ANALYSIS OF MIDDLE MARKET FIRMS

A REPORT BY THE ESRC CENTRE FOR BUSINESS RESEARCH

Andy Cosh, Alan Hughes, Anna Bullock, Xiaolan Fu, Qing Gong Yang, Isobel Milner

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Introduction

This report sets out the results of a short pilot study of middle market firms commissioned by the Department for Trade and Industry and carried out over four weeks. It draws upon the CBR biennial surveys of British SMEs and on the 2002 panel in particular. The report sets out our findings in relation to each of the tasks agreed in the commissioning process. The report demonstrates that it is feasible to use the CBR dataset to explore issues relating to the factors associated with the identification of a middle market typology of firms and an assessment of the impact of types of such firs on business performance. In reading the report it is important to bear in mind that the primary purpose of the work commissioned was to provide a starting point for discussions about whether and how a fuller study may be carried forward.

The report is divided into three sections. Section A explores the full size range of the CBR panel of SMEs: micro (0-9 employees); small (10-99 employees); and medium (100-499 employees). It analyses the associations between firm size (measured both by employment and turnover) and firm age with a wide variety of other measures of firm structure and performance. This represents the traditional way of exploring the middle market in taking firm size as the key distinguishing feature.

Section B includes only small and medium sized businesses in its analyses. It draws upon both factor and cluster analysis to form groups of firms based on common distinguishing characteristics. It exploits the richness of the CBR dataset in terms of variables beyond size age and ownership and explores differences in this wider range of characteristics of the different groupings of firms. Although the clusters are spread across the size range of firms, there is some association between firm size and the cluster in which it is likely to be found.

Section C takes the analysis of the firm characteristics and average performance of the six identified clusters much further. In particular, it explores firm performance, human resources, innovation, finance and sources of external advice across the clusters. Finally, the report ends with a preliminary analysis of the relationship between cluster membership and a number of measures of firm performance. This analysis could be

refined further by specifically examining a middle market cluster following further experimentation in the work in Section B.

A. Initial Analysis

This section looks at the variables of interest in the analysis of the Middle Market. A description of the variables, together with a non-response analysis, is presented in Appendix 1. We have analysed the variables of interest against employment size, two age cuts, and two turnover size cuts. The statistics used were the chi square test and the Mann-Whitney test. The statistically significant differences are shown at the bottom of each table with ** meaning significant at 5% level, and * meaning significant at 10% level as appropriate.

The following cuts were used:

- Employment size, which were split into
  - Micro (0-9 employees)
  - Small (10-99 employees), and
  - Medium (100-499 employees)

  The statistical significances that are shown are between small and medium sized firms only. The micro firms are present for completeness only, and were excluded from the age and turnover analysis.

- Age
  - Older (formed in 1985 or earlier), and
  - Newer (formed in 1986 or later),

  and using a subset of the data which excluded the micro firms.

- Turnover
  - <£5m, and
  - ≥£5m,

  and using a subset of the data which excluded the micro firms.

The rest of this section presents the 2-way analysis by topic.

1. General characteristics
2. Workforce and training
3. Competitive situation and collaborative activity
4. Innovation
5. Factors affecting expansion and efficiency
6. Finance and capital expenditure

For each topic tables are presented first for size then age and finally turnover.

A1. General Characteristics

This section covers questions about the CEO, use of management planning tools, share ownership, and the board.
Summary of findings:

- The use of the various planning tools tends to increase with increasing size in both employment and turnover.
- Younger firms were more likely to be users of some of these tools except for monthly management accounts and the use of the web for trading purposes.
- The CEO was younger in the newer firms as could be expected.
- More frequent board meetings and larger boards in larger firms.
- Larger firms were more likely to have a board appointment resulting from seeking external finance.
- We find decreased concentration in shareholdings with an increase in firm size.
- Positive turnover and employment growths in relation to both size and younger age.
- Larger and older firms had lower profit margin than smaller firms.

Table 1a Business Planning and Organisation by size class of Company

Analysis Size classes (employees)		% with a business plan	% with a human resources plan	% with a monthly management accounts	% with web site for information	% with web site for trading
Micro	%	23.7	5.9	56.0	47.5	22.3
	N	*735*	*734*	*734*	*737*	*737*
Small	%	51.2	21.9	88.6	81.8	28.1
	N	*1040*	*1041*	*1040*	*1040*	*1040*
Medium	%	73.0	42.7	97.0	93.0	33.6
	N	*330*	*330*	*330*	*330*	*330*
Total	%	45.0	19.6	78.5	71.6	26.9
	N	*2105*	*2105*	*2104*	*2107*	*2107*
		**	**	**	**	*

Significant between small and medium size at 5% (**); 10% (*)

Table 1b Business Planning and Organisation by Age of Company

Analysis Size classes (Age)		% with a business plan	% with a human resources plan	% with a monthly management accounts	% with web site for information	% with web site for trading
Older	Mean	51.6	25.5	91.6	83.9	29.6
	N	*990*	*990*	*990*	*989*	*989*
Newer	Mean	69.4	30.7	88.2	86.6	29.1
	N	*373*	*374*	*373*	*374*	*374*
Total	Mean	56.5	26.9	90.7	84.7	29.5
	N	*1363*	*1364*	*1363*	*1363*	*1363*
		**	*	*		

Significant at 5% (**); 10% (*)

Table 1c Business Planning and Organisation by Turnover of Company

Analysis Size classes (Turnover)		% with a business plan	% with a human resources plan	% with a monthly management accounts	% with web site for information	% with web site for trading
<£5m	Mean	50.3	20.9	88.4	80.5	28.2
	N	*960*	*961*	*960*	*960*	*960*
>=£5m	Mean	70.7	41.0	95.6	93.9	32.2
	N	*410*	*410*	*410*	*410*	*410*
Total	Mean	56.4	26.9	90.6	84.5	29.4
	N	*1370*	*1371*	*1370*	*1370*	*1370*
		**	**	**	**	

Significant at 5% (**); 10% (*)

Table 2a Business structure by size class

Analysis Size classes (employees)		% companies	% with an employee stock option scheme	% of firms with formalised management structure	% of firms where CEO a member of a key decision making group
Micro	%	42.8	4.3	18.1	8.1
	N	*740*	*164*	*702*	*695*
Small	%	86.9	8.5	63.6	23.7
	N	*1041*	*710*	*1002*	*1002*
Medium	%	93.6	20.2	84.6	36.6
	N	*330*	*262*	*319*	*317*
Total	%	72.5	10.6	51.1	20.3
	N	*2111*	*1136*	*2023*	*2014*
		**	**	**	**

Significant between small and medium size at 5% (**); 10% (*)

Table 2b Business structure by age

Analysis Size classes (Age)		% companies	% with an employee stock option scheme	% of firms with formalised management structure	% of firms where CEO a member of a key decision making group
Older	Mean	90.9	8.3	68.9	26.6
	N	*990*	*725*	*954*	*955*
Newer	Mean	82.4	21.5	68.5	27.5
	N	*374*	*247*	*359*	*356*
Total	Mean	88.6	11.6	68.8	26.8
	N	*1364*	*972*	*1313*	*1311*
		**	**		

Significant at 5% (**); 10% (*)

Table 2c Business structure by Turnover of Company

Analysis Size classes (Turnover)		% companies	% with an employee stock option scheme	% of firms with formalised management structure	% of firms where CEO a member of a key decision making group
<£5m	Mean	85.6	7.7	61.5	21.9
	N	*961*	*636*	*927*	*927*
>=£5m	Mean	95.4	19.0	85.5	38.3
	N	*410*	*336*	*394*	*392*
Total	Mean	88.5	11.6	68.7	26.8
	N	*1371*	*972*	*1321*	*1319*
		**	**	**	**

Significant at 5% (**); 10% (*)

Table 3a The CEO and the Board by size class

Analysis Size classes (employees)		CE/SP/Pr years with the firm	CE/SP/Pr years as CE/SP/Pr	CE/SP/Pr age	Total number of directors	Number of board meetings per year	% with board appointment resulting from seeking external finance
Micro	Median	14.0	12.0	53.0	2.0	2.0	7.5
	N	*724*	*717*	*724*	*165*	*140*	*160*
Small	Median	20.0	14.0	52.0	3.0	6.0	10.3
	N	*1027*	*1021*	*1027*	*707*	*667*	*691*
Medium	Median	20.0	12.0	54.0	5.0	10.0	20.4
	N	*326*	*323*	*323*	*260*	*256*	*255*
Total	Median	17.0	13.0	53.0	3.0	6.0	12.2
	N	*2077*	*2061*	*2074*	*1132*	*1063*	*1106*
					**	**	**

Significant between small and medium size at 5% (**); 10% (*)

Table 3b The CEO and the Board by age

Analysis Size classes (Age)		CE/SP/Pr years with the firm	CE/SP/Pr years as CE/SP/Pr	CE/SP/Pr age	Total number of directors	Number of board meetings per year	% with board appointment resulting from seeking external finance
Older	Median	24.0	17.0	55.0	3.0	6.0	7.6
	N	*978*	*972*	*976*	*720*	*690*	*707*
Newer	Median	10.0	8.0	47.0	4.0	8.0	28.8
	N	*368*	*365*	*367*	*247*	*233*	*239*
Total	Median	20.0	13.0	53.0	4.0	6.0	13.0
	N	*1346*	*1337*	*1343*	*967*	*923*	*946*
		**	**	**		*	**

Significant at 5% (**); 10% (*)

Table 3c The CEO and the Board by Turnover of Company

Analysis Size classes (Turnover)		CE/SP/Pr years with the firm	CE/SP/Pr years as CE/SP/Pr	CE/SP/Pr age	Total number of directors	Number of board meetings per year	% with board appointment resulting from seeking external finance
<£5m	Median	20.0	14.0	52.0	3.0	5.0	10.4
	N	*945*	*938*	*946*	*633*	*594*	*618*
>=£5m	Median	20.0	12.0	54.0	5.0	10.0	18.0
	N	*408*	*406*	*404*	*334*	*329*	*328*
Total	Median	20.0	13.0	53.0	4.0	6.0	12.9
	N	*1353*	*1344*	*1350*	*967*	*923*	*946*
				**	**	**	**

Significant at 5% (**); 10% (*)

Table 4a Share ownership by size class

Analysis Size classes (employees)		% of companies with 50% or more shares owned by: Chief Executive	whole Board of Directors	largest single shareholder
Micro	%	72.22	94.1	78.2
	N	*270*	*272*	*280*
Small	%	52.82	88.2	67.0
	N	*816*	*791*	*827*
Medium	%	38.32	71.7	56.7
	N	*274*	*269*	*284*
Total	%	53.75	86.1	67.1
	N	*1360*	*1332*	*1391*
		**	**	**

Significant between small and medium size at 5% (**); 10% (*)

Table 4b Share ownership by age

Analysis Size classes (Age)		% of companies with 50% or more shares owned by: Chief Executive	whole Board of Directors	largest single shareholder
Older	Mean	50.9	84.2	66.2
	N	*806*	*777*	*820*
Newer	Mean	44.4	83.8	59.1
	N	*279*	*277*	*286*
Total	Mean	49.2	84.1	64.4
	N	*1085*	*1054*	*1106*
		*		**

Significant at 5% (**); 10% (*)

Table 4c Share ownership by Turnover of Company

Analysis Size classes (Turnover)		% of companies with 50% or more shares owned by: Chief Executive	whole Board of Directors	largest single shareholder
<£5m	Mean	54.7	88.7	68.0
	N	*726*	*708*	*743*
>=£5m	Mean	38.2	74.7	57.1
	N	*364*	*352*	*368*
Total	Mean	49.2	84.1	64.4
	N	*1090*	*1060*	*1111*
		**	**	**

Significant at 5% (**); 10% (*)

Table 5a Performance by size class

Analysis Size classes (employees)		Export to sales ratio latest exporters only	Export to sales ratio 3 yrs ago exporters only	Profits as % of turnover	Profits as % of turnover 3 years ago	% change average employment 2002/1999	% turnover growth 2002/1999
Micro	Median	0.12	0.13	21.8	20.2	0.0	10.6
	N	*139*	*104*	*556*	*496*	*567*	*534*
Small	Median	0.11	0.12	7.2	7.0	0.0	12.6
	N	*462*	*386*	*861*	*783*	*869*	*850*
Medium	Median	0.12	0.11	5.5	6.7	14.2	20.1
	N	*194*	*166*	*296*	*257*	*260*	*262*
Total	Median	0.11	0.12	8.9	9.1	0.0	13.7
	N	*795*	*656*	*1713*	*1536*	*1696*	*1646*
				**	*	**	**

Significant between small and medium size at 5% (**); 10% (*)

Table 5b Performance by age

Analysis Size classes (employees)		Export to sales ratio latest exporters only	Export to sales ratio 3 yrs ago exporters only	Profits as % of turnover	Profits as % of turnover 3 years ago	% change average employment 2002/1999	% turnover growth 2002/1999
Older	Median	0.1	0.1	6.3	6.7	0.0	10.7
	N	*525*	*457*	*846*	*776*	*842*	*825*
Newer	Median	0.1	0.2	8.1	7.3	31.6	48.8
	N	*129*	*94*	*305*	*258*	*280*	*281*
Total	Median	0.1	0.1	6.7	6.8	4.6	15.1
	N	*654*	*551*	*1151*	*1034*	*1122*	*1106*
			**	**		**	**

Significant at 5% (**); 10% (*)

Table 5c Performance by Turnover of Company

Analysis Size classes (Turnover)		Export to sales ratio latest exporters only	Export to sales ratio 3 yrs ago exporters only	Profits as % of turnover	Profits as % of turnover 3 years ago	% change average employment 2002/1999	% turnover growth 2002/1999
<£5m	Median	0.1	0.1	7.5	7.2	0.0	11.1
	N	*401*	*338*	*775*	*701*	*783*	*761*
>=£5m	Median	0.1	0.1	5.6	6.3	13.7	25.0
	N	*255*	*214*	*382*	*339*	*346*	*351*
Total	Median	0.1	0.1	6.7	6.8	4.6	15.1
	N	*656*	*552*	*1157*	*1040*	*1129*	*1112*
				**	**	**	**

Significant at 5% (**); 10% (*)

A2. Workforce and Training

This section covers training costs, labour turnover and human resource management techniques.

Summary of findings:

- Larger and younger firms were found to have significantly higher training costs
- Larger and younger firms were found to have significantly higher labour turnover
- Larger and younger firms are all more frequent users of most HR methods, although younger firms are less likely to use performance related pay.

