

HOW CAN FIRMS IN THE UK BE ENCOURAGED TO CREATE MORE VALUE?

A Discussion and Review Paper



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1. Executive Summary

This paper investigates how firms in the UK might be encouraged to create more value through strategic innovation. Our approach is an integrative one, drawing on both the extant literature - covering the value chain, innovation and the low skill/low quality equilibrium debate - and the two systematic reviews completed by the AIM Scholars - covering promising practices and networks. In the paper we argue that there are three basic strategies that firms can adopt to create more value through strategic innovation:

Increasing efficiency and effectiveness through the adoption of better practices;

Innovating to produce products or services that generate more revenue – through either higher prices or larger volumes – but realised while remaining at the same position in the value chain.

Fundamentally changing position in the value chain and moving to a position where the products and services that are being delivered inherently generate more value.

We contend that increased value is likely to be created if firms adopt one or more of these three strategies. However, adoption is likely to represent significant challenges to management. Such challenges are linked to the levels of firm competency and their ability to construct, acquire and communicate knowledge during the innovation and subsequent implementation process. Addressing these challenges form the basis of our policy and research implications, which in turn are:

Policy Implications:

1. Adopt a broad definition of innovation that explicitly recognises and incorporates the three strategies for enhanced value creation that have been identified. Adopting this broad definition will avoid the concept of innovation being simply constrained to technological innovation.
2. Recognise that value creation is likely to be best served by the long-term support of firm-specific and industry specific learning, skills development and innovation activities. Recognition of the contextual and social constituency of value creation is a pre-requisite of future policy provision. Improving existing formal structures to assist in firm and industry specific knowledge exchange is crucial in encouraging informal learning processes associated with innovation.
3. Address specific shortcomings, identified in the Promising Practices and Networking¹ reports:

Poor management of change (especially at the integration and assimilation stage of processes and practices new to the firm).

Organisational rigidities (lack of appropriate workplace re-organisation).

Poor exploitation of skills.

Lack of customers focus and external relationships (Supply-Chain dynamics; inputs from consultants and vendors).

¹ We should note that financial inhibitors are of significant importance in this context.

These issues are important because evidence is presented in both the Promising Practices and Networking reports to suggest that:

While there are examples of successful adoption and implementation of processes or practices, some UK firms lag behind in their adoption or if they adopt them they do not fully exploit them.

Despite the fact that skills provision has massively increased in the UK since the 1980s, it appears that many firms have not been able to sustain the ability to master leading edge technologies or value creation via processes, products or services.

These two observations suggest that a major inhibitor to UK firm's ability to implement the three strategies identified in this report lies in the lack of firms capability to assimilate and implement innovations (absorptive capacity) and to add value to their processes and products.

One caveat – it is important to note that financial constraints, as well as skills constraints, will hinder firm's ability to address this issue.

Research Implications:

It is apparent from the current reviews and the accompanying discussion that innovation and the knowledge production process represent inherently controversial and context specific processes. The research implications are likely to be as follows:

Future research effort should be targeted towards examining the firm-level micro processes of innovation in the context of specific institutional structures (taking into account size, sector, industry and where appropriate the supply chain) that examine the link between knowledge, performance and adoption.

New insights into the relationship between skills, training and successful innovation is only likely to be achieved via longitudinal and comparator investigations of knowledge transfer – the aim must be to examine how intentionality gives rise to outcomes and how change is experienced within and across the firm.

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3 Introduction

3.1 The DTI Innovation Review

Policy makers, practitioners and academics in the UK are engaged in a national debate about how to improve the country's innovation and productivity performance. Fuelling this debate are two specific initiatives: the DTI's Innovation Review² and the Porter Report³. The Innovation Review, which will be published in the autumn of 2003, involves widespread consultation with key stakeholders and is seeking to identify how the DTI and wider Government might best act to increase innovation in the UK. Key issues to be covered in the Innovation Review include:

1. The drivers of innovation.
2. Current policies and actions.
3. The role of government and other stakeholders.
4. The potential obstacles.
5. International comparisons and benchmarking.

"Direct input from business and a wide range of stakeholders will be vital to the innovation review's success; not only do our stakeholders have knowledge that is essential to the analysis underpinning the review, but also many will have an important part to play in delivering the resultant strategy".

Source: www.innovation.project@DTI.dsi.gov.uk

3.2 The Porter Report

In addition to the Innovation Review, the DTI and the Economic and Social Research Council commissioned Professor Michael Porter and his team to conduct a review of the existing evidence on UK competitiveness. The resulting UK Competitiveness Report was published in May 2003 and argued that the UK has made good progress in certain aspects of the economy over the past decade. Growth in labour force utilisation in the UK has been stronger than in Continental Europe, the UK's growth rate of GDP per capita has shown a rapid increase and trade and Foreign Direct Investment levels have been good. However, there is still a worryingly large productivity gap between the UK and major competitors such as the U.S., France and Germany. The UK Competitiveness Report argues that the UK economy is now in a transitional stage and the productivity and prosperity gap will widen if certain shortcomings are not addressed. The authors of the UK Competitiveness Report conclude that one of the major levers for change is to enhance the currently weak innovation capability of the UK.

² For information on the DTI's Innovation review, see www.innovation.project@DTI.dsi.gov.uk

³ For information on the Porter Report, see Porter, M.E. et al., *UK Competitiveness: Moving to the Next Stage*, 2003, www.aim-research.org

Key findings of the UK Competitiveness Report include:

- *Significant improvements in UK competitiveness.*
- *Demonstrable managerial abilities.*
- *UK's potential in comparison to other countries.*

However:

- *Diminishing returns from current government and company strategies.*
- *Weak collaborative capacity.*
- *Inadequate innovation, investment, management training.*

In summary, the Porter and Ketels (2003) Report suggest that the UK has made considerable progress, but it now needs to make a transition to a high value economy. The key question to address is how the UK can make this change.

3.3 How The Report Was Devised

This report represents a synthesis of contributions to the debate on UK innovation and productivity. Specifically we draw on the systematic reviews covering promising practices and networks completed by the AIM Scholars⁴, as well as the extant literature. An integrative method was adopted so that we could draw together the existing material into a coherent paper addressing the question how can firms in the UK be encouraged to create more value?

3.4 What The Report Contains

Here we integrate the findings from the systematic review processes to consider how firms can create more value. The various strategies that have been considered are as follows:

Increasing efficiency and effectiveness through the adoption of better practices.

Innovating to produce products or services that generate more revenue – through either higher prices or larger volumes – but realised while remaining at the same position in the value chain.

Fundamentally changing position in the value chain and moving to a position where the products and services that are being delivered inherently generate more value.

Our aim is to investigate critically each strategic option and assess each in terms of the potential for adding more value. The findings will be presented in terms of themes examining how (i) firms can be made to operate more efficiently, (ii) how they can develop new products and/or services that are fundamentally worth more, and (iii) how firms might change their position in the value chain so to create more value and therefore grow. The significant enablers and inhibitors of each strategic position will be considered. The final section of the report will present policy implications and outline areas needing more research.

3.5 Who The Report Is For

The review will feed into current work commissioned by the DTI on the UK's Economic Competitiveness and how businesses and the Government might best act to increase innovation. The review is also seen as vitally important to identify areas where there is insufficient evidence or no evidence at all and thus further studies are required. As a result the report will be submitted to the ESRC's research priorities board.

⁴ See Pittaway, L.; Robertson, M.; Munir, K.; Denyer, D. and Neely, A.D. (2003) *Networking and Innovation in the UK: A Systematic Review of the Evidence* and Bauer, J.; Birdi, K. Denyer, D.; Lesure, M. and Neely, A.D. (2003) *Adoption of Promising Practice: A Systematic Review of the Evidence* .

4 Methodology

4.1 Evidence-based Policy and Practice

Evidence-based policy and practice (EBPP) has emerged as a response to the poor utilisation of academic research in practice, a phenomenon shared by many physical and social science disciplines (Muir Gray, 1997; Hamer and Collinson, 1999; Trinder and Reynolds, 2000). EBPP involves the collection, synthesis and application of all high quality research relevant to a problem being addressed. This research can be integrated with practitioner or policy-maker expertise to guide decision-making and action.

Evidence-based approaches can now be found in many physical and social science domains (Petticrew, 2001), such as healthcare (Cochrane collaboration, 2001; NHS Centre for Reviews and Dissemination, 2001) and social policy (Campbell Collaboration, 2001; Evidence Network, 2001). In addition, the Department of Education and Skills (DfES) has established a Centre for Evidence Informed Policy and Practice in Education. Furthermore, a 'What Works? Programme' was introduced in the probation service following the Crime Reduction Strategy published by the Home Office in July 1998 (HM Inspectorate of Probation, 1998; Home Office, 1998). In 1999 the Department for the Environment, Transport and the Regions (DETR) commissioned a review of the evidence base as it relates to regeneration policy and practice (DETR, 1999). Other disciplines such as nursing (Evans and Pearson, 2000), housing policy (Davies, Nutley and Tilley, 1999; Maclennan and More, 1999), social care (Macdonald, 1999) and criminal justice (Laycock, 2000) have also adjusted the approach with varying degrees of success. However, as yet, evidence-based business and management has largely been ignored.

