



**UNIVERSITY OF
CAMBRIDGE**



Entrepreneurs and their Businesses

Executive Summary of Key Findings

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The Centre for Business Research at the University of Cambridge is an interdisciplinary Research Centre. It brings together economists, engineers, geographers, lawyers, management scientists and sociologists to study the determinants of the organisation and competitive success of nations, industries and firms. Its research programmes include study of technological change, innovation, and business performance, of corporate governance and of the development of small and medium-sized enterprises, as well as the conduct of and analysis of related large-scale business surveys.

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The research reported here relates to the CBR Research Programme on Small and Medium Sized Enterprises. The results described are from a survey conducted late 2000/early 2001. This was a follow up study to an earlier survey which took place in 1998 and is part of an on-going international comparative study of entrepreneurship in the UK and Japan.

Any queries about the results described should be addressed to

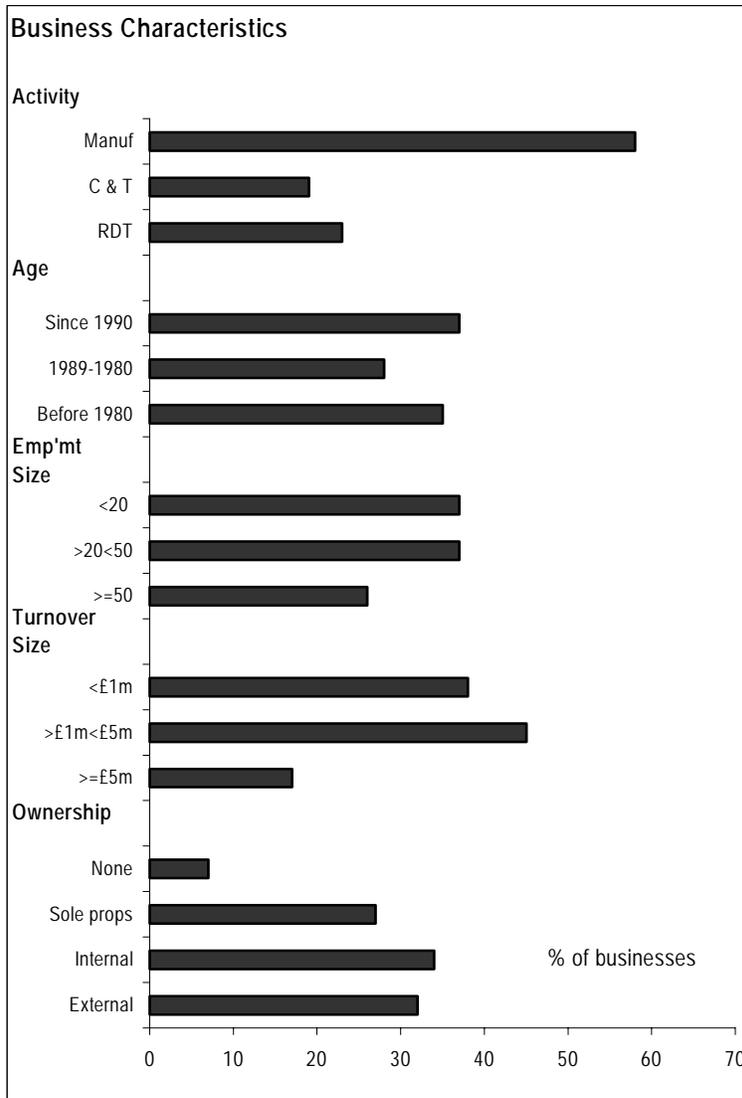
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Characteristics of Businesses and CEOs

Questionnaires were sent to 781 'high tech' (defined by SIC code) businesses during December 2000/January 2001. Excluding untraceable firms the overall response rate of 34% was excellent. Participants to the previous survey responded at twice the rate of newly approached businesses (42% compared to 24%). The results given below are for the 237 participants.

Characteristics of the businesses



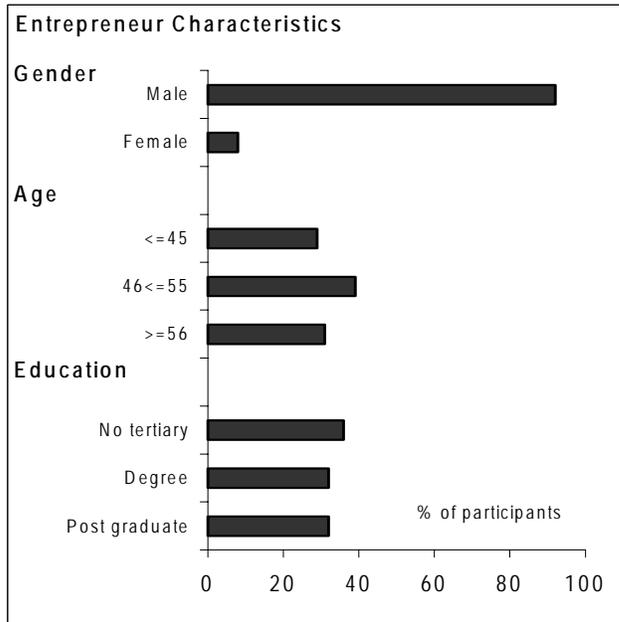
Over half were manufacturing businesses: the remaining service sector businesses were divided into computer activities and telecommunications (C&T) and R&D and technical (RDT) services. The majority of businesses were small: 72% employed less than 50 and 82% had turnovers of less than £5 million. The three age categories used contained very similar numbers of businesses. There were differences in age and size between businesses engaged in different sectors.

Manufacturing businesses tended to be larger and older: C&T businesses newer and RDT firms smaller. Turning to ownership, the proportion of businesses founded by an individual acting alone was 18%: exactly the same proportion as currently owned by an individual. Businesses in which the only other minority shareholder was a spouse were classified as 'proxy sole proprietors'. Despite this the majority of businesses (67%) had been founded as, and continued to be, collaborative ventures. Businesses in which ownership was shared were split between those in which it was shared internally (internal) and those with some external owners (external).

Owning teams largely comprised colleagues and other business acquaintances.