Table 6a Training cost by size class

Analysis Size classes (employees)		No training	<=1%	2-3%	>=4%	Total
Micro	%	71.2	13.5	8.6	6.7	100.0
	N					*684*
Small	%	32.3	33.0	25.3	9.4	100.0
	N					*1007*
Medium	%	10.7	39.5	38.2	11.7	100.0
	N					*309*
Total	%	42.3	27.3	21.6	8.9	100.0
	N					*2000*
		**				

Significant between small and medium size at 5% (**); 10% (*)

Table 6b Training cost by age

Analysis Size classes (Age)		No training	<=1%	2-3%	>=4%	Total
Older	Mean	28.5	35.4	27.3	8.9	100.0
	N					*956*
Newer	Mean	23.6	32.4	31.0	13.1	100.0
	N					*352*
Total	Mean	27.1	34.6	28.3	10.0	100.0
	N					*1308*
		*				

Significant at 5% (**); 10% (*)

Table 6c Training cost by Turnover of Company

Analysis Size classes (Turnover)		No training	<=1%	2-3%	>=4%	Total
<£5m	Mean	33.4	31.1	25.5	10.0	100.0
	N					*929*
>=£5m	Mean	12.4	42.6	35.1	9.8	100.0
	N					*387*
Total	Mean	27.2	34.5	28.3	10.0	100.0
	N					*1316*
		**				

Significant at 5% (**); 10% (*)

Table 7a Rate of labour turnover by size class

Analysis Size classes (employees)		<1%	1-5%	6-10%	11-20%	>20%	Total
Micro	%	70.3	6.6	4.5	7.5	11.2	100.0
	N						*671*
Small	%	22.3	37.0	24.4	9.4	6.9	100.0
	N						*1012*
Medium	%	5.1	35.8	31.3	16.6	11.2	100.0
	N						*313*
Total	%	35.8	26.6	18.8	9.9	9.0	100.0
	N						*1996*
		**					

Significant between small and medium size at 5% (**); 10% (*)

Table 7b Rate of labour turnover by age

Analysis Size classes (Age)		<1%	1-5%	6-10%	11-20%	>20%	Total
Older	Mean	20.8	38.9	25.4	9.1	5.9	100.0
	N						*957*
Newer	Mean	10.8	31.7	28.1	15.8	13.6	100.0
	N						*360*
Total	Mean	18.1	36.9	26.1	10.9	8.0	100.0
	N						*1317*
		**					

Significant at 5% (**); 10% (*)

Table 7c Rate of labour turnover by Turnover of Company

Analysis Size classes (Turnover)		<1%	1-5%	6-10%	11-20%	>20%	Total
<£5m	Mean	22.5	34.7	25.1	9.6	8.0	100.0
	N						*933*
>=£5m	Mean	8.2	41.3	28.3	14.5	7.7	100.0
	N						*392*
Total	Mean	18.3	36.7	26.0	11.1	7.9	100.0
	N						*1325*
		**					

Significant at 5% (**); 10% (*)

Table 8a Human Resource Management Methods by size class

Analysis Size classes (employees)		% firms accredited by or implementing Investors in People?	% firms using self-employed workers	% firms employing casual workers	% firms employing workers employed on fixed-term contracts	% firms using quality management	% firms using performance-related pay
Micro	%	2.3	23.9	14.6	9.6	15.7	15.8
	N	*698*	*690*	*690*	*691*	*686*	*684*
Small	%	16.9	23.5	18.2	15.5	38.1	38.0
	N	*1028*	*1031*	*1030*	*1030*	*1026*	*1026*
Medium	%	29.6	27.7	26.5	25.5	48.6	52.0
	N	*324*	*325*	*325*	*325*	*325*	*325*
Total	%	14.0	24.3	18.3	15.1	32.3	32.8
	N	*2050*	*2046*	*2045*	*2046*	*2037*	*2035*
		**		**	**	**	**

Significant between small and medium size at 5% (**); 10% (*)

Table 8b Human Resource Management Methods by age

Analysis Size classes (Age)		% firms accredited by or implementing Investors in People?	% firms using self-employed workers	% firms employing casual workers	% firms employing workers employed on fixed-term contracts	% firms using quality management	% firms using performance-related pay
Older	Mean	18.3	22.1	19.1	15.3	37.6	38.3
	N	*976*	*981*	*979*	*979*	*978*	*978*
Newer	Mean	24.7	30.5	22.8	24.7	30.4	49.6
	N	*368*	*367*	*368*	*368*	*365*	*365*
Total	Mean	20.1	24.4	20.1	17.9	35.7	41.4
	N	*1344*	*1348*	*1347*	*1347*	*1343*	*1343*
		**	**		**	**	**

Significant at 5% (**); 10% (*)

Table 8c Human Resource Management Methods by Turnover of Company

Analysis Size classes (Turnover)		% firms accredited by or implementing Investors in People?	% firms using self-employed workers	% firms employing casual workers	% firms employing workers employed on fixed-term contracts	% firms using quality management	% firms using performance-related pay
<£5m	Mean	17.0	22.9	18.4	14.8	32.1	37.4
	N	*947*	*950*	*949*	*949*	*945*	*945*
>=£5m	Mean	26.9	28.1	24.1	25.4	43.6	50.7
	N	*405*	*406*	*406*	*406*	*406*	*406*
Total	Mean	20.0	24.5	20.1	17.9	35.5	41.4
	N	*1352*	*1356*	*1355*	*1355*	*1351*	*1351*
		**	**	**	**	**	**

Significant at 5% (**); 10% (*)

A3. Competitive Situation and Collaborative Activity

This section covers questions on customers and the market, collaboration and assistance from government support schemes.
Summary of findings:

- Larger firms relied less on sales to the largest and top 5 customers than did smaller firms
- Larger firms had a greater proportion of firms stating that the international market is their largest.
- Larger and newer firms engaged in formal or informal collaboration significantly more often
- Larger firms in employment terms collaborated significantly more often with HEIs
- Larger firms in turnover terms collaborated significantly more often with suppliers
- Larger firms used government export schemes significantly more

Table 9a Percent of sales due to largest customer by size class

Analysis Size classes (employees)		<10%	10-24%	25-49%	>=50%	Total
Micro	%	32.7	29.3	22.1	16.0	100.0
	N					*683*
Small	%	30.9	37.4	21.5	10.2	100.0
	N					*1006*
Medium	%	41.9	33.1	17.2	7.8	100.0
	N					*320*
Total	%	33.3	33.9	21.0	11.8	100.0
	N					*2009*
		**				

Significant between small and medium size at 5% (**); 10% (*)

Table 9b Percent of sales due to largest customer by age

Analysis Size classes (Age)		<10%	10-24%	25-49%	>=50%	Total
Older	%	34.1	36.9	20.4	8.6	100.0
	N					960
Newer	%	32.4	34.4	20.7	12.6	100.0
	N					358
Total	%	33.6	36.2	20.5	9.7	100.0
	N					1318

Table 9c Percent of sales due to largest customer by Turnover of Company

Analysis Size classes (Turnover)		<10%	10-24%	25-49%	>=50%	Total
<£5m	%	31.9	35.6	22.5	10.0	100.0
	N					*928*
>=£5m	%	37.4	38.2	15.6	8.8	100.0
	N					*398*
Total	%	33.6	36.3	20.4	9.7	100.0
	N					*1326*
		**				

Significant between small and medium size at 5% (**); 10% (*)

Table 10a Percent of sales due to top 5 customers by size class

Analysis Size classes (employees)		<10%	10-24%	25-49%	>=50%	Total
Micro	%	17.7	21.2	17.7	43.5	100.0
	N					*690*
Small	%	9.4	22.5	26.9	41.2	100.0
	N					*1010*
Medium	%	15.2	21.9	27.3	35.6	100.0
	N					*315*
Total	%	13.2	21.9	23.8	41.1	100.0
	N					*2015*
		**				

Significant between small and medium size at 5% (**); 10% (*)

Table 10b Percent of sales due to top 5 customers by age

Analysis Size classes (Age)		<10%	10-24%	25-49%	>=50%	Total
Older	%	10.2	23.5	27.8	38.5	100.0
	N					*963*
Newer	%	12.4	19.2	25.1	43.2	100.0
	N					*354*
Total	%	10.8	22.3	27.1	39.8	100.0
	N					*1317*

Table 10c Percent of sales due to top 5 customers by Turnover of company

Analysis Size classes (Turnover)		<10%	10-24%	25-49%	>=50%	Total
<£5m	%	10.0	22.6	25.5	42.0	100.0
	N					*931*
>=£5m	%	12.7	21.8	30.7	34.8	100.0
	N					*394*
Total	%	10.8	22.3	27.0	39.8	100.0
	N					*1325*
		**				

Significant between small and medium size at 5% (**); 10% (*)

Table 11a Geographical scope of the firm's largest market by size class

Analysis Size classes (employees)		Local	Regional	National	International	Total
Micro	%	41.0	29.1	22.5	7.4	100.0
	N					*742*
Small	%	15.6	35.9	34.1	14.4	100.0
	N					*1047*
Medium	%	7.3	31.0	43.2	18.5	100.0
	N					*329*
Total	%	23.2	32.8	31.4	12.6	100.0
	N					*2118*
		**				

Significant between small and medium size at 5% (**); 10% (*)

Table 11b Geographical scope of the firm's largest market by age

Analysis Size classes (Age)		Local	Regional	National	International	Total
Older	%	12.7	36.0	36.9	14.5	100.0
	N					*995*
Newer	%	15.8	31.1	35.4	17.7	100.0
	N					*373*
Total	%	13.5	34.6	36.5	15.4	100.0
	N					*1368*

Table 11c Geographical scope of the firm's largest market by Turnover of Company

Analysis Size classes (Turnover)		Local	Regional	National	International	Total
<£5m	%	17.5	34.4	34.7	13.3	100.0
	N					*967*
>=£5m	%	4.4	35.5	39.9	20.3	100.0
	N					*409*
Total	%	13.6	34.7	36.3	15.4	100.0
	N					*1376*
		**				

Significant between small and medium size at 5% (**); 10% (*)

Table 12a Partnership arrangements by size class

Analysis Size classes (Employees)		% entered into partnership arrangements	% of firms collaborated with: Suppliers	Customers	HEIs	Private Research Institutes	Competitors
Micro	%	24.2	40.8	35.8	7.8	8.4	63.7
	N	*745*	*179*	*179*	*179*	*179*	*179*
Small	%	36.1	48.4	47.5	16.0	15.5	59.1
	N	*1048*	*374*	*373*	*374*	*374*	*374*
Medium	%	58.8	51.6	52.1	24.0	17.7	59.9
	N	*328*	*192*	*192*	*192*	*192*	*192*
Total	%	35.4	47.4	45.8	16.1	14.4	60.4
	N	*2121*	*745*	*744*	*745*	*745*	*745*
		**			**		

Significant between small and medium size at 5% (**); 10% (*)

Table 12b Partnership arrangements by age

Analysis Size classes (Age)		% entered into partnership arrangements	% of firms collaborated with: Suppliers	Customers	HEIs	Private Research Institutes	Competitors
Older	%	38.6	50.0	49.6	19.5	15.2	57.9
	N	*996*	*380*	*379*	*380*	*381*	*380*
Newer	%	50.0	48.6	48.1	16.8	18.4	62.7
	N	*372*	*185*	*185*	*185*	*185*	*185*
Total	%	41.7	49.6	49.1	18.6	16.3	59.5
	N	*1368*	*565*	*564*	*565*	*566*	*565*
		**					

Significant at 5% (**); 10% (*)

Table 12c Partnership arrangements by Turnover of Company

Analysis Size classes (Turnover)		% entered into partnership arrangements	% of firms collaborated with: Suppliers	Customers	HEIs	Private Research Institutes	Competitors
<£5m	%	35.5	45.9	46.8	17.5	14.9	59.9
	N	*968*	*342*	*342*	*342*	*343*	*342*
>=£5m	%	55.6	54.9	52.5	20.5	18.3	58.5
	N	*408*	*224*	*223*	*224*	*224*	*224*
Total	%	41.5	49.5	49.0	18.7	16.2	59.4
	N	*1376*	*566*	*565*	*566*	*567*	*566*
		**	**				

Significant at 5% (**); 10% (*)

Table 13a Percentage of firms collaborated on arrangements designed to: by size class

Analysis Size classes (employees)		share R_D activity	expand expertise/products	assist in management	improve financial credibility	development of specialist services	gain access to new equipment etc.	help keep current customers	provide access to new UK customers	provide access to overseas customers	outsource elements of own output	jointly purchase inputs
Micro	%	39.9	74.7	15.2	43.8	64.0	21.3	44.9	45.5	24.2	19.7	19.1
	N	*178*	*178*	*178*	*178*	*178*	*178*	*178*	*178*	*178*	*178*	*178*
Small	%	39.6	74.9	16.6	45.5	64.7	20.6	50.5	44.4	35.8	28.1	11.8
	N	*374*	*374*	*374*	*374*	*374*	*374*	*374*	*374*	*374*	*374*	*374*
Medium	%	47.2	78.2	19.7	48.7	71.0	26.4	52.3	48.7	45.1	22.8	13.0
	N	*193*	*193*	*193*	*193*	*193*	*193*	*193*	*193*	*193*	*193*	*193*
Total	%	41.6	75.7	17.0	45.9	66.2	22.3	49.7	45.8	35.4	24.7	13.8
	N	*745*	*745*	*745*	*745*	*745*	*745*	*745*	*745*	*745*	*745*	*745*
		*								**		

Significant between small and medium size at 5% (**); 10% (*)

Table 13b Percentage of firms collaborated on arrangements designed to: by age

Analysis Size classes (Age)		share R_D activity	expand expertise/products	assist in management	improve financial credibility	development of specialist services	gain access to new equipment etc.	help keep current customers	provide access to new UK customers	provide access to overseas customers	outsource elements of own output	jointly purchase inputs
Older	%	43.3	75.9	18.1	42.5	65.4	22.8	54.3	43.8	38.6	24.4	14.7
	N	*381*	*381*	*381*	*381*	*381*	*381*	*381*	*381*	*381*	*381*	*381*
Newer	%	39.5	76.2	16.8	54.6	69.7	21.6	44.9	50.3	39.5	29.7	7.0
	N	*185*	*185*	*185*	*185*	*185*	*185*	*185*	*185*	*185*	*185*	*185*
Total	%	42.0	76.0	17.7	46.5	66.8	22.4	51.2	45.9	38.9	26.1	12.2
	N	*566*	*566*	*566*	*566*	*566*	*566*	*566*	*566*	*566*	*566*	*566*
					**			**				**