Cranfield Innovative Manufacturing Research Centre (acting on behalf of the EPSRC) recently awarded grant IMRC19 Developing a methodology for evidence-informed management knowledge using systematic review to Professor David Tranfield and Dr David Denyer to develop a field-tested and grounded prototype methodology for generating research evidence in the manufacturing and management fields. This prototype methodology was used to produce the systematic reviews.

4.2 The Discussion and Review Process

This report provides an overview of the salient issues relating to how UK business and the UK government might move more readily towards a high value economy. It is not based on a systematic review of extant literature but draws insights from a limited literature search on the value chain, strategic innovation and the low skill/low quality equilibrium debate. This is brought together in conjunction with an overview of the findings from the promising practices and networks systematic reviews. This approach has been adopted to facilitate the ready interpretation of a considerable volume of literature that has already been created. A narrative is offered to locate the pressing issues of how the UK government can encourage UK business to create more value.



5 Findings

5.1 Introduction

The recent debate on the productivity gap between the UK and especially the USA, France and Germany provides the principle backdrop to this report. In particular, the UK government is currently involved in a consultation process to assess how large sections of the UK economy can be encouraged to move away from low skill, low value practices towards creating higher value. The key motivation is to ascertain how the productivity gap can be reduced and as such offer an alternative position on UK competitiveness that is not solely reliant on low input costs and an efficient business environment (Porter and Ketels, 2003). The present challenge is to assess how the government can facilitate the move toward a high value economy and to recommend how UK plc might best respond to this challenge.

This report contributes to this debate by presenting a frame of reference to address the strategic issues associated with developing a high value economy. In the recent AIM summary report (Birdi et al, 2003) it is suggested that in an effort to understand value creation it is necessary to open-up the black box of the firm in the context of intra-organisational, inter-organisational and environmental dynamics. This is a key first step as a major element of the challenge is to conceptualise adequately value creation. Here, insights are drawn from the extant literature including the promising practices and networks systematic reviews to examine how such dynamics relate to those firms strategies that are most likely to present value-adding opportunities.

The report and its recommendations are based on a critical interpretation of current thinking on value creation and innovation. We assume that innovation is not simply a question of exchanging knowledge but is a politicised and controversial process. When considering how firms might create value it is necessary to note that existing social relations and wider institutional processes mediate such strategic decisions. Crucially, the adoption of a value perspective of strategy has to be based on a realistic view of the enabling and inhibiting characteristics of existing socio-economic and political structures.

The report is structured as follows:

Section 5.2 - begins by defining the value chain and innovation in the context of the strategic positioning of UK businesses.

Section 5.3 – discusses the low skill/low quality equilibrium debate in the context of the strategic options that are potentially open to UK business.

Section 5.4 – assesses the routes to developing successful strategies that are cost beneficial to business, namely value creation via the adoption of new technologies, practices, product and services or the (re)positioning along the supply chain. We also consider the skills and training implications of these strategies.

Section 5.5 – concludes by discussing the policy guidelines and research implications emerging from this study.

5.2 The Value Chain and Innovation

5.2.1 What is a Value Chain?

The notion of a value chain derives from the field of microeconomics where it is used to characterise the process through which a good or service moves from raw materials to final consumption (figure 1). Porter's (1985) introduction of the value chain concept is used to describe the supplier and buyer relationship – in the context of delivering products and services – where costs take place and value is identified and added. In this case, value refers to the level of usefulness or importance of activities generated between stages of the chain (Cisco and Strong, 1999). The value chain represents a tool to disaggregate the business into strategically relevant activities, with the most relevant aspects being those activities that create the greatest value. In turn, competitive advantage is based on the firm being able to perform those activities more cheaply or better than its competitors (Brown, 1997).

Figure 1 – The Value Chain for Packaged Foods



[Source: Johnston and Lawrence (1988:96)]

Arguably, success depends on the way firms identify their business and link this with knowledge, competencies and customers (Normann and Ramirez, 1993). Adopting a value strategy is all about positioning the firm in the right place on the value chain; the strategic challenge is to ensure sustainable value creation (Walters and Lancaster, 2000). Ensuring and improving the fit between competencies and customers can take a variety of strategic forms. Firstly, meeting customers priorities and producing, communicating and delivering value can be achieved by building increased efficiency and effectiveness into the value chain. Adopting efficient means of production (i.e. **new technologies**) and '**best practice**' is often considered a necessary step to maintaining and improving the value of products and services that are offered to customers. Likewise, developing and **delivering products and services in novel ways** can achieve new value. The notion of value innovation is often used to capture how radical shifts in the products and services can make the competition irrelevant (Kim and Mauborgne, 1997). In turn, firms can create value by fundamentally **repositioning** themselves on the value chain or by organising their operations in better ways. For example, higher value can be created by developing partnerships along the value chain rather than by maintaining arms-length relations or hierarchies of common ownership (Walters and Lancaster, 2000).

In an effort to close the productivity gap it will be necessary for UK businesses to adopt one or more of the following strategies:

Increasing efficiency and effectiveness through the adoption of better practices;

Innovating to produce products or services that generate more revenue – through either higher prices or larger volumes – but realised while remaining at the same position in the value chain.

Fundamentally changing position in the value chain and moving to a position where the products and services that are being delivered inherently generate more value.

Such strategies reflect the priority given to transforming existing business processes rather than simply erecting barriers to rivals (Harvath, 2001). These activities involve the development, leveraging and transformation of existing products, services and processes (Harvath, 2001; Sanderson, 1999; Cisco and Strong, 1999) or provoking a quantum leap in value by shifting what is made available to customers (Kim and Mauborgne, 1997).

5.2.2 Defining Innovation

To assess the positioning of UK business in respect of the likely potential for adopting promising practices and/or adding value to products, processes and services requires a robust interpretation of innovation. At present, and despite the voluminous literature on the subject, our understanding of innovation - the commercial exploitation of ideas - is relatively limited (Wolfe, 1994). Many of the reasons behind this are linked to the lack of a common theoretical basis for innovation research (Drazin and Schoonhoven, 1996). That said, new developments in this field have begun to coalesce around the idea that innovation should be considered in terms of strategic conduct within institutional processes and structures (Nooteboom, 2000). This view has the potential of creating understanding through an examination of firm-level activities linked with knowledge-creation within the context of the firm's business system. Contrary to the studies of, for example, technical innovations that tend to assume innovations to be artefacts that can be simply dropped into firms, such an analysis provides space for a critical examination of the institutional processes and structures that inform and mediate strategic choices to innovate.

Innovation is not simply about invention or the creation of new ideas it is about the diffusion of ideas and their subsequent appropriation into society. Adoption presents considerable challenges depending on the innovation(s). For instance, new products are tangible artefacts where knowledge is black boxed and therefore is likely to offer fewer problems. This is achieved through the objectification of technical knowledge, which is ideally complemented by organisational structures that enable rather than inhibit knowledge trading. Process innovations, are on the other hand, more intangible, tacit and context-dependent. Such processes can be difficult to appropriate precisely because they reflect loosely coupled practices that are more likely to be open to (re)interpretation (Newell et al, 2002). Significantly, however, as technologies become more complex it is apparent that their introduction often requires the re-design of firm structures and as such increases the levels of risk and uncertainty associated with change. This can be usefully illustrated using examples from the literature focused on the adoption of new technologies or outsourcing aimed at cost minimizing production inputs. Here, it has been shown that the adoption of a labour saving or cost reducing process/technologies does not always lead to productivity gains (Brensnahan et al. 2002, Caroli and Van Reenen, 1999). The IT productivity paradox is a case in point, where despite sizeable investments in IT, firms often only report comparatively small productivity gains (see Brynjolfsson and Yang 1996 for a survey). Brensnahan et al. (2002) attribute this to the lack of the necessary organisational structures or management methods aimed at facilitating the introduction of new technologies, a finding confirmed by recent studies conducted by the LSE's Centre for Economic Performance in collaboration with McKinsey. Brensnahan et al. (2002) suggest that productivity gains derive not just from firms switching on IT equipment but from the joint processes of adoption, organisation re-design and changes to the services or output mix⁵. Although inventions can be bought in (such as with standard cost reducing technologies), work-place re-organisation may involve uncertain and difficult strategic

⁵ Brensnahan et al. (2002) using detailed US firm-level data, the authors find evidence of complementarities among all three of the innovations i.e. a) Information technology; b) new organisation, such as decentralisation of work and self-managing team; and c) change in product and service quality and the invention of new products and services) in factor demand and productivity regressions. The effects of IT on labour demand are greater when IT is combined with the particular organisational investments. In addition, firms that adopt these innovations tend to use more skilled labour. At the same time organisational changes do have a larger impact on productivity in workplaces with higher skilled labour.

decisions that are associated with often complex and cognitively demanding work that indicates shifts or increases in the demands placed on employees (Bresnahan et al. 2002; Brynjolfsson, and L. M. Hitt, 2002; Caroli and Van Reenen, 2000). This indicates that firms require skilled workers and professionals capable of sustaining and leading change and of responding to customer (and suppliers) needs. The lack of skills and the shortage of human capital can retard the adoption and implementation of innovative practices; while the lack of organisational changes and product or service re-designs can act to weaken the management of change (Caroli and Van Reenen, 1999⁶).