In most businesses the internal owning team had increased since founding, on average from 2 people to 3. The incidence of external ownership had doubled, rising from 17% to a third of businesses currently sharing ownership externally but the average share of equity externally held was unaltered. Few businesses (39) reported seeking venture capital: those with external owners were more likely to have done so and to have been more successful.

Characteristics of the entrepreneurs

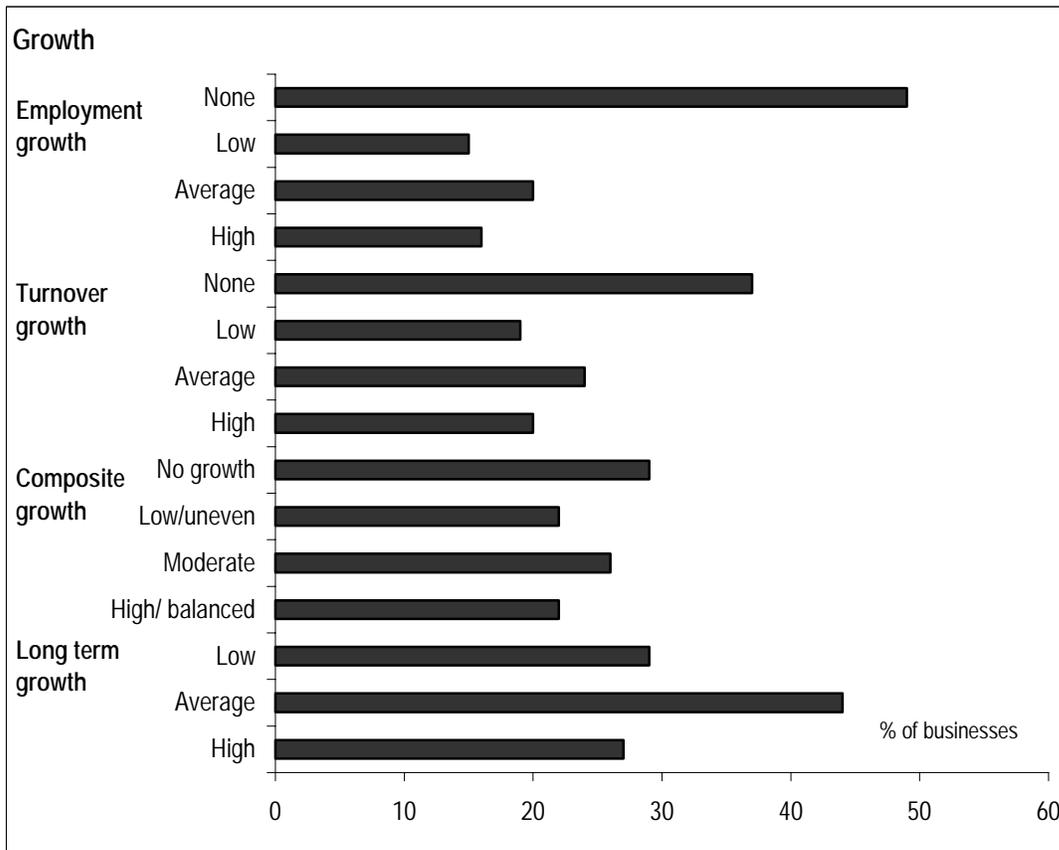


The majority (79%) of participants described themselves as 'founder/manager'. The vast majority were male, on average aged 51. Those running manufacturing businesses were older while their counterparts in C&T were younger. Participants were well qualified; two thirds held a degree and over half either a vocational or professional qualification.

There were slight sectoral differences: those in RDT businesses were the most highly educated while fewer in C&T had post graduate degrees.

In a quarter of the businesses a member of the original owning team had worked in a university, research institute or medical establishment.

Business Performance



We focused on those aspects of performance important to the wider economy: growth, in recent years and over time, innovation and exports.

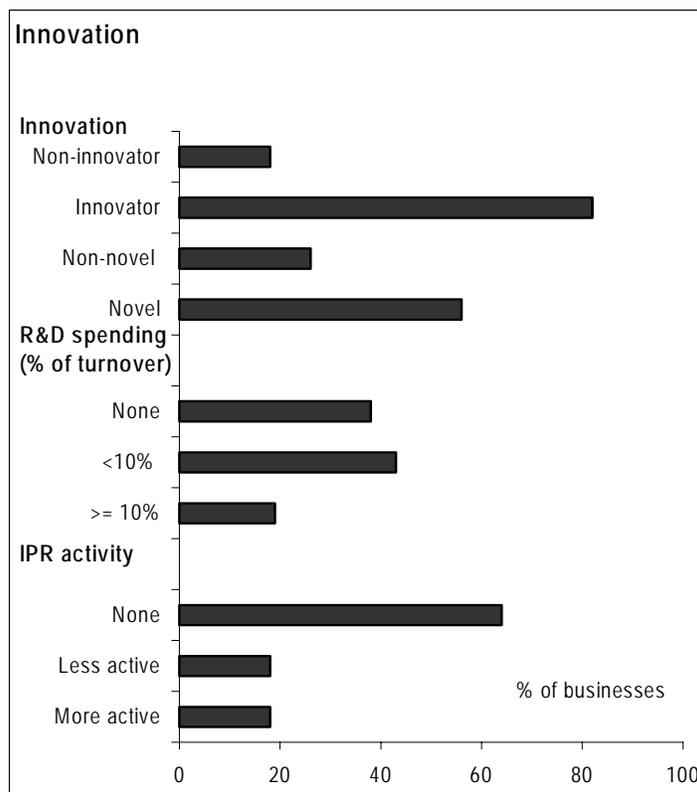
Growth

Almost two thirds of businesses experienced some increase in turnover in the two years prior to the survey, while 17% recorded some reduction. Among growing businesses, a quarter grew by 20-49%, and a third by 50% or more. There was less growth in full-time employment. Half of the businesses (52%) increased employment, and 18% reduced it. Almost a quarter (22%) had grown by 50% or more. Large increases in both employment and turnover were reported by a small number (19) of businesses.