Significant at 5% (**); 10% (*)

Table 13c Percentage of firms collaborated on arrangements designed to: by Turnover of Company

Analysis Size classes (Turnover)		share R_D activity	expand expertise/products	assist in management	improve financial credibility	development of specialist services	gain access to new equipment etc.	help keep current customers	provide access to new UK customers	provide access to overseas customers	outsource elements of own output	jointly purchase inputs
<£5m	%	43.1	76.8	16.4	44.0	66.6	21.4	51.3	44.3	34.3	28.4	12.6
	N	*341*	*341*	*341*	*341*	*341*	*341*	*341*	*341*	*341*	*341*	*341*
>=£5m	%	40.7	74.8	19.5	50.4	67.3	24.3	50.9	48.2	46.0	23.0	11.5
	N	*226*	*226*	*226*	*226*	*226*	*226*	*226*	*226*	*226*	*226*	*226*
Total	%	42.2	76.0	17.6	46.6	66.8	22.6	51.1	45.9	39.0	26.3	12.2
	N	*567*	*431*	*567*	*567*	*567*	*567*	*567*	*567*	*567*	*567*	*567*
										**		

Significant at 5% (**); 10% (*)

Table 14a Percentage of firms obtained assistance from: by size class

Analysis Size classes (employees)		Teaching Company Scheme	Small Firms Training Loans	LINK	Regional Supply Offices	Export Credit Guarantees Information Service	British Trade Intl/Trade Partners UK	Small Firms Loan Guarantee Scheme	Regional Selective Assistance/ Enterprise Grants/RIN	SMART
Micro	%	1.7	1.7	4.3	1.7	3.4	5.2	6.9	0.9	1.7
	N	*116*	*116*	*116*	*116*	*116*	*116*	*116*	*116*	*116*
Small	%	5.7	1.4	23.0	2.7	4.4	13.2	4.1	11.1	5.7
	N	*296*	*296*	*296*	*296*	*296*	*296*	*296*	*296*	*296*
Medium	%	12.1	1.8	17.0	3.0	10.3	15.8	1.8	8.5	3.6
	N	*165*	*165*	*165*	*165*	*165*	*165*	*165*	*165*	*165*
Total	%	6.8	1.6	17.5	2.6	5.9	12.3	4.0	8.3	4.3
	N	*577*	*577*	*577*	*577*	*577*	*577*	*577*	*577*	*577*
		**				*				

Significant between small and medium size at 5% (**); 10% (*)

Table 14b Percentage of firms obtained assistance from: by age

Analysis Size classes (Age)		Teaching Company Scheme	Small Firms Training Loans	LINK	Regional Supply Offices	Export Credit Guarantees Information Service	British Trade Intl/Trade Partners UK	Small Firms Loan Guarantee Scheme	Regional Selective Assistance/ Enterprise Grants/RIN	SMART
Older	%	9.3	2.2	24.6	2.9	7.7	15.3	2.9	10.9	4.2
	N	*313*	*313*	*313*	*313*	*313*	*313*	*313*	*313*	*313*
Newer	%	5.4	0.0	12.8	2.7	4.1	11.5	4.1	8.8	6.8
	N	*148*	*148*	*148*	*148*	*148*	*148*	*148*	*148*	*148*
Total	%	8.0	1.5	20.8	2.8	6.5	14.1	3.3	10.2	5.0
	N	*461*	*461*	*461*	*461*	*461*	*461*	*461*	*461*	*461*
				**						

Significant at 5% (**); 10% (*)

Table 14c Percentage of firms obtained assistance from: by Turnover of Company

Analysis Size classes (Turnover)		Teaching Company Scheme	Small Firms Training Loans	LINK	Regional Supply Offices	Export Credit Guarantees Information Service	British Trade Intl/Trade Partners UK	Small Firms Loan Guarantee Scheme	Regional Selective Assistance/ Enterprise Grants/RIN	SMART
<£5m	%	6.8	0.8	22.1	2.7	3.4	13.7	4.2	10.3	6.5
	N	*263*	*263*	*263*	*263*	*263*	*263*	*263*	*263*	*263*
>=£5m	%	9.6	2.5	19.2	3.0	10.6	14.6	2.0	10.1	3.0
	N	*198*	*198*	*198*	*198*	*198*	*198*	*198*	*198*	*198*
Total	%	8.0	7.0	20.8	2.8	6.5	14.1	3.3	10.2	5.0
	N	*461*	*461*	*461*	*461*	*461*	*461*	*461*	*461*	*461*
						**				

Significant at 5% (**); 10% (*)

A4. Innovation

This section covers innovation type, information sources, innovation objectives, economic barriers and R&D.
Summary of findings:

- There were more innovators among larger firms, for all types of innovation
- More product innovators in newer firms
- Innovation sources were more often seen as a very important or crucial source from within the firm or the group for larger and newer firms
- Extending the product range and gaining market share were seen as more important innovation objectives for larger firms
- Significantly fewer firms with turnover above £5m found that most barriers to innovation were regarded as very significant or crucial
- Significantly more large firms engaged in R&D
- Significantly larger R&D/TO ratio for medium sized firms
- Significantly more large firms applied for patents in the last 3 years

Table 15a Type of innovation by size class

Analysis Size classes (employees)		% Innovators	Product innovation	Process innovation	Logistic innovations	Sales of new products/services
Micro	%	47.4	40.2	31.9	6.5	8.2
	N	*737*	*736*	*737*	*737*	*677*
Small	%	67.0	56.8	48.6	10.5	9.8
	N	*1029*	*1028*	*1028*	*1028*	*945*
Medium	%	80.2	72.6	64.7	17.3	12.9
	N	*329*	*329*	*329*	*329*	*293*
Total	%	62.1	53.5	45.3	10.2	9.7
	N	*2095*	*2093*	*2094*	*2094*	*1915*
		**	**	**	**	**

Significant between small and medium size at 5% (**); 10% (*)

Table 15b Type of innovation by age

Analysis Size classes (Age)		% Innovators	Product innovation	Process innovation	Logistic innovations	Sales of new products/services
Older	%	69.7	58.5	52.2	12.8	9.6
	N	*979*	*979*	*979*	*979*	*889*
Newer	%	71.7	66.2	54.1	10.8	13.1
	N	*371*	*370*	*370*	*370*	*341*
Total	%	70.2	60.6	52.7	12.2	10.6
	N	*1350*	*1349*	*1349*	*1349*	*1230*
			**			*

Significant at 5% (**); 10% (*)

Table 15c Type of innovation by Turnover of Company

Analysis Size classes (Turnover)		% Innovators	Product innovation	Process innovation	Logistic innovations	Sales of new products/services
<£5m	%	66.3	55.7	48.1	9.6	9.7
	N	*950*	*949*	*949*	*949*	*869*
>=£5m	%	79.2	72.1	63.0	18.1	12.5
	N	*408*	*408*	*408*	*408*	*369*
Total	%	70.2	60.6	2.5	12.2	10.6
	N	*1358*	*1357*	*1357*	*1357*	*1238*
		**	**	**	**	**

Significant at 5% (**); 10% (*)

Table 16a Information sources: (% of firms regarding source as very significant or crucial) by size class

Analysis Size classes (employees)		within the firm	within the group	suppliers	customers	competitors	consultants	financiers
Micro	%	50.3	6.3	26.5	31.3	11.6	2.8	1.2
	N	*431*	*430*	*431*	*431*	*431*	*431*	*431*
Small	%	69.4	11.9	31.1	37.8	13.4	4.2	2.1
	N	*756*	*754*	*756*	*756*	*756*	*755*	*755*
Medium	%	76.2	23.8	25.6	38.5	14.7	4.8	1.5
	N	*273*	*273*	*273*	*273*	*273*	*273*	*273*
Total	%	65.1	12.5	28.7	36.0	13.1	3.9	1.7
	N	*1460*	*1457*	*1460*	*1460*	*1460*	*1459*	*1459*
		**	**	*				

Significant between small and medium size at 5% (**); 10% (*)

Table 16a Information sources: (% of firms regarding source as very significant or crucial) by size class (continued)

Analysis Size classes (employees)		higher educ institutes	govt/priv non-prof research institutes	patent disclosures	professional conferences /journals	fairs/exhibitions	trade assoc/chambers of commerce	computer-based info networks
Micro	%	2.3	1.9	0.7	5.6	7.7	3.7	9.5
	N	*431*	*431*	*430*	*430*	*431*	*431*	*431*
Small	%	2.9	1.3	1.7	4.0	8.7	4.0	8.2
	N	*755*	*755*	*755*	*755*	*756*	*755*	*756*
Medium	%	4.8	1.5	2.6	3.7	10.3	3.7	6.2
	N	*273*	*273*	*273*	*273*	*273*	*273*	*273*
Total	%	3.1	1.5	1.6	4.4	8.7	3.8	8.2
	N	*1459*	*1459*	*1458*	*1458*	*1460*	*1459*	*1460*

Table 16b Information sources: (% of firms regarding source as very significant or crucial) by age

Analysis Size classes (Age)		within the firm	within the group	suppliers	customers	competitors	consultants	financiers
Older	%	69.6	13.8	31.2	37.8	14.2	3.9	0.7
	N	*738*	*737*	*738*	*738*	*738*	*737*	*737*
Newer	%	75.3	18.3	25.8	38.5	12.4	5.5	5.2
	N	*291*	*290*	*291*	*291*	*291*	*291*	*291*
Total	%	71.2	15.1	29.6	38.0	13.7	4.4	1.9
	N	*1029*	*1027*	*1029*	*1029*	*1029*	*1028*	*1028*
		*	*	*				**

Significant at 5% (**); 10% (*)

Table 16b Information sources: (% of firms regarding source as very significant or crucial) by age (continued)

Analysis Size classes (Age)		higher educ institutes	govt/priv non-prof research institutes	patent disclosures	professional conferences /journals	fairs/exhibitions	trade assoc/chambers of commerce	computer-based info networks
Older	%	3.0	0.8	1.4	3.4	9.2	4.1	6.8
	N	*737*	*737*	*737*	*737*	*738*	*737*	*738*
Newer	%	4.5	2.7	3.4	5.2	8.9	3.4	10.0
	N	*291*	*291*	*291*	*291*	*291*	*291*	*291*
Total	%	3.4	1.4	1.9	3.9	9.1	3.9	7.7
	N	*1028*	*1028*	*1028*	*1028*	*1029*	*1028*	*1029*
			**	**				*

Significant at 5% (**); 10% (*)

Table 16c Information sources: (% of firms regarding source as very significant or crucial) by Turnover of Company

Analysis Size classes (Turnover)		within the firm	within the group	suppliers	customers	competitors	consultants	financiers
<£5m	%	69.2	11.2	30.7	37.5	12.4	3.6	2.0
	N	*688*	*686*	*688*	*688*	*688*	*687*	*687*
>=£5m	%	75.4	22.9	27.6	39.0	16.4	5.9	1.8
	N	*341*	*341*	*341*	*341*	*341*	*341*	*341*
Total	%	71.2	15.1	29.6	38.0	13.7	4.4	1.9
	N	*1029*	*1027*	*1029*	*1029*	*1029*	*1028*	*1028*
		**	**			*		

Significant at 5% (**); 10% (*)

Table 16c Information sources: (% of firms regarding source as very significant or crucial) by Turnover of Company (continued)

Analysis Size classes (Turnover)		higher educ institutes	govt/priv non-prof research institutes	patent disclosures	professional conferences /journals	fairs/exhibitions	trade assoc/chambers of commerce	computer-based info networks
<£5m	%	3.6	1.7	2.0	4.2	8.4	4.1	8.6
	N	*687*	*687*	*687*	*687*	*688*	*687*	*688*
>=£5m	%	2.9	0.6	1.8	3.2	10.6	3.5	5.9
	N	*341*	*341*	*341*	*341*	*341*	*341*	*341*
Total	%	3.4	1.4	1.9	3.9	9.1	3.9	7.7
	N	*1028*	*1028*	*1028*	*1028*	*1029*	*1028*	*1029*

Significant at 5% (**); 10% (*)

Table 17a Innovation objectives: (% of firms regarding objective as very significant or crucial) by size class

Analysis Size classes (employees)		replacing phased-out products	extending product range	reducing production lead times	gaining market share/new market	reducing labour costs	reducing materials consumption	reducing energy consumption
Micro	%	19.1	38.3	23.6	49.3	20.7	18.9	13.7
	N	*444*	*444*	*444*	*444*	*444*	*444*	*444*
Small	%	28.1	50.0	40.1	70.8	37.7	27.3	20.0
	N	*770*	*770*	*770*	*770*	*770*	*770*	*770*
Medium	%	33.2	60.2	42.0	78.1	43.4	32.1	17.9
	N	*274*	*274*	*274*	*274*	*274*	*274*	*274*
Total	%	26.3	48.4	35.6	65.7	33.7	25.7	17.7
	N	*1488*	*1488*	*1488*	*1488*	*1488*	*1488*	*1488*
			**		**	*		

Significant between small and medium size at 5% (**); 10% (*)

Table 17a Innovation objectives: (% of firms regarding objective as very significant or crucial) by size class (continued)

Analysis Size classes (employees)		improving production flexibility	improving product quality	reducing environmental damage	fulfilling regulations/standards
Micro	%	26.6	51.8	15.1	29.1
	N	*444*	*444*	*444*	*444*
Small	%	43.0	64.5	19.9	36.6
	N	*769*	*769*	*770*	*770*
Medium	%	39.4	64.2	14.2	36.1
	N	*274*	*274*	*274*	*274*
Total	%	37.5	60.7	17.4	34.3
	N	*1487*	*1487*	*1488*	*1488*
				**	

Significant between small and medium size at 5% (**); 10% (*)

Table 17b Innovation objectives: (% of firms regarding objective as very significant or crucial) by age

Analysis Size classes (Age)		replacing phased-out products	extending product range	reducing production lead times	gaining market share/new market	reducing labour costs	reducing materials consumption	reducing energy consumption
Older	%	31.8	52.7	45.1	72.7	43.0	31.3	22.0
	N	*751*	*751*	*751*	*751*	*751*	*751*	*751*
Newer	%	23.2	52.6	29.0	72.7	29.4	21.5	13.0
	N	*293*	*293*	*293*	*293*	*293*	*293*	*293*
Total	%	29.4	52.7	40.6	72.7	39.2	28.5	19.4
	N	*1044*	*1044*	*1044*	*1044*	*1044*	*1044*	*1044*
		**		**		**	**	**

