological Change, Strategic Choice, Managing Technology

Introduction

In today's work organizations, managing technology – and its role in organizational processes – attracts great attention due to its core significance for the success of the organization life as a whole. In attempting to understand technology-related organizational change, involving complex interactions between management, technology and organization structure (Scarbrough and Lannon, 1988), one should not interpret it as solely the adaptation process of organizations to the impact of the technology itself instead organizational actors' intervention in shaping the direction of technological change.

There has been a long debate between economists and organizational sociologist about the analysis of technological change. While the former tend to perceive technology as an independent variable – a given constant – and technological change as a rational goal-directed activity, the latter emphasize the socially created nature of the change process – human interpretation – following an 'idiographic approach' (Willman, 1997; McLoughlin, 1999). While, from one perspective, the inspired inventors/innovators are credited for technological innovation that is perceived as being inherently a chance and spontaneous event (Rhodes and Wield, 1996; Tushman and Anderson, 1986), from a different approach, the complete process of technological evolution and change is analysed in the context of the argument that whether it is the 'push' from technology or the 'pull' from market that trigger innovation and thus change (Rhodes and Wield, 1996; McLoughlin and Harris,1997). Another debate is on whether technological change process is concluded once a product is being applied successfully in the market place or the technological innovation continues during the diffusion of innovations as suggested by 'innofusion' paradigm[24] (McLoughlin and Harris, 1997: 5). From this short literature review, the most crucial result that emerges is the interdependence of technological change on many subjects and thus its complexity. It is not only that change is solely driven by technological and competitive pressures, but also it is influenced by social and political factors

[24] This notion has been raised by James Fleck in his article *'Innofusion or Diffusation: The nature of Technological Development in Robotics',* (1987), Department of Business Studies working Paper 87/9 Edinburgh University (cited in McLoughlin and Harris, 1997). The further discussion can be read from there.

(McLoughlin and Harris, 1997: 6). Additionally, organizations are inherently in a constant state of change behind their stable appearance. Technological change is the product of this chronic unpredictability and uncertainty of organizational life; therefore, it is as well a very complex and uncertain process.

This volatile and multifaceted nature of the change process is the challenge that demands a greater emphasis on non-technical aspects of it (McLoughlin, J. *et. al.*, 1999). According to Harold Leavitt (Leavitt, 1965; Huczynski and Buchanan, 2001: 449), organizational objectives, company structure, people and technology are highly interdependent in addition to the dynamic interaction between them therefore any variable can be a starting point to analyse the suggested linkage. In this paper, people in organizations are the starting point to discuss inherently complex and uncertain nature of technological change process with reference to case studies in the context of the political nature of the organizations. Instead of assuming that technology-related organizational change is mainly an adaptation to 'the inherent and unavoidable requirements of technology' as in the case in technological determinism (McLoughlin and Clark, 1994: 41; Grint and Woolgar, 1997), it is suggested that strategic choices within adopting organizations and negotiation processes between dominant coalitions and other organizational actors affect the organizational outcome of technological change (McLoughlin, 1999: 73). This further indicates the importance of the idea that there is no best way for all organizations rather there are organization-specific ways for each due to the variance in their cultures, structures and power relations. The stress will be on the argument that technological change, far from being an 'event', is a social and political process and divergent stakeholder interests within organizations shape the outcomes by their strategic choices, decisions and negotiations.

The Image of Organizations as Political Systems

Analysis of organizations as inherently complex and analysis of organization-life as occurring at multiple levels and subject to different viewpoints endorse the image of organizations as political systems. This political metaphor stems from the 'diversity of interests'. The orientation of different people toward different aspirations produces a great variety in the way they act causing tensions and conflicts that are at the centre of the political activity (Morgan, 1997: 162). If the values, interests or ideologies overlap at some point, diverse stakeholders (managers, workers, shareholders *etc.*) form coalitions to cooperate. As a result, organizations become a shelter for many coalitions with multiple goals in contrast to the view that organizations pursue a common rational goal (Morgan, 1997: 166). In such a perspective, conflict is always will be present within an organization since

there is duality in the sense that collaboration and competition are required by organization simultaneously (Morgan, 1997: 210). Then, in this approach, power can be attributed the importance of being a 'medium through which conflicts of interest are ultimately resolved' (Morgan, 1997: 170) and it is used as a means by management in their quest for the right balance in organizational outcomes of technological change (McLoughlin, 1999; Pettigrew, 1973). Nevertheless, power does not remain stable as well as the organization in which it is exercised. Variables of organizations change and evolve and so does the power. It changes hands when the sources of power such as control of technology or people change. As a result, attaching to technological change a political nature discards the view that assumes it as a constant and simple practice exercised by an objective and external force.