Growth in both employment and turnover was examined in comparison with similar sized businesses. Among manufacturing and RDT businesses over half experienced no growth or contraction in employment, and barely 10% recorded high growth for their size band, whereas 42% of C&T businesses recorded high employment growth. A similar pattern was found for turnover growth: C&T performed best and RDT businesses performed better than those in manufacturing. Employment and turnover growth were combined to produce a composite measure of recent growth. The trends outlined above were repeated, with C&T businesses outperforming their counterparts in the other two sectors.

A measure of *long-term* employment growth - size in relation to age - was used, in firms in which the participant had a founding role. Thirty five percent of RDT businesses were judged to have low employment growth for age, compared to 18% of C&T businesses. Differences by ownership were even more pronounced: businesses with shared ownership grew more than sole proprietors, and those with external owners grew more than those in which there were no external owners. Over 43% of firms with external ownership recorded high growth for their age compared with just 13% of sole or quasi-sole proprietors.

Innovation



Innovative activity was high. Almost 80% had undertaken some innovation in the preceding 2 years and two thirds of innovators had introduced a 'novel' innovation (new to both firm and industry). RDT businesses were less active, and active at a lower rate.

No overall associations were found between innovation and either longer term or recent growth, but businesses which had contracted or stagnated recently contained a high proportion of non innovators.

Business with external owners tended to be more innovative. Other studies have pointed to the importance of 'precursors' to innovation: spending on R&D, activity to secure intellectual property rights (IPR), such as patenting, and qualifications of the workforce.

The majority of businesses undertook some R&D, however under 20% devoted more than 10% of their turnover to it. Businesses spending more on R&D were significantly more innovative. Only a minority of firms sought IPR, and these were fairly evenly divided into those in which applications were related to only one innovation and those more active. As with R&D spending, seeking IPR was positively related to innovation. Similarly in 64% of novel innovators at least 10% of the full time employees had a degree, compared to just under half of non-innovators and less active innovators.

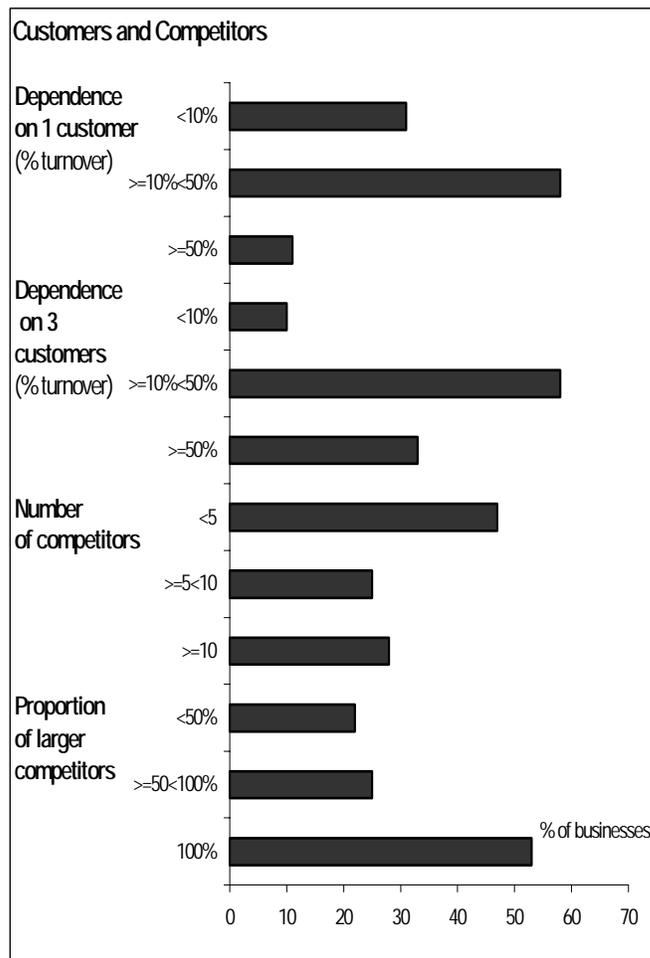
Exports

Almost two thirds of the businesses were exporters. For almost a quarter, exports accounted for over half of their turnover. Businesses exporting more than half of their turnover were predominantly manufacturing (78%) and novel innovators (85%).

Markets, competition and co-operation

Customers and Competitors

Small high tech businesses are seen to operate in 'niche markets' characterised by few competitors and few customers. The high tech businesses in this study were no exception to this. The majority displayed moderate levels of dependence on their principal customers. Relatively few (11%) were dependent on a single large customer for more than 50% of their turnover, but in a third the top three customers accounted for over 50% of sales.



Smaller businesses tended to be more dependent and there were some differences between businesses in different sectors, with those in C&T displaying slightly higher levels of dependence.