Significant at 5% (**); 10% (*)

Table 17b Innovation objectives: (% of firms regarding objective as very significant or crucial) by age (continued)

Analysis Size classes (Age)		improving production flexibility	improving product quality	reducing environmental damage	fulfilling regulations/standards
Older	%	46.3	66.1	20.8	36.6
	N	*750*	*750*	*751*	*751*
Newer	%	31.4	60.1	12.3	36.2
	N	*293*	*293*	*293*	*293*
Total	%	42.1	64.4	18.4	36.5
	N	*1043*	*1043*	*1044*	*1044*
		**	*	**	

Significant at 5% (**); 10% (*)

Table 17c Innovation objectives: (% of firms regarding objective as very significant or crucial) by Turnover of Company

Analysis Size classes (Turnover)		replacing phased-out products	extending product range	reducing production lead times	gaining market share/new market	reducing labour costs	reducing materials consumption	reducing energy consumption
<£5m	%	29.2	50.6	41.0	70.8	38.8	28.4	21.5
	N	*703*	*703*	*703*	*703*	*703*	*703*	*703*
>=£5m	%	29.9	56.9	39.9	76.5	39.9	28.7	15.2
	N	*341*	*341*	*341*	*341*	*341*	*341*	*341*
Total	%	29.4	52.7	40.6	72.7	39.2	28.5	19.4
	N	*1044*	*1044*	*1044*	*1044*	*1044*	*1044*	*1044*
			*		*			**

Significant at 5% (**); 10% (*)

Table 17c Innovation objectives: (% of firms regarding objective as very significant or crucial) by Turnover of Company (continued)

Analysis Size classes (Turnover)		improving production flexibility	improving product quality	reducing environmental damage	fulfilling regulations/standards
<£5m	%	44.0	66.0	19.6	38.7
	N	*702*	*702*	*703*	*703*
>=£5m	%	38.1	61.3	15.8	32.0
	N	*341*	*341*	*341*	*341*
Total	%	42.1	64.4	18.4	36.5
	N	*1043*	*1043*	*1044*	*1044*
		*			**

Significant at 5% (**); 10% (*)

Table 18a Barriers to innovation: (% of firms regarding barrier as very significant or crucial) by size class

Analysis Size classes (employees)		excessive perceived risk	inavailability of appropriate finance	innovation costs too high	pay-off period too long	firm's innovation potential too small	lack of skilled personnel	lack of technological information	lack of market information
Micro	%	23.6	28.1	30.6	29.2	23.0	16.4	9.7	7.7
	N	*649*	*648*	*648*	*648*	*647*	*646*	*647*	*647*
Small	%	22.9	28.0	29.9	27.8	22.7	21.3	13.9	10.2
	N	*983*	*983*	*983*	*983*	*982*	*983*	*983*	*983*
Medium	%	19.3	22.4	20.9	28.0	16.5	20.9	8.1	5.3
	N	*321*	*321*	*321*	*321*	*321*	*321*	*321*	*321*
Total	%	22.5	27.1	28.6	28.3	21.8	19.6	11.6	8.6
	N	*1953*	*1952*	*1952*	*1952*	*1950*	*1950*	*1951*	*1951*
			*	**		**		**	**

Significant between small and medium size at 5% (**); 10% (*)

Table 18a Barriers to innovation: (% of firms regarding barrier as very significant or crucial) by size class (continued)

Analysis Size classes (employees)		innovation costs hard to control	organisational rigidities	lack of technological opportunities	still exploiting earlier innovations	innovation too easy to copy	regulations_ taxes	lack of customer responsiveness	uncertainty in timing
Micro	%	15.9	8.3	11.6	6.5	11.4	20.9	17.0	12.1
	N	*647*	*647*	*647*	*647*	*647*	*647*	*647*	*647*
Small	%	16.4	6.6	13.5	5.7	12.2	21.5	16.6	9.4
	N	*983*	*983*	*983*	*983*	*983*	*983*	*983*	*983*
Medium	%	11.2	5.6	8.4	3.7	10.0	17.4	15.3	10.9
	N	*321*	*321*	*321*	*321*	*321*	*321*	*321*	*321*
Total	%	15.4	7.0	12.0	5.6	11.6	20.6	16.5	10.5
	N	*1951*	*1951*	*1951*	*1951*	*1951*	*1951*	*1951*	*1951*
		*		**					

Significant between small and medium size at 5% (**); 10% (*)

Table 18b Barriers to innovation: (% of firms regarding barrier as very significant or crucial) by age

Analysis Size classes (Age)		excessive perceived risk	inavailability of appropriate finance	innovation costs too high	pay-off period too long	firm's innovation potential too small	lack of skilled personnel	lack of technological information	lack of market information
Older	%	23.8	25.2	28.3	28.5	22.3	21.3	9.4	13.1
	N	*938*	*938*	*938*	*938*	*937*	*938*	*938*	*938*
Newer	%	17.0	30.4	26.3	26.0	17.9	20.9	8.1	10.6
	N	*358*	*358*	*358*	*358*	*358*	*358*	*358*	*358*
Total	%	21.9	26.6	27.7	27.8	21.1	21.2	9.0	12.4
	N	*1296*	*1296*	*1296*	*1296*	*1295*	*1296*	*1296*	*1296*
		**	*			*			

Significant at 5% (**); 10% (*)

Table 18b Barriers to innovation: (% of firms regarding barrier as very significant or crucial) by age (continued)

Analysis Size classes (Age)		innovation costs hard to control	organisational rigidities	lack of technological opportunities	still exploiting earlier innovations	innovation too easy to copy	regulations_ taxes	lack of customer responsiveness	uncertainty in timing
Older	%	16.0	7.0	13.9	6.0	11.9	21.2	16.7	8.6
	N	*938*	*938*	*938*	*938*	*938*	*938*	*938*	*938*
Newer	%	12.8	4.7	8.1	3.4	10.9	18.2	15.4	12.6
	N	*358*	*358*	*358*	*358*	*358*	*358*	*358*	*358*
Total	%	15.1	6.4	12.3	5.2	11.7	20.4	16.4	9.7
	N	*1296*	*1296*	*1296*	*1296*	*1296*	*1296*	*1296*	*1296*
*				**	*				**

Significant at 5% (**); 10% (*)

Table 18c Barriers to innovation: (% of firms regarding barrier as very significant or crucial) by Turnover of Company

Analysis Size classes (Turnover)		excessive perceived risk	inavailability of appropriate finance	innovation costs too high	pay-off period too long	firm's innovation potential too small	lack of skilled personnel	lack of technological information	lack of market information
<£5m	%	23.0	28.8	30.8	30.1	23.4	22.3	10.4	14.2
	N	*910*	*910*	*910*	*910*	*909*	*910*	*910*	*910*
>=£5m	%	19.8	21.6	20.6	22.6	16.0	18.5	5.6	8.6
	N	*394*	*394*	*394*	*394*	*394*	*394*	*394*	*394*
Total	%	22.0	26.6	27.7	27.8	21.2	21.2	9.0	12.5
	N	*1304*	*1304*	*1304*	*1304*	*1303*	*1304*	*1304*	*1304*
			**	**	**	**		**	**

Significant at 5% (**); 10% (*)

Table 18c Barriers to innovation: (% of firms regarding barrier as very significant or crucial) by Turnover of Company (continued)

Analysis Size classes (Turnover)		innovation costs hard to control	organisational rigidities	lack of technological opportunities	still exploiting earlier innovations	innovation too easy to copy	regulations_ taxes	lack of customer responsiveness	uncertainty in timing
<£5m	%	17.4	7.4	13.7	6.0	13.1	22.5	18.0	11.1
	N	*910*	*910*	*910*	*910*	*910*	*910*	*910*	*910*
>=£5m	%	9.9	4.1	8.9	3.3	8.4	15.7	12.2	6.6
	N	*394*	*394*	*394*	*394*	*394*	*394*	*394*	*394*
Total	%	15.1	6.4	12.3	5.2	11.7	20.5	16.3	9.7
	N	*1304*	*1304*	*1304*	*1304*	*1304*	*1304*	*1304*	*1304*
*		**	**	**	**	**	**	**	**

Significant at 5% (**); 10% (*)

Table 19a R&D by size class

Analysis Size classes (employees)		% of firms engaging in R&D in last financial year	r&d emp/ total emp % (mean)	R&D/TO % (mean)	% firms that applied for patents in last 3 years
Micro	%	21.7	9.3	1.6	1.2
	N	*724*	*698*	*612*	*721*
Small	%	47.6	6.4	2.6	7.3
	N	*1020*	*964*	*886*	*1010*
Medium	%	63.4	3.7	14.1	22.2
	N	*328*	*278*	*276*	*320*
Total	%	41.1	7.0	4.1	7.5
	N	*2072*	*1940*	*1774*	*2051*
		**		**	**

Significant between small and medium size at 5% (**); 10% (*)

Table 19b R&D by age

Analysis Size classes (Age)		% of firms engaging in R&D in last financial year	r&d emp/ total emp % (mean)	R&D/TO % (mean)	% firms that applied for patents in last 3 years
Older	%	51.4	5.1	1.6	11.4
	N	*975*	*899*	*851*	*963*
Newer	%	51.8	7.7	16.1	9.7
	N	*365*	*336*	*304*	*359*
Total	%	51.5	5.8	5.4	11.0
	N	*1340*	*1235*	*1155*	*1322*
					*

Significant at 5% (**); 10% (*)

Table 19c R&D by Turnover of Company

Analysis Size classes (Turnover)		% of firms engaging in R&D in last financial year	r&d emp/ total emp % (mean)	R&D/TO % (mean)	% firms that applied for patents in last 3 years
<£5m	%	47.1	6.4	7.2(A)	7.0
	N	*943*	*891*	*798*	*931*
>=£5m	%	61.7	4.2	1.4	20.1
	N	*405*	*351*	*364*	*399*
Total	%	51.5	5.8	5.4	10.9
	N	*1348*	*1242*	*1162*	*1330*
		**		**	**

Significant at 5% (**); 10% (*)
(A) This figure is due to 3 firms with large R&D expenditure and low sales

A5. Factors Affecting Expansion And Efficiency

This section covers business objectives, limitations on business objectives, growth objectives, and sources of advice.
Summary of findings:

- Growth in exports and market share were significantly more important to large firms and also to older firms
- Growth in employment was a significantly more important business objective to firms with lower turnover
- Lack of management skills was a very important limitation for medium sized firms
- Overdraft finance and skilled labour were very important limitations to newer firms, although growth of market demand and increasing competition were less important to them than to older firms
- For firms with turnover less than £5m we found that marketing skills, acquisition of technology and availability of appropriate premises were significantly more of a limitation to their success than their larger peers
- Larger and younger firms had higher growth ambitions
- Younger firms made more use of most advice sources compared to older firms
- Medium sized firms used solicitors, customers, consultants, venture capitalists, Local Learning and Skills Councils and RDAs more frequently than smaller firms
- Firms with turnover of £5m or more used solicitors, consultants, venture capitalists and RDAs more often than firms with a lower turnover
- Medium sized firms regarded solicitors as having the greatest impact, whereas accountants were more important to smaller firms
- Firms with turnover of £5m or more regarded customers and solicitors as having a big impact, whereas for those with a lower turnover the accountant had the greatest impact.

Table 20a Business objectives: (% of firms regarding objectives as very significant or crucial) by size class

Analysis Size classes (employees)		profit margin on sales	return on capital employed	growth in sales	growth in exports	growth in employment	market share in UK	market share overseas
Micro	%	66.7	32.2	56.0	7.4	4.1	15.7	4.5
	N	*712*	*712*	*712*	*712*	*712*	*712*	*712*
Small	%	79.2	37.4	62.1	17.5	7.3	27.6	14.5
	N	*1033*	*1033*	*1033*	*1033*	*1033*	*1033*	*1033*
Medium	%	82.5	38.6	66.8	22.2	6.5	37.8	22.5
	N	*325*	*324*	*325*	*325*	*325*	*325*	*325*
Total	%	75.4	35.8	60.7	14.8	6.0	25.1	12.3
	N	*2070*	*2069*	*2070*	*2070*	*2070*	*2070*	*2070*
					*		**	**

Significant between small and medium size at 5% (**); 10% (*)

Table 20b Business objectives: (% of firms regarding objectives as very significant or crucial) by age

Analysis Size classes (Age)		profit margin on sales	return on capital employed	growth in sales	growth in exports	growth in employment	market share in UK	market share overseas
Older	%	80.3	37.0	61.4	21.1	5.6	30.0	17.8
	N	*984*	*983*	*984*	*984*	*984*	*984*	*984*
Newer	%	79.2	39.3	68.0	12.3	11.2	30.9	12.8
	N	*366*	*366*	*366*	*366*	*366*	*366*	*366*
Total	%	80.0	37.7	63.2	18.7	7.1	30.2	16.4
	N	*1350*	*1349*	*1350*	*1350*	*1350*	*1350*	*1350*
				**	**	**		**

Significant at 5% (**); 10% (*)

Table 20c Business objectives: (% of firms regarding objectives as very significant or crucial) by Turnover of Company

Analysis Size classes (Turnover)		profit margin on sales	return on capital employed	growth in sales	growth in exports	growth in employment	market share in UK	market share overseas
<£5m	%	79.3	37.5	61.6	17.0	8.2	27.7	14.4
	N	*952*	*952*	*952*	*952*	*952*	*952*	*952*
>=£5m	%	81.5	38.0	67.0	22.4	4.4	35.5	21.2
	N	*406*	*405*	*406*	*406*	*406*	*406*	*406*
Total	%	80.0	37.7	63.2	18.6	7.1	30.0	16.4
	N	*1358*	*1357*	*1358*	*1358*	*1358*	*1358*	*1358*
				*	**	**	**	**

Significant at 5% (**); 10% (*)

Table 21a Limitations to success: (% of firms regarding source as a very significant or crucial limitation) by size class