Organisations constitute an array of competencies, individuals, artefacts and practices. Changes to these competencies and practices or the development of new products, processes and services is inherently uncertain because of resistance or problematical because of an absence of the knowledge necessary to develop, make sense of, and introduce procedures, processes or services. Understanding how firms can improve their innovative potential requires examining the extent to which their existing zones of manoeuvre (Clark and Staunton, 1989) provide the means to undertake new activities. In the firm, this is achieved by making sense of the uncertainty that may surround the development of new products, processes and services or the adoption of promising practices.

Uncertainty is in two parts:

"... the degree of uncertainty embodied and embedded within an innovation, and the extent to which users already possess levels of knowledge and skill which enable them to systematically encode the uncertainty and to devise means for handling its level. (Clark and Staunton, 1989:51)

Assessing and overcoming uncertainty is difficult because technical innovation, as with organisational innovation, presents different challenges over time (Newell et al, 2002). In the case of technical innovation, invention relies on knowledge search, it is a personalised process where individuals form associations primarily based on skills and expertise for the purpose of turning ideas into actionable concepts and models (Nonaka, 1991). Diffusion involves the exchange of solutions. Boundary-spanners exchange knowledge in ways that are appropriate to their local situation (Tushman and Scanlan, 1981). Appropriation occurs when these individuals engage in such activities to fit the know-how within the firm. Hence, adding value through innovation involves varying activities during the innovation process (Newell et al, 2002). During invention the acquisition of knowledge is likely to rely upon increased networking. Once diffused, implementation is likely to need a community approach whereby individuals work closely together in order to establish trust and shared meanings and understandings (Weick, 1990) that go to ensure the appropriation of new knowledge. Successful appropriation will depend on how readily this is captured and stored in the organisation. Here, routinisation is essential to sustain and embed knowledge (Clark and Staunton, 1989).

⁶ Caroli and Van Reenen (1999) using a panel of British and French establishments, investigate evidence for the Skill Bias of Organisational Change (such as decentralisation of authority, delayering of managerial techniques and increased multitasking, quality circles). In their paper they write: In recent years there has been a tendency in developed countries to move towards less hierarchically and more flexible organisational forms. As pointed out by Lindbeck and Snower (1996) the tendency is that each worker no longer participates in one single task (Tayloristic organisation) but participates in more tasks (Holistic organisation). the latter gives more autonomy and responsibility to workers that have to be able to perform a wide range of tasks . This decentralisation in work organisation requires higher level of skills and human capital from individual workers since they need to deal effectively with increased uncertainty and responsibility Therefore, firm productivity is enhanced by the combination of decentralisation with deepening human capital. This implies that organisational change increases the demand for skills within firms while, at the same time, relative shortages of human capital can retard organisational innovation [page 7]. Moreover, using a panel of French and UK firms they found that SBOC can have higher impact upon the demand for skills than the traditional raw technical change itself, i.e. Skill Biased - or unskilled labour saving - Technological Change (for more details on the debate on Skill Biased Technological Change vs Skill Biased Organisational Change see Berman et al 1994, 1997, Caroli and Van Reenen 1999, Machin and Van Reenen 1999, Brensnahan et al 2002, etc)

For the purpose of this report it is assumed that innovation involves “the development and implementation of new ideas by people who over time engage in transactions with others within an institutional order” (Van de Ven, et al 1989:590). Value is created by the application of knowledge for improving, changing or developing specific tasks and activities – value is unlikely to be created by the simple stockpiling of knowledge in databases (McDermott, 1999). Notably, innovation is increasingly distributed across networks of actors, structural divisions within the firm, and even nations and cultures (Newell et al, 2002). Not only does innovation rely on the firms management to recognise potentially useful developments (e.g., best practice) it is also likely to rely on collaborative efforts between individuals across firm boundaries to ensure the embedding of practices in the firms architecture. However, such challenges cannot be explained with reference to the innovation project alone. As Whitley (2003:667) has argued, firms in different national locales develop distinctive kinds of capabilities that influence how they compete in different sectors and technologies . In other words, the selection process that informs strategic decisions to innovate is likely to be governed by the internal, contextual attributes of the organisation and by their position within a social network that informs whether a new idea or innovation is legitimate and viable (Drazin and Schoonhoven, 1996).

If the UK wants to avoid moving to the lower end of the value chain characterised by low cost strategies and therefore low risks and returns, it should take higher risks and re-think its strategic position within the value chain. Such strategic choices are not simple precisely because of the inherent controversies associated with knowledge creation and exchange and the structural constraints of the socio-economic and the political environment. Nonetheless, changes in strategic orientation are of increasing importance. The following section considers these issues with specific reference to the low skill/low quality debate before assessing in subsequent sections how innovation can add value through a) new technologies, b) workplace re-organisation and best management practices; c) high value added services and products and; d) firm repositioning along the value chain.

5.3 Innovation and the Low skill/Low Quality Equilibrium Debate

The low skill/low quality equilibrium debate has its origins in Finegold and Soskice's (1988) seminal paper considering the UK's deficiencies in vocational education and training (VET). In this, Britain was described as trapped in a self-reinforcing network of societal and state institutions which interact to stifle the demand for improvement in skill levels [resulting in] the majority of enterprises staffed by poorly trained managers and workers produc[ing] low quality goods and services . This provides an important juncture in research and policy terms as it denotes the popularisation of the debate and subsequent efforts to make sense of the role of skills and knowledge in competitiveness and organisational performance within advanced economies. In a recent review of papers on this debate it is argued that although our understanding of the problems of the VET system have improved it remains that there is an imperfect appreciation of the nature of skills and of their contribution to the development of a more competitive, higher value-added economy (Keep and Mayhew, 1999:1). A key issue in this, as in the original debate, is in explaining the mismatch of skills provision (which has massively increased since the 1980s) and the low levels of demand and how this might be resolved.

Until the work of Finegold and Soskice (1988), much of the debate on the relatively poor performance of vocational education and training in the UK, focused on supply side problems. These included failings in full-time education and work-based training (Keep and Mayhew, 1999). In contrast, the low skill/low quality equilibrium debate is based on a more complicated set of circumstances where demand side problems are expressed in terms of systems failure. From this perspective, the low skill form of work organisation within British industry is believed to infer wider institutional conditions – short-term financial markets, an adversarial industrial relations system, and a low supply of skills in the labour market (Finegold, 1999:61). Hence, the link between skills and competitiveness is located within the context of environmental, cultural and structural factors that include systems of production, industrial relations, inter-firm networks, industrial capital, corporate governance, politics and so on (Keep and Mayhew, 1999). This argument can be illustrated as follows: although there has been considerable criticism of the relatively low-level task specific character of workplace training (e.g., NVQ level) (Green, 1998), it is insufficient to assume that supply side issues explain a shortfall in the mastery of leading edge technologies in the UK. Demand issues and the role of management are consequential in the context of firm strategy. Hence, it is unlikely that firms will adopt high performance practices unless adequately integrated within, for example, high performing supply chains (Oliver and Delbridge, 2002). Hence, the preponderance of low-specification goods manufactured using Fordist production methods is as much about industry structure as it is about the national provision of skills.

How business and the UK government address these areas is not straightforward. To begin with, the debate on skills and organisational performance is itself based on a bipolar model of low versus high skills that is perhaps an oversimplification of the actual situation (Finegold, 1999). Misunderstandings about the relationship between skills and performance are apparent in the misleading assumption that the production of high-tech products is indicative of a highly skilled workforce. As Keep and Mayhew (1999:11) argue workers who solder together integrated circuit boards do not need degrees. Hence, a better appreciation of the knowledge production process is crucial if the provision and acquisition of appropriate skills and training is to be met. In other words, although formal education and work place qualifications are of considerable importance VET provision needs to be more attuned to the wider strategic challenges facing UK managers. Adopting promising practices, developing new value through knowledge construction or repositioning along the value chain need to be understood not just in terms of supply but also demand-side issues. This can be usefully illustrated with reference to the high-skill ecosystems in Northern and Southern California – the geographic clusters of organisations (both firms and research institutions) employing staff with advanced, specialised skills in a particular industry and/or technology (Finegold, 1999). The success of the ecosystems depends, in part, on the structural characteristics that enable rapid skills and technology development.