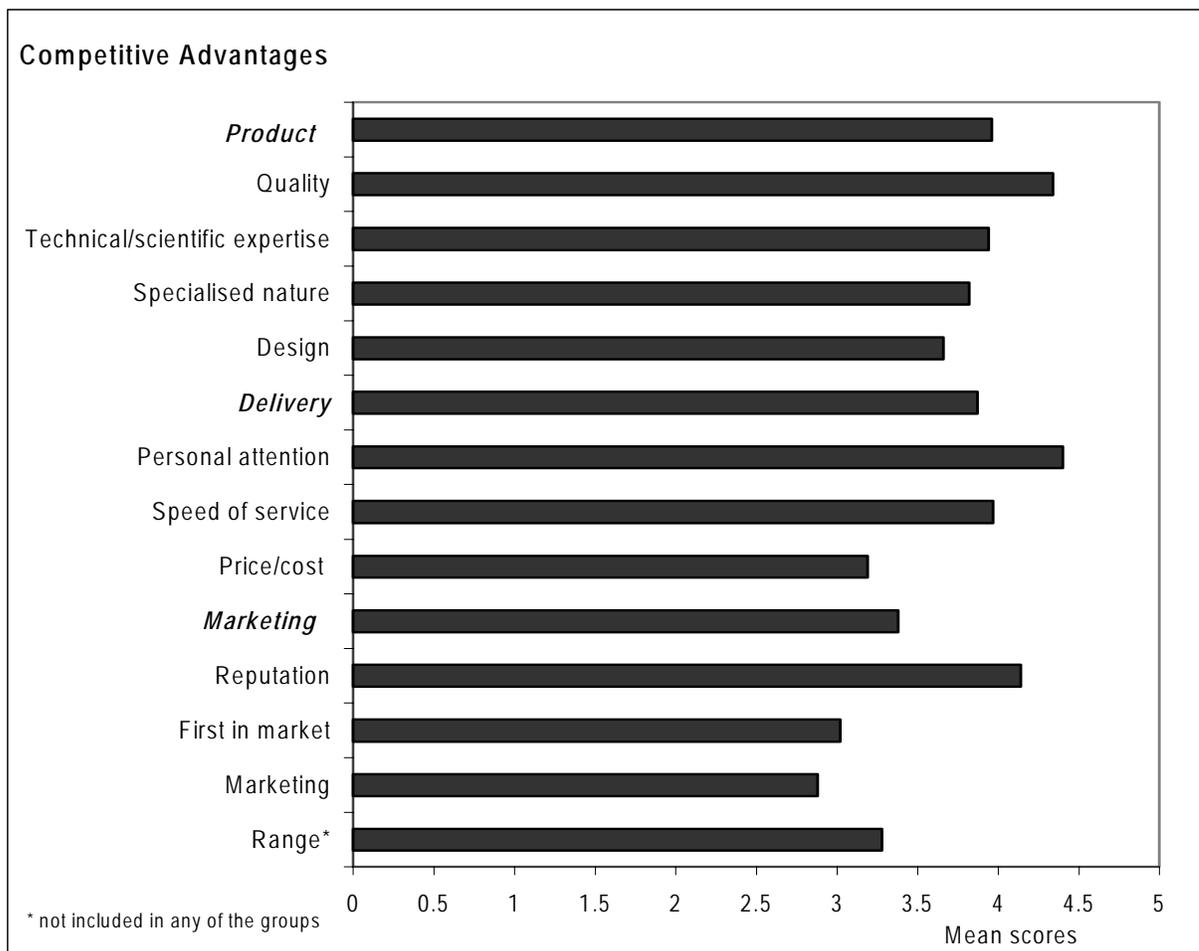
Few businesses (5%) reported no serious competitors, half reported less than 5, and almost three quarters reported less than 10. RDT businesses, smaller businesses and sole proprietors tended to report fewer serious competitors. Innovators were also more likely to see fewer rivals than non innovators, and to see themselves as competing against larger firms.

Over half of the participants (55%) saw their businesses as competing exclusively with larger companies, and only 16 participants reported no larger competitors.

Competitive Advantages

Another view of markets is given by the competitive advantages seen by CEOs. Participants were asked to rate the importance of 11 advantages on a 5 point scale from 'not at all' to 'crucial'. Advantages characteristic of 'niche markets' such as, 'Personal attention/responsiveness to client needs', 'Quality of product/service' and 'Established reputation' were the most highly rated. Whereas those associated with atomistic competition such as 'Marketing and promotion', and 'Price/cost advantages' were eschewed.

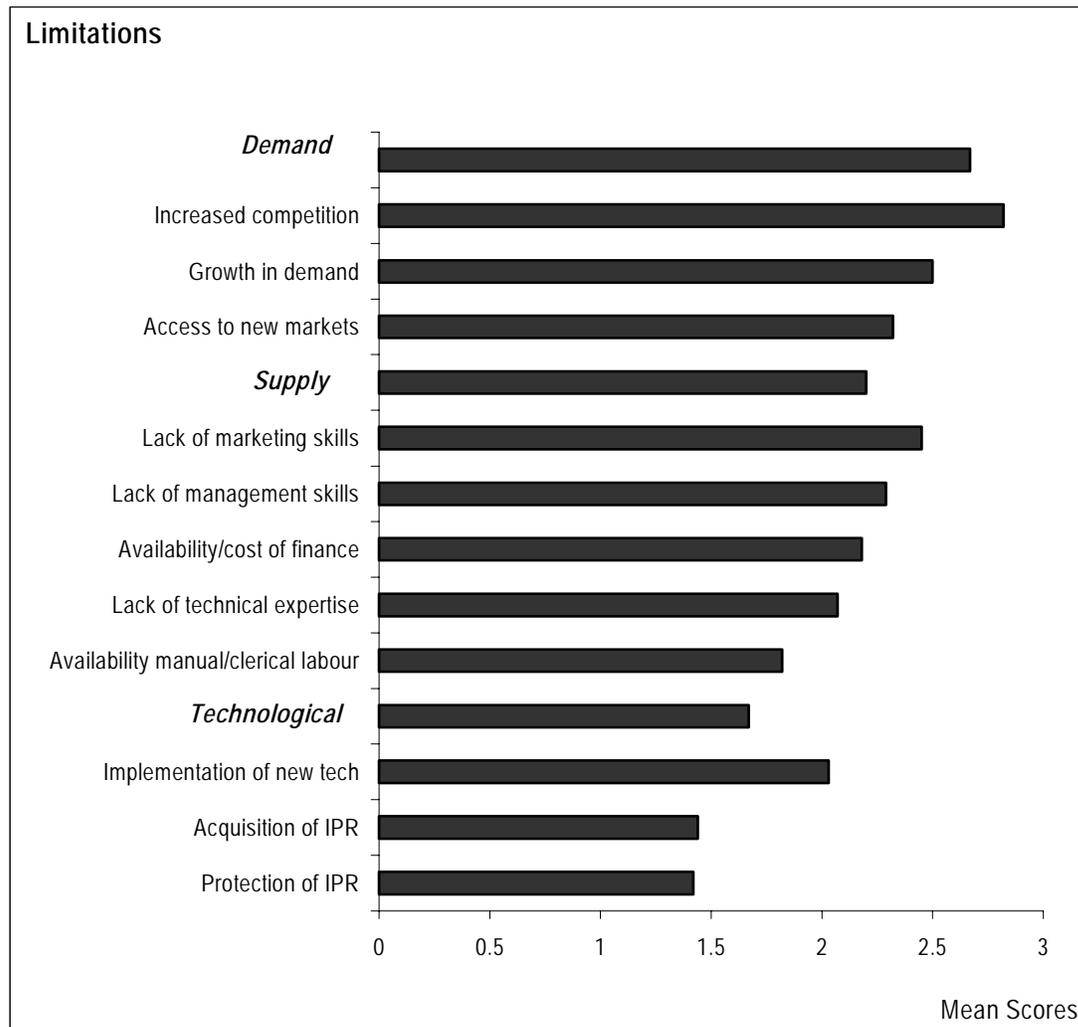
Factor analysis was used to derive 3 groups of advantages reflecting concerns for: the products or services, for delivery and for marketing. Advantages concerned with products or services were the most important and those concerned with marketing the least important.