Analysis Size classes (employees)		finance for expansion	overdraft finance	skilled labour	Manage ment skills	marketing/ sales skills	acquisition of technology	difficulties in implemen ting new tech	availability of appropriate premises	access to overseas markets	growth of market demand	increasing competition
Micro	%	24.4	22.1	14.5	10.7	20.5	8.6	8.2	10.3	4.4	19.6	23.3
	N	*709*	*709*	*709*	*709*	*708*	*709*	*709*	*709*	*709*	*709*	*709*
Small	%	24.3	18.6	23.3	20.5	28.7	8.8	9.4	12.4	8.1	30.0	34.7
	N	*1028*	*1028*	*1028*	*1028*	*1028*	*1028*	*1027*	*1027*	*1027*	*1027*	*1028*
Medium	%	17.1	14.1	22.3	29.4	25.7	6.1	9.2	11.9	8.3	29.7	36.4
	N	*327*	*327*	*327*	*327*	*327*	*327*	*327*	*327*	*327*	*327*	*327*
Total	%	23.2	19.1	20.2	18.6	25.4	8.3	9.0	11.6	6.8	26.4	31.1
	N	*2064*	*2064*	*2064*	*2064*	*2063*	*2064*	*2063*	*2063*	*2063*	*2063*	*2064*
		**	*		**							

Significant between small and medium size at 5% (**); 10% (*)

Table 21b Limitations to success: (% of firms regarding source as a very significant or crucial limitation) by age

Analysis Size classes (Age)		finance for expansion	overdraft finance	skilled labour	Manage ment skills	marketing/ sales skills	acquisition of technology	difficulties in implemen ting new tech	availability of appropriate premises	access to overseas markets	growth of market demand	increasing competition
Older	%	21.5	16.7	21.4	22.2	27.2	8.4	9.0	12.9	8.8	32.0	37.6
	N	*981*	*981*	*981*	*981*	*981*	*981*	*980*	*980*	*980*	*980*	*981*
Newer	%	25.4	19.9	27.3	24.0	29.8	7.7	10.4	10.9	6.3	24.0	28.7
	N	*366*	*366*	*366*	*366*	*366*	*366*	*366*	*366*	*366*	*366*	*366*
Total	%	22.6	17.6	23.0	22.7	27.9	8.2	9.4	12.3	8.1	29.9	35.2
	N	*1347*	*1347*	*1347*	*1347*	*1347*	*1347*	*1346*	*1346*	*1346*	*1346*	*1347*
				**							**	**

Significant at 5% (**); 10% (*)

Table 21c Limitations to success: (% of firms regarding source as a very significant or crucial limitation) by Turnover of Company

Analysis Size classes (Turnover)		finance for expansion	overdraft finance	skilled labour	Manage ment skills	marketing/ sales skills	acquisition of technology	difficulties in implemen ting new tech	availability of appropriate premises	access to overseas markets	growth of market demand	increasing competition
<£5m	%	23.9	18.6	23.9	21.5	29.5	9.3	9.9	13.8	8.2	30.0	34.3
	N	*948*	*948*	*948*	*948*	*948*	*948*	*947*	*947*	*947*	*947*	*948*
>=£5m	%	19.4	15.0	21.1	25.3	24.3	5.4	8.1	8.6	7.9	29.7	37.1
	N	*407*	*407*	*407*	*407*	*407*	*407*	*407*	*407*	*407*	*407*	*407*
Total	%	22.6	17.5	23.1	22.7	28.0	8.1	9.4	12.3	8.1	29.9	35.1
	N	*1355*	*1355*	*1355*	*1355*	*1355*	*1355*	*1354*	*1354*	*1354*	*1354*	*1355*
		*				**	**		**			

Significant at 5% (**); 10% (*)

Table 22a Growth objectives by size class

Analysis Size classes (employees)		Smaller	Same size	Moderate growth	Substantial growth	Total
Micro	%	6.5	35.0	50.0	8.5	100.0
	N					*726*
Small	%	4.0	14.8	61.7	19.6	100.0
	N					*1033*
Medium	%	2.2	7.1	59.6	31.1	100.0
	N					*322*
Total	%	4.6	20.7	57.3	17.5	
	N					*2081*
		**				

Significant between small and medium size at 5% (**); 10% (*)

Table 22b Growth objectives by age

Analysis Size classes (Age)		Smaller	Same size	Moderate growth	Substantial growth	Total
Older	%	4.1	15.0	64.4	16.6	100.0
	N					*983*
Newer	%	1.9	7.4	53.0	37.6	100.0
	N					*364*
Total	%	3.5	12.9	61.3	22.3	100.0
	N					*1347*
		**				

Significant at 5% (**); 10% (*)

Table 22c Growth objectives by Turnover of Company

Analysis Size classes (Turnover)		Smaller	Same size	Moderate growth	Substantial growth	Total
<£5m	%	4.3	15.2	62.4	18.1	100.0
	N					*951*
>=£5m	%	1.7	7.7	58.4	32.2	100.0
	N					*404*
Total	%	3.5	13.0	61.2	22.3	100.0
	N					*1355*
		**				

Significant at 5% (**); 10% (*)

Table 23a Advice source: (% of firms using source) by size class

Analysis Size classes (employees)		accountant	solicitor	bank	business friend/ relative	customers	suppliers	consultants	venture capitalist	business angel/ private individual	local Chamber of Commerce
Micro	%	77.2	30.5	51.3	45.2	53.0	38.1	15.5	1.2	4.9	12.6
	N	*491*	*491*	*491*	*491*	*491*	*491*	*491*	*492*	*491*	*491*
Small	%	82.5	56.7	61.5	39.7	58.1	43.2	33.5	4.9	6.2	27.8
	N	*812*	*812*	*812*	*812*	*812*	*812*	*812*	*812*	*811*	*812*
Medium	%	79.9	73.8	64.2	40.1	64.9	49.5	47.0	14.3	9.0	28.0
	N	*279*	*279*	*279*	*279*	*279*	*279*	*279*	*279*	*279*	*279*
Total	%	80.4	51.6	58.8	41.5	57.7	42.7	30.3	5.4	6.3	23.1
	N	*1582*	*1582*	*1582*	*1582*	*1582*	*1582*	*1582*	*1583*	*1581*	*1582*
			**			**	*	**	**		

Significant between small and medium size at 5% (**); 10% (*)

Table 23a Advice source: (% of firms using source) by size class (continued)

Analysis Size classes (employees)		trade/prof assoc	Business Link/Shop/ Connect	local Enterprise Agency	Local Learning and Skills Council	Scottish Enterprise/ RDA
Micro	%	26.3	21.1	4.9	2.2	3.5
	N	*491*	*494*	*491*	*491*	*491*
Small	%	39.2	36.8	9.6	7.3	6.9
	N	*811*	*812*	*812*	*812*	*812*
Medium	%	43.4	36.2	9.3	11.5	11.8
	N	*279*	*279*	*279*	*279*	*279*
Total	%	35.9	31.8	8.1	6.4	6.7
	N	*1581*	*1585*	*1582*	*1582*	*1582*
					**	**

Significant between small and medium size at 5% (**); 10% (*)

Table 23b Advice source: (% of firms using source) by age

Analysis Size classes (Age)		accountant	solicitor	bank	business friend/ relative	customers	suppliers	consultants	venture capitalist	business angel/ private individual	local Chamber of Commerce
Older	%	81.2	58.6	59.6	37.5	57.9	45.5	34.0	5.1	4.8	29.7
	N	*789*	*789*	*789*	*789*	*789*	*789*	*789*	*789*	*788*	*789*
Newer	%	83.4	67.5	68.9	45.7	64.9	43.0	44.7	13.2	12.3	23.2
	N	*302*	*302*	*302*	*302*	*302*	*302*	*302*	*302*	*302*	*302*
Total	%	81.9	61.0	62.1	39.8	59.9	44.8	36.9	7.3	6.9	27.9
	N	*1091*	*1091*	*1091*	*1091*	*1091*	*1091*	*1091*	*1091*	*1090*	*1091*
			**	**	**	**		**	**	**	**

Significant at 5% (**); 10% (*)

Table 23b Advice source: (% of firms using source) by age (continued)

Analysis Size classes (Age)		trade/prof assoc	Business Link/Shop/ Connect	local Enterprise Agency	Local Learning and Skills Council	Scottish Enterprise/ RDA
Older	%	41.8	38.0	9.8	8.9	7.9
	N	*789*	*789*	*789*	*789*	*789*
Newer	%	36.2	33.1	8.9	7.0	8.9
	N	*301*	*302*	*302*	*302*	*302*
Total	%	40.3	36.7	9.5	8.3	8.2
	N	*1090*	*1091*	*1091*	*1091*	*1091*
		*				

Significant at 5% (**); 10% (*)

Table 23c Advice source: (% of firms using source) by Turnover of Company

Analysis Size classes (Turnover)		accountant	solicitor	bank	business friend/ relative	customers	suppliers	consultants	venture capitalist	business angel/ private individual	local Chamber of Commerce
<£5m	%	83.1	57.4	63.4	41.2	60.3	44.0	34.1	4.5	6.1	28.9
	N	*741*	*741*	*741*	*741*	*741*	*741*	*741*	*741*	*740*	*741*
>=£5m	%	79.1	68.9	59.4	36.9	58.9	46.6	42.9	13.4	8.6	25.7
	N	*350*	*350*	*350*	*350*	*350*	*350*	*350*	*350*	*350*	*350*
Total	%	81.9	61.0	62.1	39.8	59.9	44.8	36.9	7.3	6.9	27.9
	N	*1091*	*1091*	*1091*	*1091*	*1091*	*1091*	*1091*	*1091*	*1090*	*1091*
			**					**	**		

Significant at 5% (**); 10% (*)

Table 23c Advice source: (% of firms using source) by Turnover of Company (continued)

Analysis Size classes (Turnover)		trade/prof assoc	Business Link/Shop/ Connect	local Enterprise Agency	Local Learning and Skills Council	Scottish Enterprise/ RDA
<£5m	%	40.0	38.2	10.0	8.0	7.0
	N	*740*	*741*	*741*	*741*	*741*
>=£5m	%	40.9	33.4	8.6	9.1	10.6
	N	*350*	*350*	*350*	*350*	*350*
Total	%	40.3	36.7	9.5	8.3	8.2
	N	*1090*	*1091*	*1091*	*1091*	*1091*
						*

Significant at 5% (**); 10% (*)

Table 24a Source of advice which had the biggest impact by size class (significant sources only)

Analysis Size classes (employees)		Accountant	Solicitor	Business Link/Shop/ Connect	Venture capitalist	Total
Micro	%	35.7	2.7	4.8	0.0	
	N					*336*
Small	%	35.0	3.5	5.7	1.0	
	N					*628*
Medium	%	24.2	11.4	2.3	2.7	
	N					*219*
Total	%	33.2	4.7	4.8	1.0	
						1183
		**	**	**	*	

Significant between small and medium size at 5% (**); 10% (*)

Table 24b Source of advice which had the biggest impact by age (significant sources only)

Analysis Size classes (Age)		Accountant	Solicitor	Suppliers	Venture capitalist	Business angel/private individual	Total
Older	%	36.1	4.4	3.5	0.0	1.0	
	N						*595*
Newer	%	23.0	8.3	1.2	4.8	3.2	
	N						*252*
Total	%	32.2	5.5	2.8	1.4	1.7	
	N						*847*
		**	**	*	**	**	

Significant at 5% (**); 10% (*)

Table 24c Source of advice which had the biggest impact by Turnover of Company (significant sources only)

Analysis Size classes (Turnover)		Accountant	Solicitor	Customers	Business Link	Total
<£5m	%	35.3	3.2	14.8	5.8	
	N					*569*
>=£5m	%	25.9	10.4	21.2	2.9	
	N					*278*
Total	%	32.2	5.5	16.9	4.8	
	N					*847*
		**	**	**	*	

Significant at 5% (**); 10% (*)

A6. Finance

The final section covers attempts to obtain additional finance, and the reasons why no additional finance was sought, investment appraisal methods and merger activity.

Summary of findings:

- Significantly more larger and younger firms had all attempted to obtain external finance
- They also sought significantly higher amounts
- For those that had not sought external finance , sufficient internal cash flow was significantly more often given as a reason by larger firms
- Larger firms were more likely to use investment appraisal methods
- Larger and newer firms were significantly more likely to have merged in the previous 2 years
- And were also more likely to have been subjected to bid proposals

The sources of finance approached did not show any significant differences between the groups and are therefore not included here. Investment appraisal methods are also displayed, and the final set of tables cover merger activity and bid proposals.

Table 25a Seeking or not seeking finance by size class

Analysis Size classes (employees)		Attempted to obtain external finance? % of firms	IF YES, amount sought (mean £'000)	IF YES, percentage obtained (mean £'000)	Why additional finance not sought: internal cash flows sufficient	unwilling to dilute equity shareholding	cost of external too high	unwilling to increase borrowing risk
Micro	%	25.7	21.5	87.0	80.3	16.9	29.1	49.9
	N	*738*	*728*	*165*	*532*	*533*	*533*	*533*
Small	%	42.9	521.3	89.2	87.7	23.8	20.0	38.6
	N	*1040*	*1009*	*400*	*576*	*576*	*576*	*577*
Medium	%	55.4	1508.1	92.8	93.0	30.8	11.9	28.7
	N	*327*	*316*	*163*	*143*	*143*	*143*	*143*
Total	%	38.8	495.9	89.5	85.1	21.6	22.9	42.3
	N	*2105*	*2053*	*728*	*1251*	*1252*	*1252*	*1253*
		**	**	**	*	*	**	**

Significant between small and medium size at 5% (**); 10% (*)

Table 25b Seeking or not seeking finance by age

Analysis Size classes (Age)		Attempted to obtain external finance? % of firms	IF YES, amount sought (mean £'000)	IF YES, percentage obtained (mean £'000)	Why additional finance not sought: internal cash flows sufficient	unwilling to dilute equity shareholding	cost of external too high	unwilling to increase borrowing risk
Older	%	42.9	584.4	91.2	88.3	24.1	17.9	37.3
	N	*989*	*960*	*385*	*548*	*548*	*548*	*549*
Newer	%	54.1	1232.8	88.0	91.0	29.5	19.3	33.7
	N	*370*	*358*	*176*	*166*	*166*	*166*	*166*
Total	%	45.9	760.5	90.2	88.9	25.4	18.2	36.5
	N	*1359*	*1318*	*561*	*714*	*714*	*714*	*715*
		**	**					

Significant at 5% (**); 10% (*)