At one level these rely on the local proximity of world-class research institutions, as well as adequate finance mechanisms that in combination represent the very highest levels of social and financial capital. Yet, converting such resources into services relies on a sophisticated learning process. Value creation, in this case, involves the combination of a highly educated workforce and knowledge production processes based on informal learning. Skills development is linked to project based informal learning processes that include visits to customers, suppliers or partner companies rather than formalised training programmes. Hence, social relations formed on trust ensure the conversion of tacit knowledge into concepts and outcomes that are accessible (Nonaka, 1991). In combination, these institutional structures and informal micro-processes represent the dual sides of competitiveness, the provision of resources and the development of human capital to exploit knowledge and understanding. Such high skills ecosystems are not necessarily a panacea or without problems (Finegold, 1999) but they illustrate how formal education, resources and informal activities can be complementary and as such contribute to the creation of value.

Resolution of the low skills/low quality equilibrium debate is likely to depend on a dual approach to skills development where formal education and training routes are seen in the context of supportive mechanisms of knowledge production that are sympathetic to context specific and informal learning processes. These issues are considered in relation to the three value creating strategies assessed in this report.

5.4 Creating Value through Innovation

5.4.1 Strategy 1: Creating Value – Adopting Promising Practices

“Assessing how UK business might be encouraged to create value by improving efficiency and effectiveness through the adoption of better practices”

According to Bauer et al (2003), ad hoc studies show that during the 1990s UK business lagged behind other European countries in the adoption and performance results of promising practices (Hanson et al. 1994, Bessant et al. 1996, Boddy et al. 1988). More recent studies by Clegg et al. (2002) indicate that the UK has started to bridge the gap in the adoption of best practices but that UK business still tends to use them less effectively and extensively (Bauer et al, 2003). Successful implementation depends on professionals and skilled workers sustaining and leading change during the adoption process. This process can be characterised as follows:

- **ADOPTION** - all events that lead to the decision to transfer a best practice;
- **SET UP** - planning for the implementation of the best practice;
- **IMPLEMENTATION** - the stage from the launch of the change programme to the execution of the short term actions that have been planned;
- **RAMP-UP** - the stage when the practice is actually used, i.e. ramp-up to performance;
- **INTEGRATION** - final stage of the adoption process, i.e. when firms achieve satisfactory results and its use becomes gradually routinised.

Appropriation is predicated on the firm’s ability to learn, adopt, adapt and routinised new practices. Here, management has to be able to recognise the value of new, external knowledge, assimilate it and apply it to commercial ends (Cohen and Levinthal, 1990), indicating that re-design, human capital and cognitive skills are harmonising assets within the organisational capital of the firm (see Dunne, Haltiwanger and Troske 1996). Yet, the problems encountered by UK firms (during implementation) are linked to these same elements. In other words, the main inhibitors are from internal factors such as **poor management of change** reflected in **organisational rigidities** (poor knowledge and human resource management, lack of investments, lack of customers or external relationship) (table 1).

Table 1 – Internal Inhibitors of the Adoption of Best Practice

Inhibitors of the adoption of best practices internal to the organisations are:

Human Capital/Resources

Poor enactment of leadership role (no clear line of responsibilities for the project, lack of firm commitment and active championing from top management);

Lack of understanding, communication and knowledge-sharing;

Insufficient education, training and development for workforce and management;

Cultural resistance and lack of employees motivation.

Process

Little setting of goals, objectives, targets for best practice;

Lack of measurement, assessment and review during the implementation process;

Lack of customer or external relationship focus;

Inappropriate control of the adoption process;

Poor communication at all organisational levels – Lack of knowledge sharing;

Little empowerment of employees.

Financial

Lack of investments in equipment, people and processes.

Perspectives and Partnership.

Lack of customer or external relationship focus (no engagement in supplier management, unwillingness to learn from customers/suppliers, Poor benchmarking, Little engagement in networking).

The adoption of best or promising practices presents substantial challenges. This can be usefully illustrated with reference to recent developments in manufacturing sectors where the adoption of continuous improvement and problem-solving practices reflects the diffusion of Japanese management principles (Toyota production system). Cooke and Morgan (1988) have noted that many leading manufacturers have embarked on a process of experimentation involving a semi-permanent process of organisational innovation that is based on an attempt to create a more collaborative corporate culture, both within the firm and between the firm and its principle suppliers. This is indicative of a move away from the basic principles of scientific management and the adoption of policies dedicated to total quality and to active participation in new product development (Leonard-Barton, 1992). Advocates of lean thinking purport an important shift with the factory floor increasingly seen as a place where knowledge can be created as well as applied, where production workers think as well as do (Womack, et al, 1990). This has been characterised by the learning factory model that consists of the following dimensions (Delbridge et al, 1998:227):

Innovation is the central motif of the learning factory. The learning factory generates, codifies and applies knowledge to improve its various products, structures and processes.

Learning factories are host to continuous improvement activities that are driven by internal sources of information such as tacit knowledge of shop-floor workers, the contextual knowledge of technicians, and the formal knowledge of professionals and craft workers.

The learning factory also benefits from improvement derived from external sources of information, such as problem-solving suppliers and the supplier development programmes of customers.

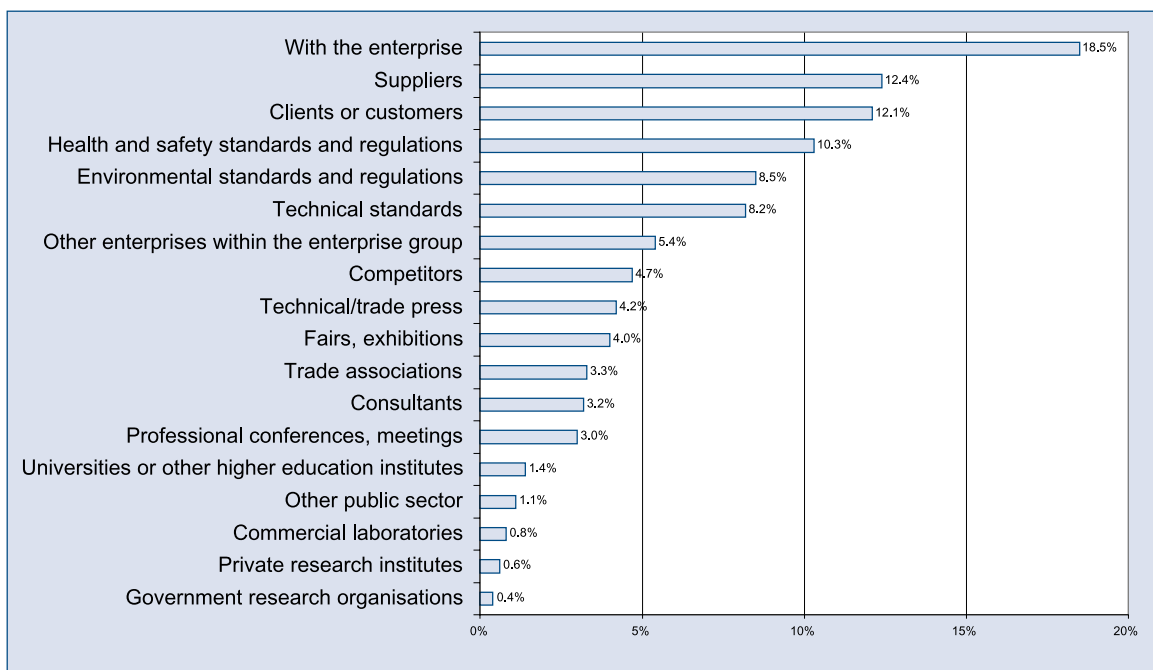
The learning factory is embedded in an innovation network of collaborators with whom there is information exchange and shared learning.

How such practices are experienced on the shop floor is open to contention. Notably, those studies adopting a normative approach (Oliver and Wilkinson, 1992; Womack, et al. 1990) tend to take an ideal type view of such techniques assuming a uni-linear interpretation of diffusion and appropriation. In contrast, critical studies of the Japanisation of the labour process (Delbridge, et al 1992; Williams, et al 1992; Elgar and Smith, 1994, Smith and Meiksins, 1995) have indicated that the borrowing of social innovations across contexts is more problematic. Recent work by Delbridge and Barton (2000) on the auto components industry supports this view and suggests that conformity to such practices is likely to be differentiated across several dimensions: the degree of specialisation (relating to the use of specialists or specialist groups in the organisation of problem-solving and continuous improvement activities), the breadth of participation (relating to the level of shop floor inclusion in such activities), the degree of centralisation (relating to the role of management in such activities), and the level of standardisation or the procedures governing group problem solving. They argue that developments at individual plants is informed by the social and institutional context of operations and by the plant s specific history (Delbridge and Barton, 2000:188). This supports what Elger and Smith (1994:46) have contended in that the selection and interpretation of social innovations, such as those associated with Japan, of necessity are mediated and interact with home grown, conditions and existing practices. As Bauer et al, (2003) show, these local conditions often reflect a set of considerable inhibitors.