Competitive advantages concerned with products or services were ascribed significantly higher levels of importance by entrepreneurs in businesses which had undertaken novel innovation, who focused on 'design'. For CEOs in RDT businesses 'technical/scientific expertise' was especially important.

Advantages concerned with the delivery of the product or service were less important for larger firms (those employing 50 or more and with turnovers of £5 million or larger), and significantly less important for businesses with external owners. 'Personal attention' tended to be more important for sole proprietors. Advantages concerned with marketing were more important for participants in manufacturing businesses. Support for these advantages, and particularly 'being first in the market' was positively related to innovation.

Limitations



Also of interest were the limitations on achieving business objectives seen by entrepreneurs. There was a muted response to these questions, with few limitations seen as 'significant' or 'crucial'. 'Increased competition', 'Overall growth in demand' 'Lack of marketing/sales skills' and 'Access to new markets' were the most important. At the other extreme, protection and acquisition of intellectual property rights and the availability of manual/clerical skills were the least important. Factor analysis produced three groups: decreasing in order of importance, these were 'demand', 'supply' and 'technological' limitations.

Entrepreneurs of manufacturing businesses, particularly those achieving little growth recently, rated demand limitations, and particularly 'Increased competition' as significantly more important than their counterparts in service businesses.

'Supply limitations' were seen as more important by entrepreneurs in businesses which had grown over time, in larger, more innovative businesses and in those with external owners. 'Availability/cost of finance' appeared a stronger constraint to highly innovative businesses, and those with external owners whereas for younger entrepreneurs, lack of managerial and marketing skills appeared greater constraints.

Not rated as important, technological constraints were seen as strongest by participants in highly innovative businesses but considered unimportant by those in RDT businesses. 'Implementing new technology' was seen as a relatively important constraint by those in larger businesses and in businesses undertaking higher levels of R&D.

Subcontracting

Almost two thirds of businesses undertook subcontracting work for others. For those doing so, it was either relatively unimportant, accounting for less than 10% of turnover, or a significant activity - in 20% of businesses it accounted for 75% or more of turnover. Businesses highly dependent on subcontract work tended to be smaller and were less likely to be novel innovators. Three quarters of the firms in turn put subcontracting work out to others, but for most, this counted for less than 25% of turnover. Looking at the location of these links businesses tended to receive orders from a wider geographical area than that to which they placed orders.

Trading Links

Businesses with strong overseas trading links were differentiated from those more dependent on local markets by combining the answers to the questions about exports, location of subcontract orders and relative importance of overseas competitors to produce 3 groups of businesses: those with an 'overseas orientation', those with a 'local orientation' and those with a 'mixed or national orientation'. Approximately a quarter of the businesses had an 'overseas orientation' and just under 30% a 'local orientation'.

A significant proportion (33%) of manufacturing businesses had an 'overseas orientation', while relatively few (14%) had a 'local orientation'. Few service businesses had strong overseas links and the majority (61%) of C&T businesses were predominantly 'locally' oriented, while the RDT businesses were evenly split between 'local' and 'mixed/national' categories. CEOs of 'overseas oriented' businesses had higher levels of education and businesses with strong overseas demand links were more innovative.

Collaboration with other organisations

Almost 60% of the businesses had entered into at least one collaborative arrangement in the previous two years, and 60% of these had more than one arrangement. Most commonly, collaboration was with other firms in the same line of business, closely followed by suppliers and customers, these were mainly with organisations elsewhere in the UK, although again local collaborations, tended to be with suppliers, while collaborations with overseas customers were more common than those with local customers.

Just over one in five of the participants had entered into a collaborative arrangement with a higher education, medical or research institute. These were predominantly manufacturing businesses (83%), and significantly more likely to be novel product innovators, and actively involved in R&D and IPR applications.

Multiple reasons were given for collaboration, the most common were about expansion: to 'Expand range of products/services' (75%), 'Provide access to new markets' (56%) and 'Develop services/products for current customers'. Fewer entrepreneurs in RDT businesses reported collaborative agreements. Newer, larger businesses and those with external owners were slightly more likely to collaborate. Collaborative businesses were more innovative.

Training and Human Resource Management

Employment Relations

The businesses taking part had highly qualified workforces. Considering the proportion of full-time employees with tertiary qualifications: university degree, vocational qualification (HNC, etc.), only 5% reported that none of their employees had any type of tertiary qualification. In almost a quarter, 50% or more of the employees had a degree. In the overwhelming majority (91%) of RDT businesses more than 50% of the employees had a tertiary educational qualification. Employees in C&T businesses were similarly highly qualified.

Roughly 30% of the businesses did not employ part time or temporary workers, and in another 46% they constituted less than 20% of the workforce. Where such workers were employed they comprised on average 18% of the workforce. Businesses employing less than 20 were more likely to use part-time workers and to use them more intensively.

Training

Over 80% of businesses provided on-the-job training (on-JT) and 70% provided off-the-job training (off-JT) for full time employees in the last financial year. Over a third of businesses reported that at least 50% of their full time employees had received on-JT in the previous year and 15% reported that at least half of their employees received off-JT.

A distinction was made between the incidence of training (whether it is provided or not) and the extent of provision (the proportion of employees involved). Businesses providing training were classified as 'low', 'moderate' and 'extensive' trainers when compared with businesses of similar size. Smaller businesses (employing less than 20) were significantly less likely to provide training than larger businesses (46% did not do so compared to about 20%). But if providing training, were likely to involve proportionately more employees. A similar but less marked pattern was found for on -JT. Businesses which had not grown over time were markedly less likely to train (off the job) than high growth firms and to train proportionately fewer employees.