Strategic Choice and Politics of Organizational/Technological Change

The 'strategic choice' concept was originally developed by John Child (1972) as a 'corrective' to the arguments that stressed situational, environmental or operational factors as influences that determine organizational structure and change. The aim of the strategic choice perspective was:

"…to highlight the key role played by organizational politics and divergent stakeholder interests in shaping organizations where external factors are regarded not as determining, but rather as contextual referents *for decision-makers when designing organizations and establishing their purpose (e.g. type of technology used), defining salient features and even when shaping elements of the environment and by selecting and interpreting the criteria through which organizational performance is assessed." (McLoughlin, 1999: 71)*

Thus, the emphasis is on the role of the strategic managerial choice influencing the outcomes of the change in work organizations through an essentially political process rather than technology as being an independent variable itself. This argument is quite clear in the case of PowerDoc in which a new office technology with more advanced network facilities in word processing was introduced by the data processing manager (technical specialist), however, followed by unintended consequences although it was a technical success (Harris, 2004). PowerDoc case can be used to illustrate that different decision makers have different reference points and thus the new technology is open to different interpretations being a political process. The data processing manager promoting his operational view of the situation at the expense of informational, strategic and labor objectives put the non-technical components aside preventing the overall organizational success. Relatively similar conclusions may also be derived from the case of Central Linen Service (Dawson, 1994: 123-141). Besides the importance of

participative management and employee involvement in the change process, Central Linen Service case highlights that the strategic decisions and political dynamics have further influences in implementing and developing the new technology, as with the PowerDoc case.

Given the concept of 'strategic choice', why particular choices are made and by who shall be discussed as a next stage. Child (1972) answers these questions in the context of the term 'decision-makers' and the 'dominant coalition' concept. They refer to another notion – the 'power-holding group' in the sense that in organizations power is not distributed equally in the hands of the actors signifying a 'differential access to decision-making' which, in return, can be seen as a political process since its dependence on the goals and interests of organizational actors (Child, 1972: 13). Although dominant coalitions normally initiate strategic choices as argued, this does not necessarily mean that these choices are not subject to adjustments by the other members of an organization (Child, 1972; McLoughlin, 1999). Indeed, there may be circumstances when there is more than one power-holding group that create conflict and competition within an organization (Child, 1972; McLoughlin and Clark, 1994).

Wilkinson (1983: 18) further modifies the argument of Child (1972) in the sense that managers are 'creative mediators between potential and actual technology' rather than being passive 'messengers' of technological requirements (McLoughlin, 1999: 77). Individual managers have certain assumptions, values and different interests in the outcomes of technological change therefore; they may not always act in the interest of senior managers and the overall company goals. In other words, they mediate and influence the processes in organizations. All taken together, organizations may well be seen as the juxtaposition of management choice and political negotiation process with other organizational actors (McLoughlin, 1999: 72).

Besides, Child (1997) enriches his original argument by himself regarding that strategic choice analysis, instead of drawing a sharp line between organizational agency and organizational environment, sees the overall process as an 'interactive' one in the sense that latter imposes constraints upon organizational choices as well as the former responding to the environment with its own subjective definitions. Consequently, strategic choice perspective presents a dynamic rather than a static view about organizations bounded by their environment but at the same time impact upon that environment (Child, 1997: 60).

The Process of Technological Change

The development of strategic choice/organizational politics approach has challenged the technological determinism view in the favour of a processual one with indeterminant outcomes. Wilkinson (1983) contributed

to Child's (1972) initial theory by arguing that the design, choice and introduction of new technology in organizations are highly dependent on political decisions and thus can be conceived as a process involving persuasion and negotiation. This process, according to Wilkinson, can be fragmented and during each distinct stage, 'critical junctures' occur which provide the room for management, unions and workforce to make and contest strategic choices effecting the outcomes of technological change.