Notwithstanding, the appropriation of promising practices remains possible as long as managers and employees are able to access and use knowledge. As indicated by Pittaway et al, (2003), networking represent a considerable resource in this respect in so far as they offer an information channel for entrepreneurs (Birley 1985, Smeltzer et al 1991 Hoang and Young, 2000) while managerial networks positively impact the adoption of practices, especially when they are cross functional involving actors from a range of contexts. In turn, the engagement of customers and suppliers in networks with buyers can strengthen the commitment of the supplying and buying firm's top management to their role and integration; this enhances cooperation and investment (Pittaway et al, 2003). In combination, social networks and networking often provide the basis for managers to overcome the barriers to resource acquisition, problemsolving and commitment to change. In this case, although networks are not the panacea to all problems the findings confirm the role of social relations in an ever increasingly distributed innovation process.

An important question is from where do new ideas come. The UK innovation survey 2001, does not directly measure the extent of networking however, it shows that UK firms source technologies and other innovation related knowledge and information from multiple sources⁷. For the period 1998-2000, the main sources of information for UK enterprises are internal to the enterprises themselves (18.5%) followed by market suppliers (12%), clients or customers (12%). Relatively weak sources include institutional entities (e.g. public sector such as government research organisations and universities or private research institutes) and the professional links (conferences, trade associations, technical/trade press or fairs and regulations).

Table 2. Proportion of respondent grading importance of information sources as high



[Source: UK innovation survey 2001 elaboration by B. Stockdale, DTI, <http://www.dti.gov.uk/iese/ecotrends.pdf>]

Encouraging links represents a considerable challenge, not just for business but also for government. Networks of individuals (informal) and organisations (formal) form the foundations for successful adoption that can, when appropriately organised, contribute to skills development in ways that help overcome many of the home grown difficulties experienced by UK managers and businesses.

⁷ UK innovation survey 2001 is part of a wider community innovation survey covering the EU. It is conducted by the ONS on behalf of the DTI and contains information on a sample of 8172 UK enterprises in the production, construction, distribution and services.

5.4.2 Skills and Training – Adopting Promising Practices

A key question is the extent to which UK business has the necessary skills to enable the appropriate adoption of promising practices. The resolution of these issues is likely to depend on the effective utilisation of those mechanisms that enable both knowledge production and skills development through collaborative links that are meaningful to all those participating. It is apparent from Bauer et al (2003) that the inhibitors to adoption reflect weak connections between the firm and those institutional structures that should inform strategic choices. Issues relating to skills, competencies and adoption cannot be taken out of the context of the business system. By way of example, we suggest that the recent work of Society for Motor Manufacturers and Traders (SMMT) represents an exemplar of how institutional actors contribute to firm level value creation through the adoption of promising practices by facilitating both knowledge production and skills development.

The SMMT industry forum has established a framework to support sustainable worldleading competitiveness in the UK vehicle and components industry. This represents the adoption of promising practices based around lean manufacturing methods and offers opportunities for either individual firms via its Master Class or multiple firms via the Supply Chain Group training programmes. For individual firms the industry forum offers second and third tier auto components suppliers an opportunity to work with specially trained forum engineers to implement a range of measures to help improve quality, cost and delivery improvements. A key aspect of this work is the learning process that is based on learning-by-doing. The skills imparted for the elimination of waste is context specific and inextricably linked to the wider strategic issues of the supply chain and industry. Firms are introduced and trained to conduct value stream mapping, process improvements, and team leadership and supply chain management activities. Hence, the industry forum engages with firms to try to respond to the pressures of an increasingly global and competitive market place. Value creation and training take on strategic importance as suppliers are brought under the one umbrella for the purpose of collaboration and support.

Here, the SMMT facilitates the adoption of best practice by responding to many of the shortcomings of UK business identified in the Promising Practices Report. Firstly, the trainers on the programmes provide a co-ordinating role that help to keep the firm on track with the skills and training development process. In turn, the engineer's role is to ensure that the employee's benefit from, and draw upon, the skills and expertise of the engineers within their own context. It is through the involvement of the engineers that co-ordination and measurement of these processes is effectively managed, reviewed and assessed – control is crucial to the effective adoption of such promising practices. Finally, because this work is focused on the auto component industry, the emphasis is on industry improvements that work along the supply chain. The role of institutions such as the SMMT is crucial to encouraging value creation. As it stands, the role of trade associations could be improved as with trade conventions (Pittaway et al 2003), yet, as the SMMT example shows, it is possible to see how such institutions can help to address the low skills/low quality debate in the context of specific industries.

Arguably, the SMMT have raised the game in respect of support and direction. Against globalisation and increasing pressure to add value the industry forum has set new standards that challenges a low skill viewpoint. Such normative pressure clearly has the potential to reframe the skills debate within the UK vehicle and components industry. Significantly, such provision emphasises the contextual and processual characteristics of innovation and knowledge production. In other words, the success of such programmes is based around the essentially bespoke and strategic relevance of their work.

5.4.3 Which 'best practice'?

As to the question which is the best practice the answer is, which is ever the best for the firm. There are many management practices and several organisational models. At any moment for any given firm there is an optimal organisation form or management method that if used by the firm will yield the greatest benefit (Perrow, 1969). It is around this principle, and the fact that there exist complementarities among practices, that the concept of system of organisational innovations has been developed and used (Huselid, 1995, MacDuffie 1995 Ichniowski and Shaw 1995). High performance workplaces result from the synergic interaction of many work management practices - TQM, formal team working, job rotation, employees involvement programme, training, compensation and management performance systems (Huselid 1995). The system, when successfully implemented, creates a unique source of competitive advantage for the firm that is difficult for competitors to replicate with increased quality productivity and often better performance than more traditional systems (see Huselid 1995, Ichnowski 1990, Ichnowski et al 1996, Black and Lynch 2001, Cappelli and Newmark 2001, Colombo and DelMastro, 2002).

The systems approach has resonance with the lean production paradigm (see Krafcik 1988, Wormack et al. 1991, Davies and Kocchar 2000). Such a paradigm, in part, implies the reduction in the managerial hierarchy, with the elimination of intermediate managerial layers and the decentralisation of the decision authority to the hierarchical level where the relevant information resides, with few levels between blue collars and plant managers so as to exploit localised expertise. This generates flatter structures, the delegation of decision authority; work in teams organised around processes with empowered workers with high skills levels and cross-training, rewards and profit sharing. Although there are examples of successful implementation, not all techniques apply to all types of work. Firms have specific identified needs and these vary by size, market, objective, ownership, and national environment. Vertical organisations might suite some types of industries better or there might exist hybrid organisations such that high performance workplaces require skills, competences and capability that not all firms possess.

The evidence shows that there is no one best practice or best organisational model. Promising practices need to be firm specific and relevant to the firm s strategic and environmental contingencies (the market the firm operates in, the final product characteristics, how the new flexible technologies apply to the work, the existing intra and inter-organisational structure, the existence of highly skilled work force) and appropriate to what Galagan (1994) defines as the firm's unique culture. In this case, adoption needs not only to be assessed within the context of existing understanding within the firm but also where appropriate across the industry. Here, mediating bodies (e.g., the SMMT) can usefully inform management of the utility of these promising practices. As long as such institutions are able to offer impartial advice then there does appear to be room for a role within the existing institutional framework for such bodies to act as the adviser and provider of skills, knowledge and expertise. It is through such mechanisms that the government and other institutions can encourage, via incentives and financial awards, the successful take-up of promising practices.

5.4.4 Strategy 2: Creating Value – Product, Process and Service Development

“Assessing how UK business might be encouraged, while remaining in the same position along the value chain, to innovate and produce products and/or services that generate more value”

Creating value through product, process and service development can take two broad forms. The first option is for firms to seek to develop new products and/or services for which consumers are willing to pay more. The second is to develop new products and/or services for which more consumers are willing to pay. An example of the former would be the development of mobile phone technology, while an example of the latter would be the low cost airlines. The low cost airlines have not innovated to develop products and/or services that are inherently worth more. In fact they have innovated to develop products and/or services that cost the consumer less, but through which they have been able to massively grow market share.

In either case – innovating to produce new products and/or services or innovating to grow new markets – it is crucial to understand from where the innovations come. A key contribution of Pittaway et al (2003), was the identification of the attributes associated with networks and networking that can enable and facilitate value creation through product, process and service development. Most notably, social capital, as an outgrowth of such networks is the basis of a set of resources, tangible or virtual, that accrue to an organisation through social structure, facilitating the attainment of goals (Leenders and Gabbay, 1999:3). The link between social capital and innovation is evident in the way collaborative relationships and new product development can be greatly enhanced by networking activities especially for firms that cannot engage in their own R&D⁸. Networks can provide small businesses with the link into R&D that is contracted by larger firms as well as setting up marketing and manufacturing relationships (Rothwell and Dogson, 1991). Networks can also act as information channels for entrepreneurs that enable the integration of suppliers, co-suppliers and distributors during innovations projects. More generally, by being part of a network that is conducting development activities firms can (Pittaway et al, 2003:23-24):

Share the risk (e.g., Grandori, 1997).