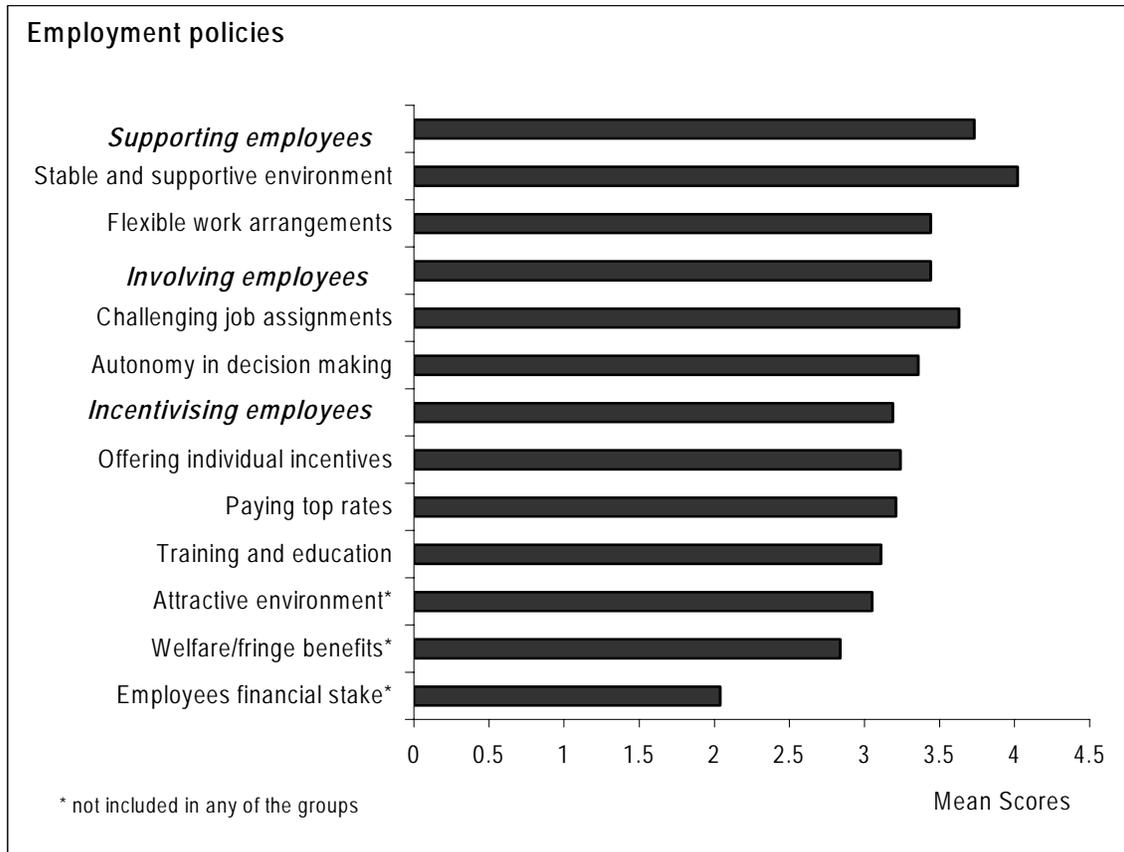
Personnel policies

Attitudes towards different types of employment policies were also examined. Entrepreneurs were asked to rate the importance of nine different personnel policies. 'Providing a stable and supportive environment' and 'Giving challenging job assignments' were the most strongly supported personnel policies, whereas 'Giving employees a financial stake in the company' received least support. Factor analysis was used to construct three groups, in descending order of importance: 'Supporting employees', 'Involving employees' and 'Incentivising employees'.

Attitudes towards 'Supporting employees' were strongly related to size, with respondents in small businesses (employing less than 20) and sole proprietors seeing these as more important than those in larger businesses. Those in small businesses gave significantly higher levels of support to 'Offering flexible/family friendly work arrangements'.

Entrepreneurs in newer businesses gave more support than those in older firms to policies aimed at 'Involving employees', and in particular to 'Giving challenging job assignments'. Overall, policies aimed at 'Incentivising employees' received least support. Entrepreneurs in businesses which had experienced no growth recently in either turnover or employment were significantly less likely to consider these policies important especially compared to entrepreneurs in businesses which had recorded growth in both turnover

and employment. This was particularly true for the individual policies of 'Providing incentives for individual excellence' and 'Providing or facilitating training or education'.



Although the least supported individual policy, 'Giving employees a financial stake in the company' found support among entrepreneurs in C&T businesses founded since 1990.

Incentive practices

To what extent were differences in attitude towards personnel policies reflected in the incentive schemes adopted? Schemes included profit related bonuses, individual incentives, group incentives and employee share schemes. Almost three quarters of the businesses offered some incentive scheme. Few businesses (29) offered employee share schemes, and only did so in conjunction with other types of incentive schemes. The majority of firms offering any type of incentive offered only one, the most common being profit related bonuses.

In the main there were strong positive associations between support for policies aimed at 'Incentivising' and to a lesser extent 'Involving' employees and the use of incentive schemes. Some trade off between policies aimed at 'Supporting' employees and the use of incentive schemes was discernible. Businesses not offering profit related bonuses gave higher level of support for policies aimed at 'Supporting' employees and especially for offering 'Flexible and family friendly work arrangements'. C&T businesses were significantly more likely to offer share schemes. Businesses offering no incentives schemes tended to be smaller, whereas larger businesses used a wider range of schemes.

Personal and business objectives

Growth

Participants were asked about objectives for their businesses including growth and approaches towards risk. They were asked about growth objectives over the next three years, and their responses supported other CBR findings: 11% aimed for no growth or contraction, 47% aimed for 'moderate' growth and 42% sought 'substantial' growth.

Entrepreneurs of different sized businesses and in different activities tended to hold different growth objectives. Two thirds of those in C&T sought substantial growth compared to 38% in manufacturing and 31% in RDT businesses. Participants in larger businesses, regardless of activity, wanted to grow more than those in smaller businesses, as did those in more innovative businesses. Entrepreneurs in businesses which had not grown over time or recently were significantly more likely to aim for stability or contraction.