Table 25c Seeking or not seeking finance by Turnover of Company

Analysis Size classes (Turnover)		Attempted to obtain external finance? % of firms	IF YES, amount sought (mean £'000)	IF YES, percentage obtained (mean £'000)	Why additional finance not sought: internal cash flows sufficient	unwilling to dilute equity shareholding	cost of external too high	unwilling to increase borrowing risk
<£5m	%	43.1	324.0	89.7	87.1	24.0	20.3	40.0
	N	957	*933*	*373*	*526*	*526*	*526*	*527*
>=£5m	%	52.4	1786.3	91.3	93.3	28.5	13.0	27.5
	N	*410*	*190*	*190*	*193*	*193*	*193*	*193*
Total	%	45.9	756.6	90.2	88.7	25.2	18.4	36.7
	N	*1367*	*1325*	*563*	*719*	*719*	*719*	*720*
		**	**		**		**	**

Significant at 5% (**); 10% (*)

Table 26a Investment appraisal methods by size class

Analysis Size classes (employees)		Investment appraisal method: payback	discounted cash flow	Both appraisal methods
Micro	%	35.5	4.0	0.9
	N	*546*	*546*	*546*
Small	%	58.9	7.8	3.2
	N	*881*	*881*	*881*
Medium	%	71.8	12.0	7.6
	N	*291*	*291*	*291*
Total	%	53.7	7.3	3.2
	N	*1718*	*1718*	*1718*
		**	**	**

Significant between small and medium size at 5% (**); 10% (*)

Table 26b Investment appraisal methods by age

Analysis Size classes (Age)		Investment appraisal method: payback	discounted cash flow	Both appraisal methods
Older	%	63.5	7.3	3.7
	N	*854*	*854*	*854*
Newer	%	59.0	12.9	5.8
	N	*310*	*310*	*310*
Total	%	62.3	8.8	4.3
	N	*1164*	*1164*	*1164*
			**	

Significant at 5% (**); 10% (*)

Table 26c Investment appraisal methods by Turnover of Company

Analysis Size classes (Turnover)		Investment appraisal method: payback	discounted cash flow	Both appraisal methods
<£5m	%	59.3	6.2	2.4
	N	*805*	*805*	*805*
>=£5m	%	68.4	14.7	8.4
	N	*367*	*367*	*367*
Total	%	62.1	8.9	4.3
	N	*1172*	*1172*	*1172*
		**	**	**

Significant at 5% (**); 10% (*)

Table 27a Merger activity by size class

Analysis Size classes (employees)		% firms that have acquired/merged with other firms in last 2 years	Very significant or crucial merger factor: vertical integration	% of firms subjected to a bid proposal	Bid proposal from larger firm	Bid proposal from smaller size firm
Micro	%	2.6	21.1	9.2	7.4	0.4
	N	*725*	*19*	*718*	*718*	*718*
Small	%	9.7	29.3	21.6	17.7	1.3
	N	*1028*	*99*	*1013*	*1012*	*1012*
Medium	%	22.5	45.2	26.4	22.0	3.5
	N	*325*	*73*	*318*	*318*	*318*
Total	%	9.2	34.6	18.0	14.7	1.3
	N	*2078*	*191*	*2049*	*2048*	*2048*
		**	**	*	*	**

Significant between small and medium size at 5% (**); 10% (*)

Table 27b Merger activity by age

Analysis Size classes (Age)		% firms that have acquired/merged with other firms in last 2 years	Very significant or crucial merger factor: vertical integration	% of firms subjected to a bid proposal	Bid proposal from larger firm	Bid proposal from smaller size firm
Older	%	11.8	34.8	20.7	16.8	1.4
	N	*979*	*115*	*963*	*962*	*962*
Newer	%	15.3	37.5	28.6	23.9	3.1
	N	*367*	*56*	*360*	*360*	*360*
Total	%	12.8	35.7	22.8	18.8	1.8
	N	*1346*	*171*	*1323*	*1322*	*1322*
		*		**	**	*

Significant at 5% (**); 10% (*)

Table 27c Merger activity by Turnover of Company

Analysis Size classes (Turnover)		% firms that have acquired/merged with other firms in last 2 years	Very significant or crucial merger factor: vertical integration	% of firms subjected to a bid proposal	Bid proposal from larger firm	Bid proposal from smaller size firm
<£5m	%	9.2	33.7	20.3	16.0	1.6
	N	*945*	*86*	*930*	*929*	*929*
>=£5m	%	21.1	38.4	28.4	24.9	2.2
	N	*408*	*86*	*401*	*401*	*401*
Total	%	12.8	36.0	22.8	18.7	1.8
	N	*1353*	*172*	*1331*	*1330*	*1330*
		**		**	**	

Significant at 5% (**); 10% (*)

B. Factor Analysis and Cluster Analysis

B.1 Factor Analysis

Factor analysis is conducted at this stage to identify the characterising factors of the CBR 2002 dataset. The aim of this analysis is to identify some combinations of variables which capture the principal features of the dataset and best explain the data variations The analysis is concentrated on companies with more than 10 employees (small and medium companies).

B.1.1 Identifying Related Variables

Based on the analysis done in section A, the predictive variables identified in earlier work by DTI and the discrimination analysis run by ourselves, we identify several variables which are closely correlated with the size classifications, and treat them as the inputs of the factor analysis. These variables can be classified into 5 groups:

- **Board structure**:
    - Total number of board directors,
    - Total number of board meetings,
- **Shareholder:**
    - Percentage of shares owned by the Chief Executive,
    - Percentage of shares owned by the Whole Board of directors,
    - Percentage of shares owned by the largest single shareholder,
    - The type of the largest single shareholder (the chief executive, another director, or a non-board individual)
- **Management structure**:
    - Informal or formalised management structure,
    - The Chief Executive's/Managing Partner's/Proprietor's involvement in decision-making.
- **Market**:
    - The share of sales due to the largest customer,
    - The share of sales due to the top 5 customers
- **Collaboration**:
    - Has the firm entered into partnership arrangements?

B.1.2 Principal Component Factor Analysis

Initial Factor Analysis

Principal component factor analysis involves a mathematical procedure that transforms a number of (possibly) correlated variables into a (smaller) number of uncorrelated variables called *principal components*. Linear combinations of variables are estimated which explain the maximum amount of variance in the variables. The first component accounts for the most variance in the variables. Then the second component accounts for the most variance in the variables residualized for the first component, and so on. It transforms a collection of measured variables into a set of orthogonal maximum variance linear combinations.

The initial analysis is presented in the following table, the first five factors of which explain 60% of the variance.

Table 28: Principal Component Factors

Factor	Eigenvalue	Difference	Proportion	Cumulative
1	2.59774	0.93551	0.1998	0.1998
2	1.66224	0.33374	0.1279	0.3277
3	1.3285	0.13782	0.1022	0.4299
4	1.19068	0.08231	0.0916	0.5215
5	1.10838	0.12917	0.0853	0.6067
6	0.9792	0.07088	0.0753	0.6821
7	0.90832	0.08256	0.0699	0.7519
8	0.82576	0.04999	0.0635	0.8154
9	0.77577	0.0875	0.0597	0.8751
10	0.68827	0.29286	0.0529	0.9281
11	0.3954	0.05088	0.0304	0.9585
12	0.34452	0.1493	0.0265	0.985
13	0.19522	.	0.015	1

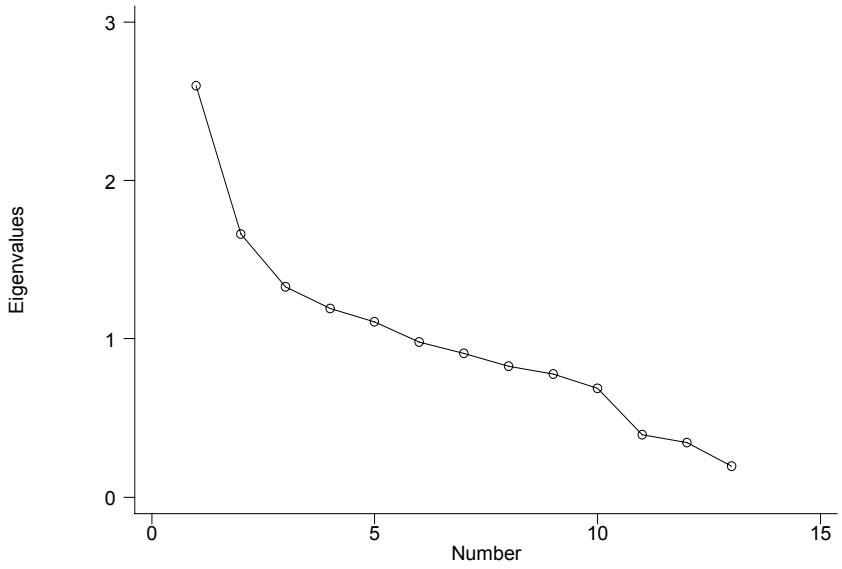
This result indicates that a single dimension cannot accommodate all the data variance.

How Many Factors to Retain

In order to decide how many factors to retain and extract, we apply the **scree test.** The scree test is a graphic method for determining the number of factors. The eigenvalues are plotted in the sequence of the principal factors. The number of factors is chosen where the plot levels off to a linear decreasing pattern. The figure below suggests a two-factor solution, since the eigenvalues begin a linear decline commencing with the third factor.

The following Scree Plot graph displays the eigenvalues obtained by factor analysis

Figure 1: Scree Plot



Based on the Scree test, various experiments we have done and the factors' economic meaning, we decided to retain the first four factors (though it could have been five if we had used eigenvalue greater than unity), which together explain more than 50% of the variance.

Factor Loading

Factor loading is a term used to refer to factor pattern coefficients or structure coefficient, which multiply with factors to produce measured variables according to the common factor model. And it represents the correlations between the variables and the new factors. Mathematically, it can be shown as below:

X_{ij}, the observation measured on case i for variable j, is assumed to be related to n underlying factors as follows:

$$X_{ij} = \sum_{k} F_{ik} P_{kj} + u_{ij} \qquad k = 1,..., n$$

where P_{kj} is the *pattern coefficient or factor loading* for variable j on factor F_k, F_{ik} is the value for case i on factor k, and u_{ij} is the unique component of X_{ij}.

The Factor Loadings of our factor analysis are shown in Table 29. Uniqueness measures the proportion of a variable's variance that is not covered by the factors – sales concentration is low because it is well covered by Factor 2.

Table 29: Factor Loadings

	Factor				
	1	2	3	4	Uniqueness
Total number of directors	-0.507	-0.067	0.458	-0.170	0.500
Total Number of Board Meetings	0.085	-0.015	-0.275	-0.267	0.845
% of shares owned by Chief Executive	0.872	-0.130	0.200	0.164	0.155
% of shares owned by whole Board of Directors	0.503	0.045	0.144	-0.489	0.485
% of shares owned by largest single shareholder	0.593	-0.140	0.065	0.570	0.300
Has the firm entered into partnership arrangements?	-0.209	0.121	0.599	0.117	0.569
CEO's Role in Management: Personal control of strategic and operating decision	0.165	-0.077	-0.588	-0.028	0.621
Percent of sales due to largest customer	0.159	0.884	-0.074	0.075	0.182
Percent of sales due to top 5 customers	0.148	0.887	0.016	0.084	0.183
The largest shareholder: Chief Executive	0.673	-0.115	0.271	-0.090	0.453
The largest shareholder: another director	-0.445	0.021	-0.306	0.163	0.681
The Largest shareholder: non-board individual	-0.417	-0.031	0.184	0.533	0.507
Informal Management Structure	0.157	-0.122	-0.259	0.391	0.740

Rotation of Factors

Rotation of factors is a transformation of the principal factors or components in order to approximate a simple structure.

The rotated factor loadings are shown in Table 30:

Table 30: Rotated Factor Loadings (varimax rotation)

Variable	1	2	3	4	Uniqueness
Total number of directors	-0.382	-0.177	*0.568	0.019	0.500
Total Number of Board Meetings	-0.110	-0.020	*-0.288	-0.243	0.845
% of shares owned by Chief Executive	*0.882	0.014	-0.046	-0.255	0.155
% of shares owned by whole Board of Directors	0.238	0.063	0.010	*-0.674	0.485
% of shares owned by largest single shareholder	*0.793	0.010	-0.103	0.245	0.300
Has the firm entered into partnership arrangements?	0.000	0.078	*0.640	0.122	0.569
Personal control of strategic and operating decision	-0.003	-0.032	*-0.615	-0.026	0.621
Percent of sales due to largest customer	0.000	*0.903	-0.046	-0.023	0.182
Percent of sales due to top 5 customers	0.017	*0.902	0.044	-0.021	0.183
The Largest Shareholder: Chief Executive	*0.616	-0.030	0.076	-0.402	0.453
The largest shareholder: another director	-0.383	-0.019	-0.176	0.375	0.681
The Largest shareholder: non-board individual	-0.067	-0.043	0.284	*0.637	0.507
Informal Management Structure	0.263	-0.045	-0.300	0.314	0.740

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Factor Scores

Factor is linear combinations of variables; the coefficient of each variable is the cases' scoring coefficient on the factors or components.

Table 31: Scoring Coefficients

Variable	1	2	3	4
Total number of directors	-0.138	-0.097	0.380	-0.081
Total Number of Board Meetings	-0.120	-0.020	-0.209	-0.190
% of shares owned by Chief Executive	0.395	-0.017	0.051	-0.039
% of shares owned by whole Board of Directors	0.005	0.008	0.056	-0.464
% of shares owned by largest single shareholder	0.431	0.001	-0.019	0.324
Has the firm entered into partnership arrangements?	0.073	0.054	0.460	0.068
Personal control of strategic and operating decision	-0.057	-0.022	-0.446	0.004
Percent of sales due to largest customer	-0.024	0.540	-0.029	0.019
Percent of sales due to top 5 customers	-0.008	0.540	0.037	0.019
The largest Shareholder: Chief Executive	0.247	-0.044	0.123	-0.202
The largest shareholder: another director	-0.143	0.009	-0.176	0.224
The largest shareholder: non-board individual	0.099	0.000	0.174	0.454
Informal Management Structure	0.161	-0.021	-0.209	0.292

These four factors can be identified as follow:

- **The CEO as the largest shareholder** (as expressed by shares owned Chief Executive, the chief executive as the largest shareholder, and the shares owned by the largest shareholder)
- **Market situation** (as expressed by percent of sales due to the largest customers, and percent of sales due to the top 5 customers)
- **Governance style** (as expressed by the number of directors, the number of board meetings, Chief executive's personal control of strategic and operating decisions, partnership arrangement, formal or informal management structure). In smaller, less formal, less professionalized structures board meetings and management committee meetings are often the same. In the middle market we are likely to find fewer board meetings, separated from management meetings.
- **Individual other than CEO as the largest shareholder** (as expressed by shares owned by the whole board member, shares owned by the largest shareholders, and non-board individual and other directors as the largest shareholder)

B.2 Cluster Analysis

Cluster Analysis is a multivariate statistical technique used in segmentation, in which cases are classified into homogenous groups such that cases in one cluster are as similar as possible to each other, and as different as possible from people in the other clusters.