Access new markets or technologies (e.g., Granadori and Soda, 1995).

Improve product speed to market (Kogut, 1989).

Pool complementary skills (e.g., Hagedoorn, 1993).

Safeguard property rights when complete contracts are not possible (e.g., Leibeskind et al. 1998).

Access external knowledge (e.g., Powell, Kogut and Smith-Doerr, 1996, Cooke and Morgan 1993).

⁸ The biotechnology industry illustrates why networking is indispensable in situations where scientific and technological knowledge is developing at a rapid pace. From their foundation firms must translate scientific discoveries into commercial technologies and new medical products. Biotech firms need: large amounts of capital to fund costly research; assistance with management and clinical trials; and later on, experience with the regulatory approval process, manufacturing, marketing, distribution, and sales. The technological and scientific knowledge required to stay on top of such a field is diverse and the industry is complex and changing rapidly. In this business, many new areas of science have become inextricably involved, ranging from genetics, biochemistry, cell biology, general medicine, computer science, to even physics and optical sciences. Modern biotechnology is not a discipline or industry but a set of technologies relevant to a wide range of disciplines and industries. Since all the necessary skills and organisational capabilities needed to compete in the industry are not readily available under one-roof biotech firms have regularly entered into a wide array of alliances to gain access to different competencies and knowledge. Many of these alliances are with pharmaceutical companies, which provide a set of organisational capabilities that biotech firms are lacking. Others are with research institutes and other firms designed to help biotech firms stay abreast of the latest technological and market opportunities. Success in the biotech industry depends on a firm's ability to access knowledge and skills located beyond their boundaries (Adapted from Powell, 1998). Comment: A key challenge for both small biotechnology firms and large global pharmaceutical corporations is to learn to collaborate and learning from collaborations with external parties by constructing a portfolio of collaborators. Many high-tech industries have a similar need to develop and benefit from network relationships when seeking to innovate (See Pittaway, L.; Robertson, M.; Munir, K.; Denyer, D. and Neely, A.D. (2003) *Networking and Innovation in the UK: A Systematic Review of the Evidence*, p. 22).

Importantly, there is no consensus on the best network type. As with the findings from Bauer et al (2003) on promising practices, Pittaway et al (2003), found that networks and networking is industry, purpose and innovation specific. That said there is a general view that they are effective enablers that contribute to information spreading and the forming of formal and informal relationships with diverse organisations. For example, it has been proved that in the UK, networks and networking amongst firms plays a relevant role in boosting output and competitiveness in several industries (Ahuja, 2000, Powell Koput and Smith-Doerr, 1996). While, some networks in the high tech industry have lead firms to generate 20% more product⁹ improvements than those firms not in the network (Gemunden, Ritter and Heyderbreck s 1996). Clearly, there is an opportunity for industry specific support through the encouragement of networking that will encourage both formal and informal collaboration (e.g., Biotechnology) (see Pittaway et al, 2003).

Networks and networking represent a significant component of the innovation process that have to be understood within the context of the strategic decisions of managers. In the case of product, process and service developments strategic choice can take on many forms ranging from incremental changes that entrench existing understandings and skills to those that are radical-altering or discontinuous and which challenge the firms existing architecture (Clark and Staunton, 1989). What is significant about trying to change the existing rules of the industry and the market place (despite the obvious challenges) is that it offers an alternative view to value creation strategies.

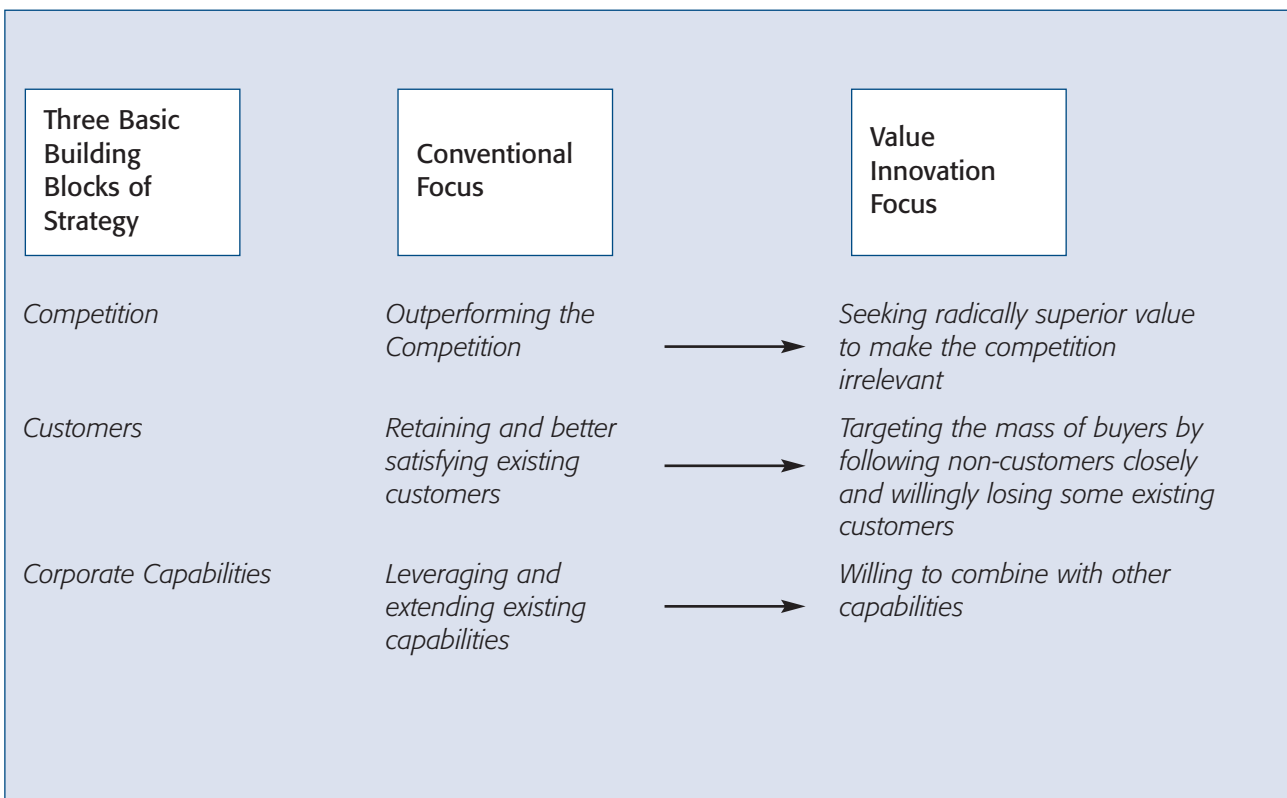
⁹ The review reports that very little research has been conducted on the role of networks in the development of process innovations aiming at producing services.

5.4.5 Value Innovation

According to Kim and Mauborgne (1999) in a five-year study of high-growth firms and their less successful competitors those firms that maintained high growth in revenues and profits were found to approach strategy radically differently. These authors found that such high growth companies were innovative in strategy and the execution of how they did business. In the case of strategy, what distinguishes high performers from the less successful firms is a strategic logic called value innovation. The less successful firms followed a more conventional approach to strategy, which was dominated by the idea of staying ahead of the competition. In contrast, the high-growth firms paid very little attention to matching or beating their rivals; rather, they sought to make their competitors irrelevant (figure 2).

The strategic logic of value innovation can be summarised in terms of the following issues: the industry assumptions, strategic focus, customers, assets and capabilities, product and service offerings. Industry assumptions – where conventional thinking might start with the idea that the firms industrial conditions are given, value innovators, no matter what the state of the industry, are looking for significant ideas and important leaps in value to the customer and to profits. Strategic focus – usually firms allow competitors to set the parameters of strategic decision making. However, this leads firms to compete at the margin for incremental share. From the value perspective, the aim is not to compete on existing parameters, rather, it is to critically examine these parameters and to ensure that they add value to the most significant, and where appropriate, try to define new sources of value. Customers – often firms seek growth by retaining and expanding their customer base through more customisation and specialisation. In contrast, value innovators develop commonalties rather than differences. Assets and capabilities - many firms view business opportunities through the lens of their existing assets and capabilities. In contrast value innovators ask, what if we start anew? This is not to say that value innovators never leverage their existing assets and capabilities. Instead, they assess business opportunities without being biased or constrained by their current position. Product and Service Offerings - conventional competition takes place within clearly established boundaries defined by the products and services the industry traditionally offers. Value innovators think in terms of the total solution buyers seek.