Entrepreneurs giving greater weight to financial objectives and having an open approach towards risk (discussed below) were more likely to seek substantial growth. Financial objectives and approaches to risk were more important than performance and sector differences. Even in businesses which had not grown, entrepreneurs giving more support to financial objectives and having an open approach towards risk held higher growth objectives.

Risk

Two broad approaches towards risk were identified from responses to an open question: a more closed approach of 'avoidance and aversion' and a more open approach of 'calculation and willingness'. These respectively accounted for 46% and 54% of businesses. RDT entrepreneurs were more likely to take a closed approach towards risk. Entrepreneurs with higher growth objectives reported a more open approach towards risk: 84% of entrepreneurs not seeking growth reported a closed approach compared to 29% of those seeking substantial growth. Both objectives for growth and approach towards risk were strongly related to the other personal objectives (reported below). In particular entrepreneurs rating financial objectives as relatively more important were significantly more likely to report an open approach towards risk and to seek 'substantial' growth.

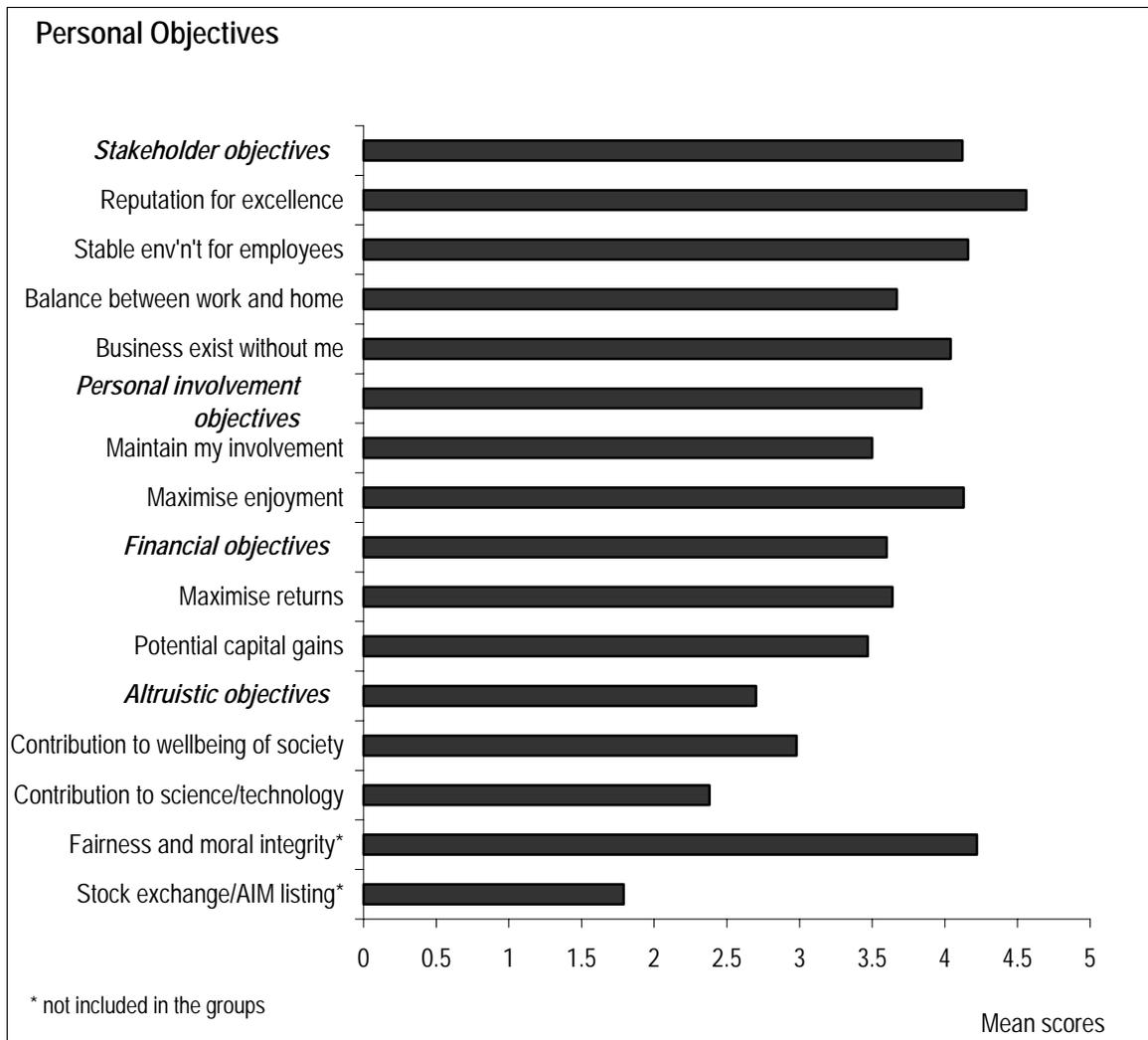
Personal objectives

Participants were asked to rate 12 objectives for their business on a five point scale, ranging from 'not at all' to 'crucial'. The four most strongly supported objectives were: 'Build a business with a reputation for product/service excellence', 'Conduct business on the basis of fairness and moral integrity', 'Provide a stable and positive environment for employees' and 'Maximise my enjoyment and satisfaction from work'. The least supported objectives were 'Prepare the business for future stock exchange/AIM listing', 'Make a contribution to science and technology', and 'Build a business which contributes to the wellbeing of society'.

Factor analysis resulted in four groups of objectives: 'stakeholder', 'financial (gain)', 'personal involvement' and 'altruistic'. 'Stakeholder' objectives were the most strongly supported, followed by 'personal involvement', 'financial' and 'altruistic' objectives.

Stakeholder objectives: Older entrepreneurs gave higher levels of support to these, as did entrepreneurs in manufacturing businesses and those employing between 20 and 49 people. Among the individual objectives, 'Building a business with a reputation for excellence' was of more concern for participants in new businesses, those undertaking innovation and those recording better recent performance. CEOs in small

businesses were likely to see 'Creating a balance between work and home life' as more important, while 'Building a business to exist without me' was given greater support by entrepreneurs in manufacturing businesses and less support by those in smaller businesses.