Initial cluster Analysis

Based on the newly created factors, cluster analysis is conducted, and six clusters are constructed. It should be remembered that this analysis is being performed only for small and medium sized businesses – micro businesses are excluded.

Table 32: Number of Cases in each Cluster

Cluster	1	159	14.5%
	2	264	24.0%
	3	215	19.6%
	4	131	11.9%
	5	120	10.9%
	6	209	19.0%
Valid		1098	100.0%
Missing		116	

The position of the cluster centres is shown in Figure 3 and Figure 4

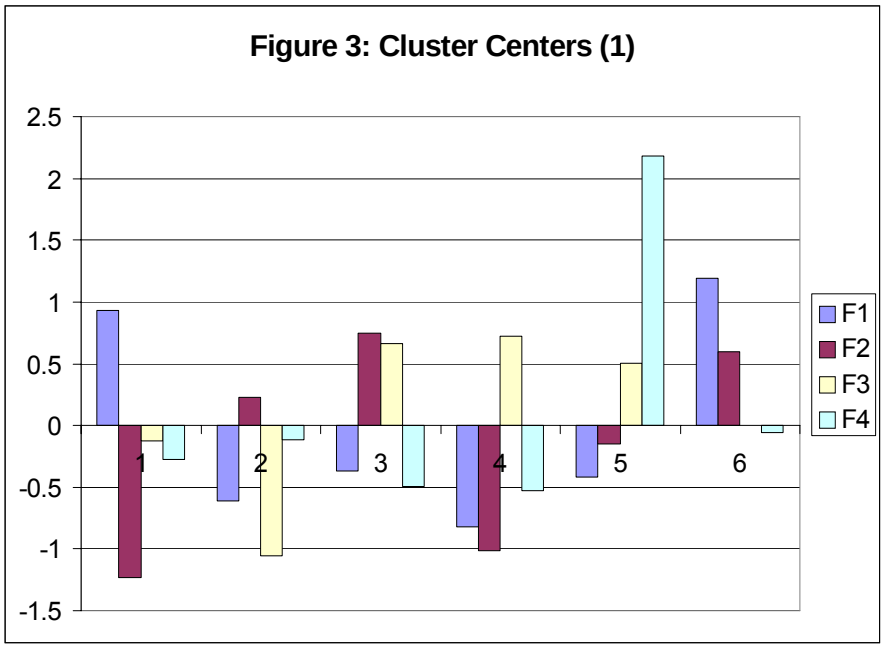
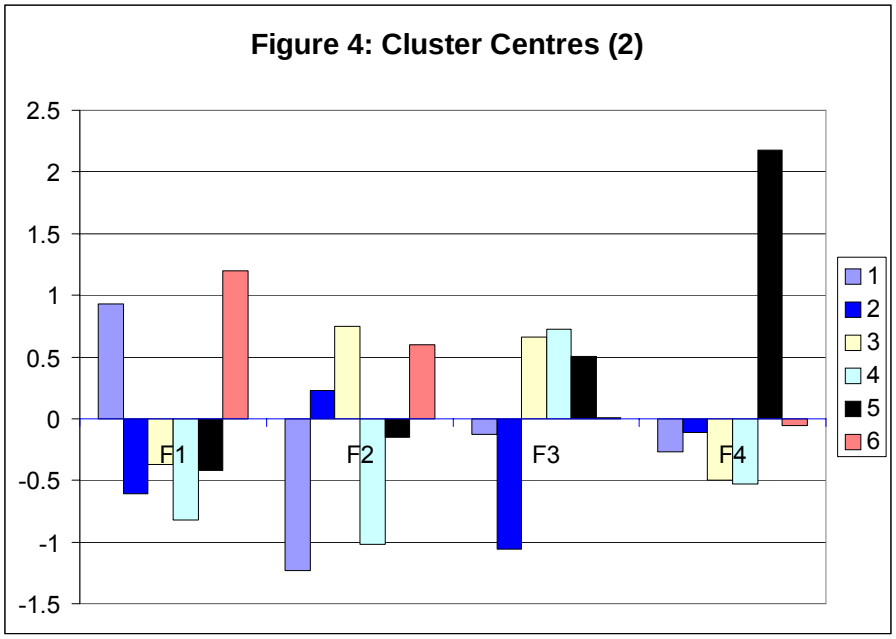


Figure 4: Cluster Centres (2)



As we can see that the fourth factor, the other than CEO individual as the largest shareholder, best discriminate cluster 5. But all the other clusters have to be discriminated by the combination of at least two factors.

Cluster Characteristics

The key discriminates for each cluster are shown in Table 33: with ++ represents the positive dimension of the corresponding factor, and -- represents the negative dimension of the corresponding factor.

Table 33: Cluster Characteristics

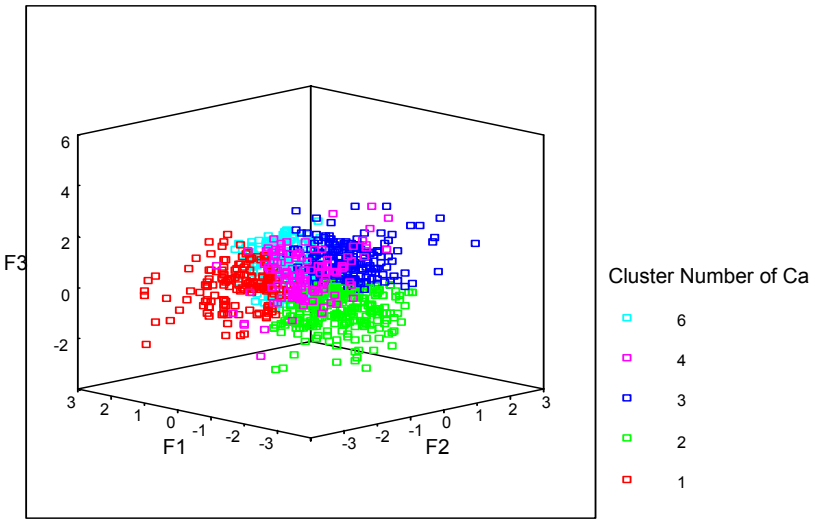
Cluster Number	Percentage of Companies	CEO as the largest Shareholder	Market Situation	Governance Style	Other individual as the largest shareholder
1	14.5%	++	--		
2	24.0%	--		--	
3	19.6%		++	++	
4	11.9%	--	--	++	
5	10.9%				++
6	19.0%	++	++		

We may notice that:

- **For companies in cluster 1 and cluster 6, they are generally managed by owner or the largest shareholder.**
- **For companies in Cluster 5, CEOs are generally not the largest shareholder or owner.**
- **Companies in Cluster 4 and 3 are both characterised by good governance style. But companies in cluster 3 rely more on large customers, while companies in cluster 4 rely on neither large customers nor large shareholders as their CEOs.**

As the cluster 5 is best distinguished by factor 4, we just plot cluster 1,2,3,4,6 on factor 1,2,3

Figure 5: Distribution of Clusters (except cluster 5) on F1, F2, F3



Cluster and Size Classification

In order to see whether the newly generated clusters coincide with the size classification in CBR 2000 dataset, we cross-tabulate turnover, employment and cluster number and employment size. The result is shown in the following table:

Table 34: Turnover, Employment and Labour Productivity by Cluster and Employment Size

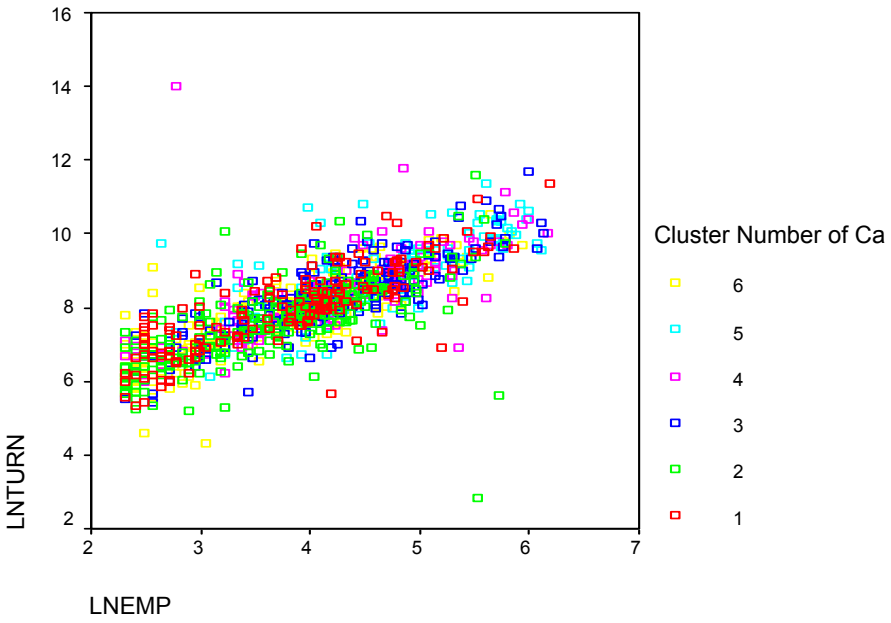
Cluster Number	Employment Category	Number of Firms	Turnover		Employment		Productivity
			Sum	Mean	Sum	Mean	
			1	2	3	4	1/3
	10-99	126	389,182	3,089	4,845	38	80
1	100-499	33	489,115	14,822	5,863	178	83
	Total	159	878,297	5,524	10,708	67	82
	10-99	235	611,639	2,603	9,614	41	64
2	100-499	29	345,801	11,924	5,027	173	69
	Total	264	957,440	3,627	14,641	55	65
	10-99	152	562,781	3,703	7,619	50	74
3	100-499	63	883,607	14,026	11,441	182	77
	Total	215	1,446,388	6,727	19,060	89	76
	10-99	76	1,442,467	18,980	3,439	45	419
4	100-499	55	771,679	14,031	9,977	181	77
	Total	131	2,214,146	16,902	13,416	102	165
	10-99	55	344,745	6,268	3,018	55	114
5	100-499	65	1,063,553	16,362	13,630	210	78
	Total	120	1,408,298	12,399	16,648	120	85
	10-99	168	470,277	2,799	7,075	42	66
6	100-499	41	353,803	8,629	6,439	157	55
	Total	209	824,080	3,943	13,514	65	61
Total		1214	8,279,464	6,820	95,882	79	86

We may notice from this table that:

- Most of the owner-managed companies in cluster 1 are small companies, but they have relative higher productivity.
- Companies in cluster 2 and 6 are generally smaller in terms of turnover, employment and labour productivity compared with their counterparts in the corresponding size band.
- Companies in cluster 4, characterising by good governance style, have the largest mean turnover and the highest productivity.
- For companies in cluster 3, they are bigger in terms of employment and turnover, but they are still relying on large customers.

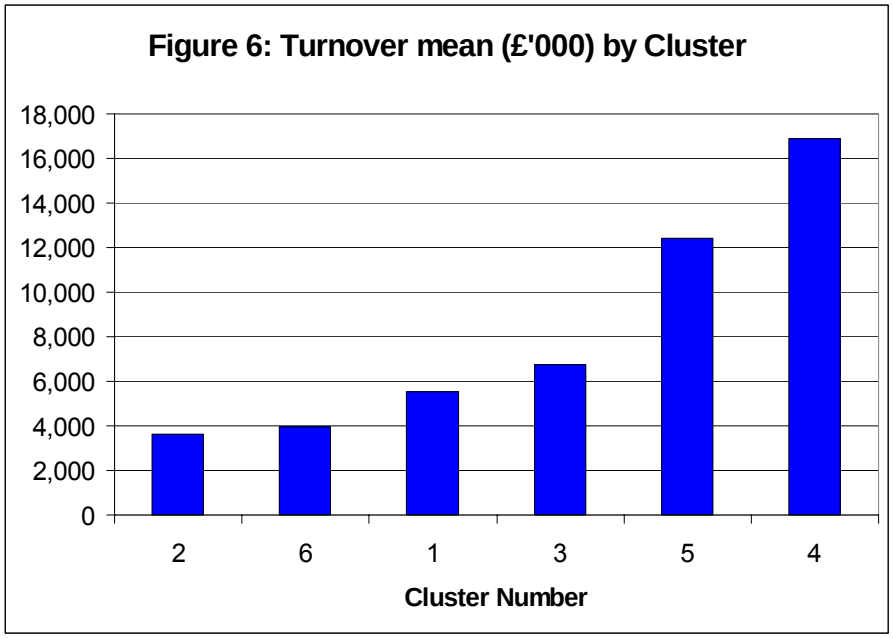
- We may also notice the relatively lower labour productivity of medium companies in cluster 4 and 5 compared with their smaller counterparts in the same cluster.
- However, there is no clear-cut coincidence between size classification and clusters.