Figure 2 – The Strategic Logic of Value Innovation



This indicates that value innovations are not necessarily incremental or radical innovations but might be simply architectural innovations that reconfigure an established system to link together existing components in a new way while leaving the core design concept untouched (Henderson and Clark, 1990). The application of this type of innovation can be illustrated for example by the movement of a technology from large to small that leaves unchanged the core concept but changing the relationships developed between components in a smaller space and proximity while maintaining the integrity and functionality of the overall design. Architectural innovations can successfully add value to the existing components or technical knowledge generating competitive advantage for the organisation (Henderson and Clark, 1990). At the same time existing architectural knowledge or on incremental innovations based upon the existing product architecture can create internal rigidities that endanger the competitive advantage of the firm and lower the barrier to new entrants on the market (see for example the case of Xerox and the entrance of rival companies producing successful smaller copiers with almost the same core technological components in Clark 1987). This indicates that to be able to survive firms need to be open to changes and not to be locked in by embedded architectural knowledge.

Although this work provides insight into the options open to firms, such departures from conventional business thinking represents daunting challenges that are likely to remain the exception rather than the rule. An insight into some of these challenges can be illustrated with reference to the various contingencies that often inform the strategic conduct of management. The political nature of innovation is apparent during periods when firms are involved in acquisitions, mergers, divestitures, downsizing or cost reduction activities. Drizin and Schoonhoven (1996), argue, for example, that such activities are likely to have adverse implications for innovation. This is because, faced with such events, senior executives are likely to adopt short-term approaches:

Increase financial controls.

Decrease strategic controls, and

Reduce the time and attention devoted to innovation-related activities.

The adoption of these strategies restricts effort, encouragement and resources away from innovation such that emphasis is placed on financial rather than strategic control. Subsequently, motivation and support of innovation at the individual, group or network level is supplanted by the need to satisfy the more urgent and immediate strategic needs. Innovation is controversial precisely because such activities are informed by a set of factors and elements that are only partially within the control of managers. Yet, the value innovation example serves to demonstrate the importance of leadership and strategic management and competence. Despite these contingencies innovation, as outlined by Bauer et al, (2003) and Pittaway et al, (2003) demands the co-ordination of competencies, resources and knowledge. Overcoming low value activities can usefully be achieved through the sponsorship of networking activities that draws together the necessary skills and resources around firm specific problems.

5.4.6 Skills and Training – Product, Process and Service Developments

Creating value through product or service innovation represents an opportunity as well as a challenge because the resource constraints around innovation are usually tied to the lack of management competency and skilled labour. According to Freel (1998) this is manifest in the way that technical entrepreneurs, for example, are likely to be better equipped to deal with the technical characteristics of innovation but experience difficulties in ensuring successful commercialisation. Constraints of this form are not restricted to entrepreneurs but are experienced by firms of all sizes. The difficulties confronted by technicians, managers and employees alike relate to the process via which the firm's resources are created and then rendered as services (Tsoukas, 1996). Translating resources into services relies on the knowledge applied to these resources through, for example, the firm's routines (Nelson and Winter, 1982). Yet, the rendering of services from resources is not without problems. This is due to the fact that a firm's knowledge is distributed in the sense that it is inherently indeterminate and because the process of knowing is uncertain (Tsoukas, 1996:22). Firms are both distributed and decentred such that management practice is mediated by limitations in knowing what they know and knowing what they need to know .

Overcoming such constraints is by definition incredibly difficult. Yet, the translation of resources can be facilitated through knowledge partnerships whereby firms actively engage in activities to move them beyond the low skills equilibrium. The most notable example involving public funds is the newly named Knowledge Transfer Partnership (KTP) (formerly the TCS – Teaching Company Scheme). The KTP illustrates how adequately educated graduates and post graduates have a key role in assisting firms to create value through skills development, knowledge production and adoption. In the case of TCS (as it was) it has been shown that £1 million of TCS support buys 58 jobs; £3.6 million value added; £3.0 million exports; £13.3 million turnover; £1.5 million capital expenditure and £0.2 million R&D expenditure (PACEC, 1998). KTP s are built on a collaborative arrangement for the resolution of a business problem that is beyond the means of the host firm. Value added is created through joint development activities - the firm has access to the scientific, engineering, technological and business skills and expertise of the UK s universities, the participating academic benefits from working with industry that should inform subsequent research and teaching and the associate – a well-qualified graduate or associate – is given the opportunity to take up quality careers in industry (Quinquennial Review, 1996). Problems linked with the distributed and decentred characteristics of knowledge production can be addressed by drawing together the embedded knowledge of the industrial supervisor (usually a senior manager in the firm) with the expertise of the academic. Here, the associate acts as a boundary-spanner interpreting and embedding new forms of knowledge within the firm.

By definition, the KTP is designed to facilitate the shift from low skills to higher skills through joint development and innovation. Encouraging managers to invest in such activities is positively influenced by funding arrangements that help firms to share the risks. However, adoption of such practices also depends on the management of the firm being open to the idea of innovation as well as being able to adequately support and facilitate the process on-site. In this respect, programmes such as KTP are, unlikely to assist firms in most need to move away from a low skills level precisely because they do not have the resources or infrastructure to support such activities. It is clear that such opportunities should be combined with skills and training provision that is more generic and designed to broadly develop management skills. A recent example of such provision can be found at Cardiff University Business School. The Sustaining Profitable Growth (SPG) programme has recently been designed to develop the strategic and leadership skills of Welsh managers. Based on workshops and learning sets, SPG exposes managers to people from different businesses and business cultures, provides a challenging environment that is open and supportive and creates new opportunities to discover different ways of doing business. Skills training should combine basic and pier based provision (e.g., the SPG) with project focused programmes (e.g., KTP). In combination, these can begin to resolve the complex issues facing middle management in the UK (Porter and Ketels, 2003).

5.4.7 Strategy 3: Creating Value – Re-positioning along the Value Chain

"Assessing how UK business might be encouraged to fundamentally change their position along the value chain"

The dominance of large, vertically integrated companies is being challenged by the value-adding partnership which can be described as a set of independent companies that work closely together to manage the flow of goods and services along the entire value chain. Low cost computing and communication packages are increasingly giving competitive advantage back toward partnerships of smaller companies, each of which performs one part of the value-added chain and co-ordinates its activities with the rest of the chain. The flexibility and responsiveness of SMEs are translated along the value chain so that the diversity of the whole chain can become the basis of new ideas and innovation (Johnston and Lawrence, 1988).

Value-adding partnerships are generally created whenever a non-integrated firm deals with another firm that performs the next phase of the value chain and so stands to benefit from each other's success. These relationships seldom evolve synergistically and more often than not, firms keep their distance and do their best to keep financial gains to themselves. It is not uncommon for firms to develop weakening strategies with partnerships in an effort to control profits. Value-adding partnerships are innovative in so far as they involve efforts to ensure stakeholder buy-in, collaboration, mutually beneficial operations and even mutual training. The advantages are obtained through the way the constitute firms of the chain are able to focus on just one step of the value chain. For example, the McKesson Corporation showed how a distributor of drugs, health care products, and other consumer goods transformed itself into the hub of a large value adding partnership and as such increased its own value-adding activities¹⁰. Such examples are in contrast to vertical integration where non-productive outcomes and control are exercised through single management structures. Notably, vertical integration has weaknesses, for example, in the process of exploiting their distinctive competences, many large, integrated firms emphasize one competitive dimension and as such are often vulnerable to new challenges. In this regard, the benefits of the individual competencies contributed by the individual firms are significantly diminished.

In addition to challenging the structure of the value chain, value creation is also possible through new make or buy decisions (Leavy, 2001). Specifically, the pace of change relative to product, process and materials technologies has made the potential to outsource more varied and so, created exciting pathways to innovation, growth and competitiveness. Increasingly there is evidence that this applies to both manufacturing and service firms, with many of the city of London investment banks, for example, outsourcing operations to alternative locations – some within the UK and some outside it. At the same time outsourcing can be extremely dangerous as this might lead the firm towards the lower end of the value chain leading to what is called the lock in effect. Yet, when properly developed, strategic outsourcing substantially lowers costs, risks and fixed investments while greatly expanding flexibility, innovative capabilities and opportunities for creating higher value-added and shareholder returns (Quinn, 1999:10). Here, there are three key questions linked to the proposition of outsourcing:

In what way should a firm decide to outsource?

Why should a firm outsource?

To what extent and under what circumstances do the benefits of partnership outweigh that of sourcing from the market and visa versa?

¹⁰ "McKesson's evolution to a VAP was triggered by fierce competition from large drugstore chains, which were eating into its business of the independent stores McKesson serviced. McKesson realised that if the independents dies, it would soon suit. To protect their business, McKesson's managers began to look for ways help customers... [successful use of a computerised system] McKesson thus offered independent drugstores many advantages of computerised systems that no one tore could afford by itself.. The close and productive link with customers wasn't enough, however, to satisfy McKesson's imagination. The company recognised that the up-to-date information on sales had immense value to product managers of consumer goods manufacturers and proceeded to sell it to its own suppliers. What makes McKesson so powerful - and what makes it a value adding partnership - is the understanding that each player in the value-added chain has a stake in the other's success. They looked for ways the resources at one part of the value-added chain could be used in another. McKesson also looks for ways to add value by creating new services" (Johnston and Lawrence, 1988).