Personal involvement objectives: These objectives were more important for younger entrepreneurs in small businesses, and significantly more important for those not seeking growth. 'Maintaining personal involvement' was of greater importance to entrepreneurs **not** seeking growth, whereas 'Maximising personal enjoyment and satisfaction' was given greater support by those either not seeking growth or seeking substantial growth.

Financial Objectives: Younger entrepreneurs gave higher levels of support to financial objectives, as did entrepreneurs in businesses in which ownership was shared externally. Entrepreneurs in small businesses and in RDT businesses gave less support for 'Seeking capital gains', whereas those in newer businesses and those in which ownership was shared externally gave slightly higher levels of support. 'Maximising returns for the owners/investors' received higher levels of support from younger entrepreneurs (under 45) and from those running businesses in which ownership was shared externally.

Altruistic objectives: These were the least well supported. The highest levels of support for these objectives came from older entrepreneurs in manufacturing businesses and those in older firms. However the most marked differences in how these were evaluated were found in respect of innovative activity, innovators and particularly novel innovators were likely to consider them of significantly greater importance. The highest levels of support for 'Making a contribution to science and technology' came from entrepreneurs in manufacturing businesses undertaking novel innovation.

Patterns

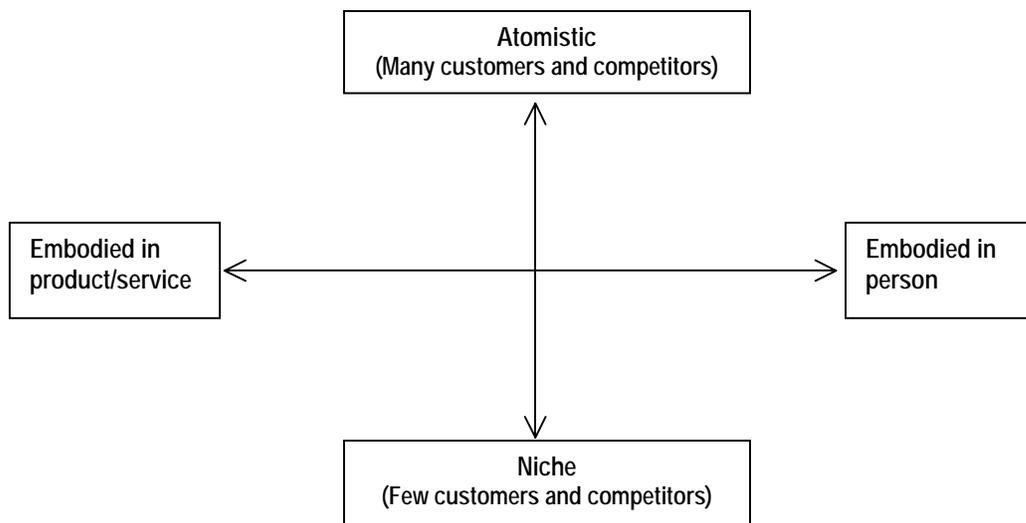
Types of niche markets

Answers to two groups of questions were combined to give 'overall patterns'. Firstly characteristics of the businesses together with the responses to questions about trading links, competitive advantages and limitations were used to differentiate types of niche markets. Figure 1 illustrates these. For some service sector businesses, chiefly RDT, the technology was embodied in the 'the person'. These businesses operated in more local markets comprised of moderate numbers of customers but few competitors, experienced relatively few limitations and tended to be less innovative. Issues of technical and scientific expertise, and reputation predominated. Growth may be problematic for businesses in this type of niche market, in requiring fundamental changes in the nature and scope of the business.

In the other extreme type of niche market the technology was embodied in the product or service with businesses operating in more global markets. There was some differentiation in this type of market in terms of the extent of atomistic competition, larger manufacturers tended to see both more customers and more competitors. Businesses in this type of niche market, especially those heavily involved in overseas markets were predominantly novel innovators; focused on issues of design and quality. For some demand had been problematic.

There was an intermediate type of market in which the technology appeared to embodied in both the person and the product or service. Businesses in this type of market were more likely to be subcontractors and or undertaking computer activities. These markets were largely national rather than purely local or global, the businesses were innovative but not novel innovators and there was less concern for design, or technical or scientific expertise per se, but concern for quality and reputation. For some there were questions of higher levels of customer dependence. Many of the businesses in this intermediate type of niche market were relatively new.

Figure 1



Personal objectives

The second overall pattern sought was the relationship between performance and personal objectives. As in the previous study participants were compared according to the strength with which they held 'stakeholder' and 'financial objectives'. There were strong relationships between support for different types of personnel policies and the strength with which 'stakeholder' and 'financial' objectives were held. Participants regarding 'stakeholder' objectives as crucial or significant were markedly more likely to support policies aimed at 'supporting' employees, and to a lesser extent those aimed at 'involving' employees. Support for policies aimed at 'incentivising' employees was strongly positively related to support for 'financial' objectives.

Figure 2

		Stakeholder Objectives	
		Low	High
Financial Objectives	High		Positive Balanced
	Low		

As outlined above participants strongly supporting 'financial' objectives were likely to adopt a more open approach towards risk and seek 'substantial' rather than 'moderate' growth. But this in turn may result in greater volatility. The previous study suggested that performance was related to a balanced approach to personal objectives, seeing both 'financial' and 'stakeholder' objectives as important. Accordingly the participants were compared in terms of a simple matrix illustrated in figure 2. Businesses in which the CEO had a positive balanced approach, regarding both 'stakeholder' and 'financial' as significant or crucial had performed better in recent years overall. Fewer businesses in this group had experienced no growth in the two years prior to the study, fewer had experienced no growth in employment or turnover and a slightly higher proportion recorded high growth in turnover for their size.

Other studies have pointed to the importance of innovation and developing employees to future growth. Businesses in which the CEOs held a positive balanced approach were also more likely to be innovators and to give higher levels of support for policies aimed at 'incentivising' employees which included the provision and facilitation of training and education.