This focus on the processual nature of technological change has given rise to many attempts to model the key stages of change (McLoughlin, 1999; McLoughlin and Clark, 1994). While Wilkinson is breaking the process into three stages concerning the choice, implementation, and debugging of technology (Wilkinson, 1983; 21), others suggest five stages – initiation, decision to adopt, system selection, implementation and routine operation (McLoughlin and Clark, 1994: 59). However, it should be stressed that

"Although sequential in analytical terms, in practice organizations may 'regress' to earlier stages or inhabit two or more stages simultaneously. Moreover, the notion of 'stages' of change is open to and shaped by the interpretations of organizational actors. ... At the same time, (the nature of the change process) ... will reflect organizational specific characteristics of the content of the change itself and the organizational context and wider context in which change takes place." (McLoughlin, 1999:74)

In a further attempt to capture the dynamic and multifaceted picture of change, Pettigrew (1985; 1990; 1992) signifies the need to locate it in past, present and future time. A stress on the importance of 'interconnected levels of analysis' could be taken as suggesting that the quest for a singular cause for change is likely to fail. Pettigrew (1985; 1990; 1992) views the change as developing from a mixture of choices and causes that evolve through time. Adopting the similar terminology to analyse technology-related organizational change specifically, Dawson (1994) proposes three determinants of change – the substance (the scale and scope of change), the context (past, present, future and internal, external) and the politics (within and outside the organization).

In the context of the above arguments, it is reasonable to assume that the technological change is a continuous, political and unpredictable process rather than being an 'event'. Disputes, ambiguity and power are at the centre of the organizational life, which witnesses the interplay of multiple variables of context, substance and politics. Regarding the interpretative process of technological change, it may also be suggested further that, as Dawson (1994) also argues, there is no best way for all organizations rather there are organization-specific ways for each. This last argument is also apparent in relation to the Bank of Scotland case (Scarbrough and Lannon, 1988). The

case answers the question that why some organizations do better than others do by underlining 'the importance of historical and organization specific factors in shaping a company's approach to the management of innovation' (Scarbrough and Lannon, 1988: 258).

Conclusion

Managing technological change in organizations is about managing a complex, non-linear, dynamic process. It is a truism that change is uncertain by definition, thus any consideration attempts to scrutinize it should be tempered by recognition of this uncertainty. The argument in the paper draws on the fact that technological change, far from being an 'event', is a political process and divergent stakeholder interests within organizations shape the outcomes of this process by their strategic choices, decisions and negotiations. Attaching to technological change a political nature discards the view that assumes it as a constant and simple process.

Strategic choice perspective instead of regarding technology itself as an objective and external force in shaping the outcomes of change highlights the process of choice and political negotiation between dominant coalitions. Besides, as Child (1997) argues further, there is an interaction between organizational agency and organizational environment in the sense that the latter imposes constraints upon strategic choices made by members of the organization as well as the former responding to the environment with its own subjective definitions. Consequently, strategic choice/organizational politics perspective captures the interactive and complex nature of organizations that are bounded by their environment but at the same time impact upon that environment. By doing so, it challenges the technological determinism view in the favour of a processual one with indeterminant outcomes. Various interpretations of the actors in organizations shape the stages of the change process reflecting organizational specific characteristics of the content of the change itself and the organizational context and wider context in which change takes place. Therefore, it may well be suggested that one best way is not possible for all organizations to manage technology-related organizational change rather there are organization-specific ways for each. A further attempt to capture the dynamic and multifaceted picture of change comes from Pettigrew who signifies the need to locate the change process in past, present and future time through which it evolves with a mixture of choices and causes. The above arguments are all apparent in the cases of PowerDoc, Central Linen Service and Bank of Scotland illustrating the range of factors that may impede, hasten and shape technology-related organizational change.

Nevertheless, recognizing that there is no secure certainty instead there is ambiguity and subjectivity in every respect; it should be bear in mind

that this is not the complete story of technological change. To be clear, no knowledge is determinate since there are several interpretations of its meaning. Hence, there may well be many other stories to justify the complex and uncertain nature of technological change. However, they are left out in this paper to be analyzed in a further research in a more detailed way for the benefit of concentrating on the political/strategic side of the change process.

In conclusion, the outcome of technological change is a vague picture painted by many artists simultaneously and influenced by the mood and the creativity of each. The picture is coloured with choices and negotiation; at the same time, it is darkened with political power plays. The end picture, as expected then, is highly multifaceted and open to many interpretations and thus to a further change.

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