As the literature suggests, such decisions by customers have significant implications for suppliers and therefore, firm's need to be responsive to the needs of customers with the ability to respond to market and partnership demands. While outsourcing is significant in some industries – for example, automobiles and semi-conductors – its application is not prevalent across all industries (Berman, Bound and Machin, 1997). Quinn and Hilmer (1994:43) assert that outsourcing is only appropriate where 'it can achieve definable pre-eminence and provide unique value for customers', or when it has a 'critical strategic need'. For those that outsource the greatest payoff is to be found in the opportunity to innovate, learn and create value through the pooling of a firm's capabilities with those of 'best-in-class' suppliers. The underlying strategic goal is the creation of an improving fit between capabilities and customers throughout the value chain (Normann and Ramirez, 1993). For example, Johnson and Johnson (J&J) (Puerto Rico) have benefited from such activities. In the late 1990's, as many as 13 J&J firms were doing business in Puerto Rico. Each of the companies maintained the services of training and development that served within the HRM department. However, during an economic downturn it was revealed that these often part-time services were costing full-time wages and benefits even when they were not being utilized. In order to address the training and development needs of each of the business units, as well as cost efficiency, J&J developed shared services. Shared services involved a centralised HRM function that outsourced its services to the needs of each unit. When a particular business unit required training and development, it had the option to use in-house trainers and facilitators or bid the work to an outside training and development company. Ultimately, this internal outsourcing practice provided timely and ready-made trainers for duties within and between the business units. As an added bonus, it raised the level of services provided by internal trainers of internal trainers because they were competing with outside trainers for the same jobs they had heretofore received as gratis.

Questions associated with creating greater value in terms of integration or movement along the value chain necessarily involve issues associated with Modern Supply Chain Management thinking. In the case of small and medium-sized enterprises (SMEs), for example, integration, a key aspect of current supply chain thinking, is often made difficult for SMEs due to resource and cultural constraints. In particular, managers can find it difficult to respond to the demands of supplier arrangements because they don't understand what skills and competencies are sought to operate in high performing supply chains. This is exacerbated by their inability to analyse their own capabilities and ascertain shortcomings or readily find support from the right state agencies (Monkhouse, 1995; Macpherson and Wilson, 2003). It is also important to recognise that many managers find it difficult to shift from market driven interpretations of how to conduct business towards those that are more collaborative in form.

Interestingly, it remains to be seen whether the UK government can play a direct role in helping SMEs to work towards closer supplier relations. In particular, there is some considerable scepticism as to the worth of such support in the context of the SME population. As Curran (1999:43) has argued, it is difficult to say very much worthwhile about the impact of small business policy in the UK over the last 20 years. Existing industry forums (see above) are an obvious source of skills training and expertise. In this respect, the UK government might focus on using such mechanisms to distribute financial incentives to assist firms, including SMEs, to respond to the challenges of globalisation. In this respect, the nature of the skills and training issues that are likely to inform such support are usefully considered in relation to SMEs.

5.4.8 Skills and Training – Re-positioning along the Value Chain

UK business and especially SMEs are likely to find it difficult to integrate or (re)position themselves along the value chain. The implications are likely to be significant because if SMEs cannot add value through their product or relational capabilities it is likely that they will become increasingly pressured from global sourcing through the use of epurchasing or e-market systems (Rhodes and Carter, 1998). In the case of the supply chain, a reduction in the numbers of suppliers is unlikely to be avoided unless SMEs improve, at the very least, the competencies to support supply chain management practices (Macpherson and Wilson, 2003). The competencies are likely to include: Business process competencies (benchmarking, continuous improvement, flexibility, innovation); interactive competences (customer focus, communication) and; production competences (performance, quality) (Macpherson, 2001). According to Macpherson and Wilson (2003:210):

“...being able to identify and strengthen supply chain competences will be an important factor for SME competitive advantage and will be dependent on two major issues: the willingness and opportunity to develop appropriate skills; and the belief or perception by the SME management that closer integration is important for their success”.

Developing appropriate skills has proven problematic in the context of SMEs as the competence-based NVQ programmes are often seen as too generic and do not reflect the diverse needs within the SME sector (Banfield et al, 1996; Connor and Haydock, 1997). Equally, owner managers often appear not to value the certification process (Matlay and Hyland, 1997). Yet, as Macpherson and Wilson (2003) have argued, the benefits of working within high performing supply chains represent an opportunity for SMEs to learn from their customers. This is much closer to the model of skills development and learning that appeals to SMEs – it is immediate, focused on real business issues, and addresses the specific business needs of the SME, albeit possibly from the perspective of the customer organisation. Success relies on larger organisations and industry forums willingness to disseminate their learning through the supply chain as well as demonstrating the need for such practices. In this respect, for example, increasing globalisation and rationalisation of suppliers appears to offer a convincing argument for a good number of UK auto components suppliers many, if not all, are SMEs, to engage in the programmes provided by the SMMT.

The insights gleaned from this work suggests that skills provision is likely to require a multi-agency approach that combines industry and firm specific training at both a wide or generic level (e.g., SPG) with more problem-specific challenges (e.g., the SMMT and KTP). In this respect the UK government is likely to need to establish specific centres for collaboration that can respond to the range of strategic options discussed within this report.

5.5 Policy and Research Implications

5.5.1 Policy Implications

This discussion has begun to illustrate some of the issues associated with the low skill low quality debate in the context of those strategic options that are potentially open to UK businesses embarking on new value adding activities. This report identified three strategies that might help the firm to move away from the low skills equilibrium:

Increasing efficiency and effectiveness through the adoption of better practices.

Innovating to produce products or services that generate more revenue – through either higher prices or larger volumes – but realised while remaining at the same position in the value chain.

Fundamentally changing position in the value chain and moving to a position where the products and services that are being delivered inherently generate more value.

The first policy implication is that these three strategies should be explicitly recognised and incorporated into any strategy for innovation. In essence a broad definition of innovation – that recognises that innovation is not simply constrained to technological innovation – should be adopted.

At a more detailed level there are also specific issues that any government policy has to address. These, which are outlined in the Promising Practices (Bauer et al, 2003) and Networks Reports (Pittaway et al, 2003)¹¹ include:

Poor management of change (especially at the integration and assimilation stage of processes and practices new to the firm).

Organisational rigidities (lack of appropriate workplace re-organisation).

Poor exploitation of skills.

Lack of customer focus and external relationships (Supply-Chain dynamics; inputs from consultants and vendors).

In addressing these issues, policy makers and managers need to consider how best to develop and encourage more specialised informal skills and learning. Arguably, it is only when formal education and general training is accompanied by a sustained process of knowledge production and informal learning within the organisation that firms will then be able to efficiently and successfully introduce and implement new strategies. It is against these issues that we propose the following:

Value creation is likely to be best served by the long-term support of **firm specific and industry specific learning, skills development and innovation activities**. Recognition of the contextual and social constituency of value creation is a pre-requisite of future policy provision. Improving existing formal structures to assist in firm and industry specific knowledge exchange is crucial in encouraging informal learning processes associated with innovation.

¹¹ We should note that financial inhibitors are of significant importance in this context.

5.5.2 Research Implications

It is apparent from the current reviews and the accompanying discussion that innovation and the knowledge production process represent inherently controversial and context specific processes. The research implications are likely to be as follows:

Future research effort should be targeted towards examining the firm-level micro processes of innovation in the context of specific institutional structures (taking into account size, sector, industry and where appropriate the supply chain) that examine the link between knowledge, performance and adoption.

New insights into the relationship between skills, training and successful innovation is also likely to be achieved via longitudinal investigations of knowledge transfer (including along the supply chain) – the aim must be to examine how intentionality gives rise to outcomes and how change is experienced within and across the organisation.

The research opportunities remain considerable especially in relation to cross-national comparator studies based on performance measurement and qualitative in-depth investigations of micro-level processes. Our understanding of innovation is unlikely to improve unless the research community systematically begins to grapple with both the formal and informal characteristics of adoption and innovation.



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Professor Andy Neely is Associate Director of AIM, the Advanced Institute for Management, Chairman of the Centre for Business Performance at Cranfield School of Management and Managing Director of The Performance Practice. Previously he has held appointments at Cambridge University, where he was a Fellow of Churchill College, Nottingham University, where he completed his PhD and British Aerospace. Andy has been researching, teaching and consulting in the field of business performance measurement and management since the late 1980s and chairs the PMA, an international network for those interested in the performance measurement and management. He has authored over 100 books and articles, including *Measuring Business Performance*, published by the Economist and *The Performance Prism*, published by the Financial Times. He sits on the UK Government's Performance Information Panel and is widely recognised as one of the world's leading authorities on performance measurement.

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