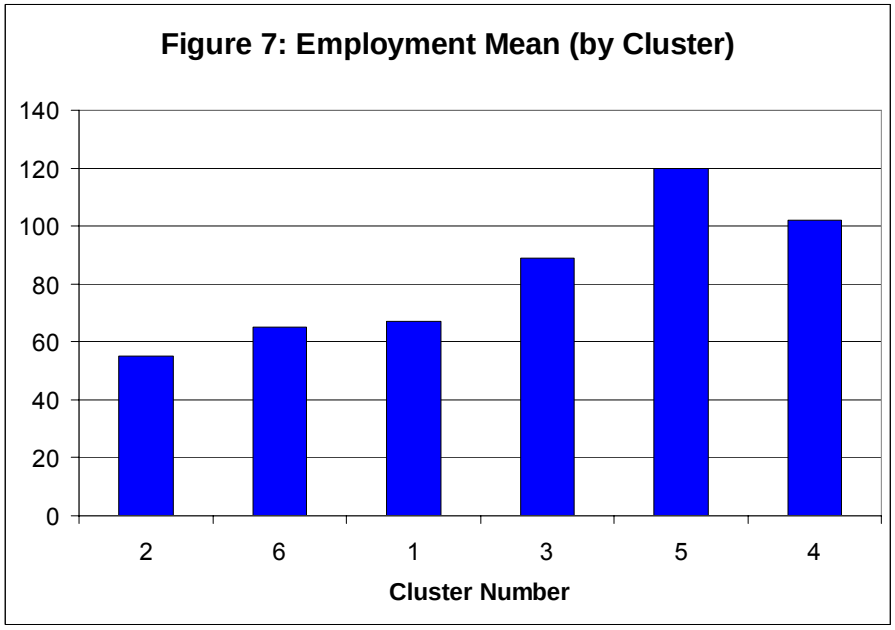
Figure 5: Clusters Plotted Against Turnover and Employment

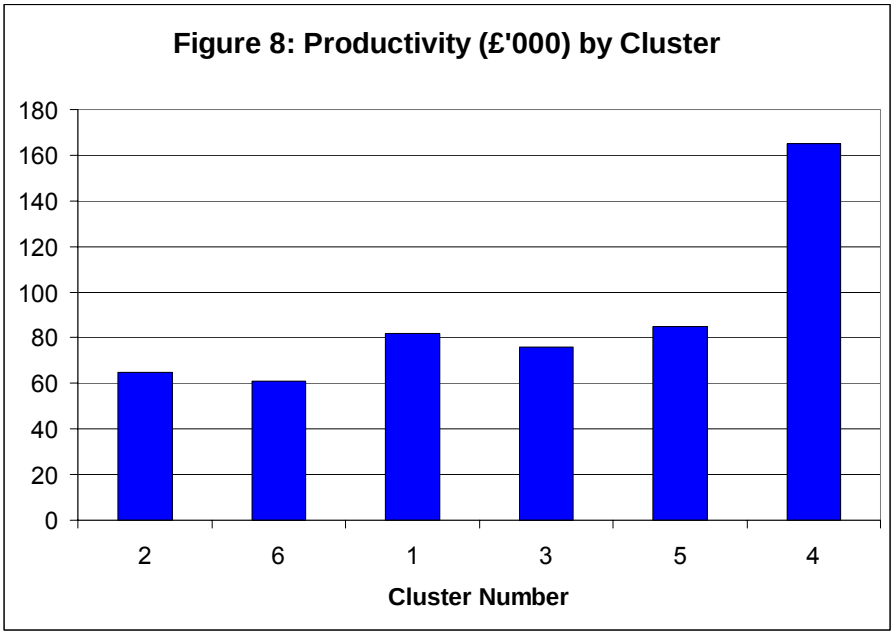


Cluster and Turnover, Employment and labour Productivity

In order to have a clearer picture of the size and the cluster relationship, we ordered the clusters by the mean turnover and plotted the graphs below:







We may notice from these graphs that:

- As companies grow in size, they do experience changes in their characterising features, changing from manager owned to good governance.

B.3 Summary

In this analysis, we first used factor analysis identifying 4 characterising factors of the dataset. These four factors can be identified as:

- **Owner or Larger shareholder managing**
- **Market situation**
- **Governance style**
- **Large share shareholder delegate management**

Based on the four factors thus identified, cluster analysis is conducted, and six clusters are constructed. We have noticed that:

- **Each cluster has its own characterising feature or features.**
- **As companies grow in size, they do experience changes in their characterising features, changing from manager owned to good governance.**
- **However, there is not clear-cut coincidence between size classification and clusters.**

C. Performance Analysis

The statistical analysis in this section will focus on:

- Summarizing the performance and Figure Z-related characteristics of identified clusters.
- Assessing the impact of the choice of one particular firm type on firm performance controlling for firm size, age and sector effects.

C.1 Performance and characteristics of clusters

This section summarises the average performance and characteristics of identified clusters.

Table 35 reports the average **firm performance** of the 6 clusters.

- Cluster 5 (owner-directed) has the largest size in terms of both turnover and number of employees and the highest average labour productivity.
- Cluster 1 (owner-managed) has the highest employment growth, sales growth, export growth and return to sales. Firms in this cluster are the most dynamic.

Table 35. Performance of clusters

	Cluster1	Cluster2	Cluster3	Cluster4	Cluster5	Cluster6
Turnover (latest) (£th)	5778	3861	6987	8255[1]	**12141**	4162
Average number of full-time employees	60	48	82	93	**132**	58
EMPLOYMENT growth %	**1.67**	1.16	1.40	1.39	1.33	1.16
Growth of sales %	**2.61**	1.29	1.85	1.81	1.59	1.39
Export growth %	**11.62**	2.41	2.70	2.04	1.78	1.65
Return to sales	**0.09**	0.08	0.07	-0.02	-0.01	0.07
Turnover per employee	90.54	79.94	80.39	85.84[1]	**109.82**	78.68

Note: An outlier in cluster 4 whose turnover reports to be £1,200,000 thousand and labour productivity to be £75,000 thousand per employee is excluded.

Labour-related characteristics of the clusters are presented in Figure 9.

- Cluster 3 feels the most limitation in management and marketing skills. It also has the highest rate of labour turnover and, together with cluster 5, spends the highest rate of labour costs in training.
- Cluster 2 has the highest casual to full-time worker ratio.

- There is no significant difference in the average percentage of managerial staff in total employees across the clusters. There is no significance difference in the percentage of firms implementing Investors in People either.

Figure 9.

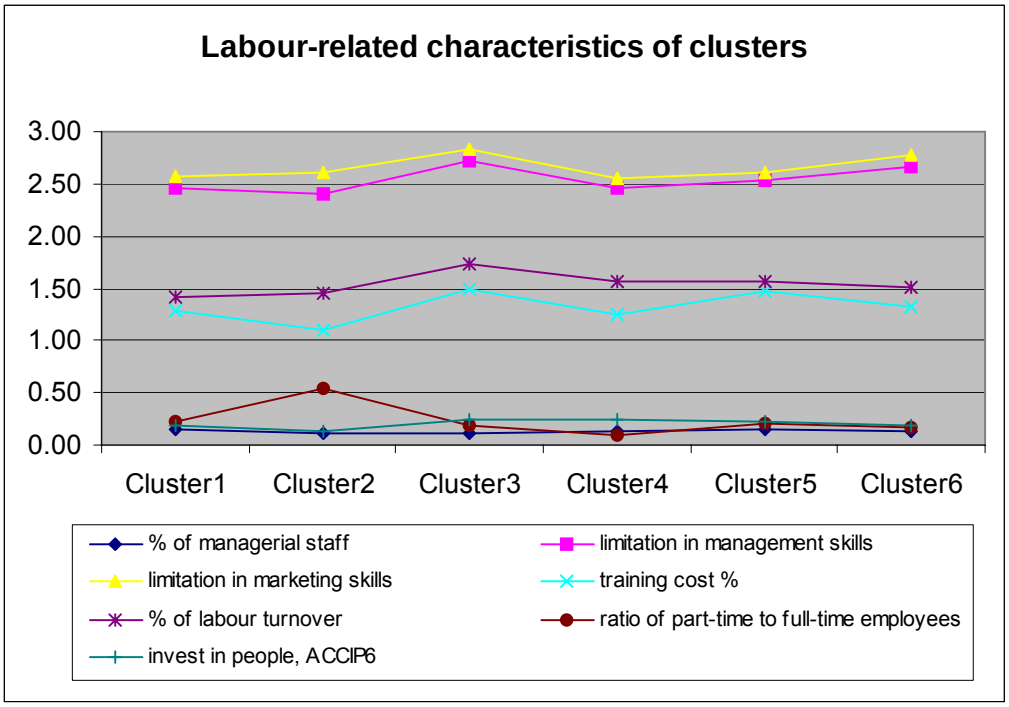
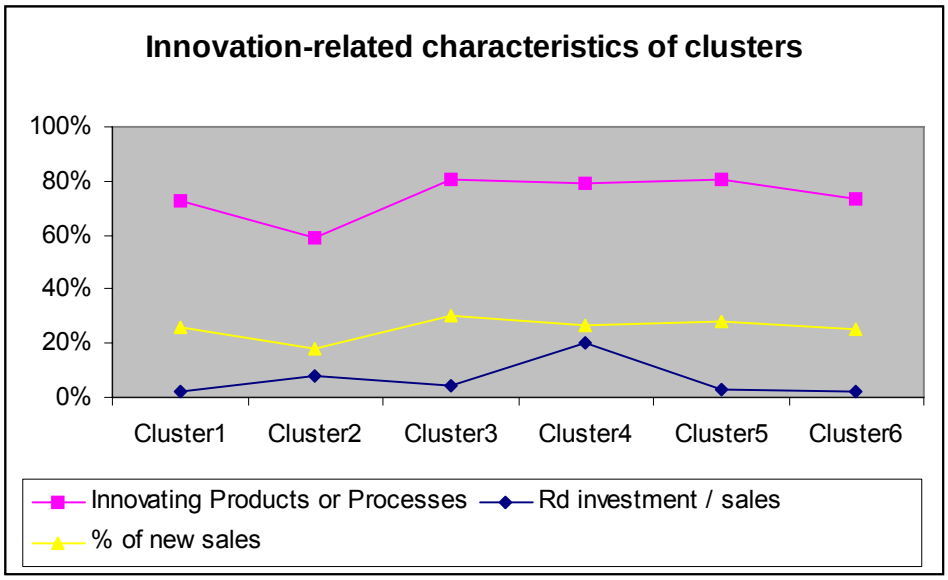


Figure 10 shows the **innovation-related characteristics** of the 6 clusters.

- Clusters 3 and 5 have the highest proportion of innovators and percentage of new sales.
- Cluster 2 has the least achievement in these two aspects.
- Cluster 4 has the highest R&D expenditure to total sales ratio, while clusters 1, 6 and 5 invest the smallest proportion of total sales in innovation.

Figure 10



Financial characteristics of clusters are presented in Figure 11.

- More than 50 percent of the firms in clusters 4, 5 and 6 have made attempts to obtain external finance in addition to internal cash flows. This percentage is the lowest in cluster 1 and 2 at around 35 percent.
- About 25 percent of firms in cluster 5 have used discounted cash flow method for financial appraisal, while this percentage for the other 5 clusters are at or below 10 percent.

Figure 11

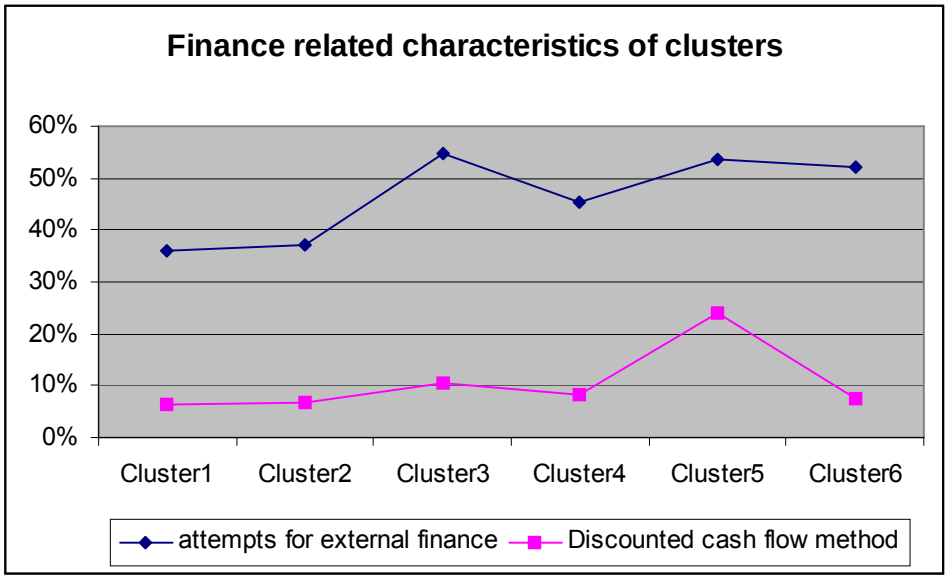


Table 36 reports the cluster characteristic in **sources of external advice**.

- Firms in cluster 3 are more likely to use the traditional advice sources. About 85 percent of them obtained advices form accountants, and 68 percent of them obtain advices from bank and customers. These ratios are all the highest in these three categories.
- Cluster 5 has the highest percentage of firms that obtain business advice form solicitors, consultants and venture capitalists. This cluster also has the highest percentage of firms that obtain advice from business angel and local learning and skills council.
- Cluster 6 has the highest percentage of firms that obtain business advice form accountants, friends, suppliers, local Chamber of Commerce, Business Link, and local enterprise agency.

Table 36. External advice-related characteristics of clusters

	Cluster1	Cluster2	Cluster3	Cluster4	Cluster5	Cluster6
Advice source:accountant	0.84	0.79	**0.85**	0.78	0.76	**0.85**
Advice source:solicitor	0.65	0.49	0.71	0.60	**0.74**	0.60
Advice source:bank	0.58	0.53	**0.68**	0.56	0.63	0.67
Advice source:business friend/relative	0.43	0.40	0.38	0.34	0.32	**0.44**
Advice source:customers	0.64	0.53	**0.68**	0.51	0.57	0.65
Advice source:suppliers	0.47	0.42	0.47	0.44	0.44	**0.49**
Advice source:consultants	0.30	0.28	0.40	0.37	**0.50**	0.43
Advice source:venture capitalist	0.05	0.02	0.07	0.08	**0.32**	0.04
Advice source:business angel/private individual	0.06	0.03	0.09	0.11	**0.14**	0.04
Advice source:local Chamber of Commerce	0.24	0.29	0.30	0.25	0.21	**0.31**
Advice source:trade/prof assoc	**0.43**	0.36	0.40	0.40	0.41	0.40
Advice source:Business Link/Shop/Connect	0.43	0.29	0.42	0.35	0.27	**0.46**
Advice source:local Enterprise Agency	0.09	0.08	0.09	0.10	0.07	**0.12**
Advice source:Local Learning and Skills Council	**0.11**	0.05	0.08	0.10	**0.11**	0.08
Advice source:Scottish Enterprise/Reg Development Agency	**0.11**	0.06	0.09	**0.11**	0.09	0.07

C.2 The impact of firm type on firm performance

What is the real relationship between firm type and business performance after the size, age and sector effects are controlled for? This section attempts to explore this issue.

C.2.1 Methodology

The impact of the choice of one particular firm type on firm performance could be statistically assessed by estimating a regression model as follows:

$$Z = \alpha + \lambda_1 CL_1 + \lambda_2 CL_2 + \lambda_3 CL_3 + \lambda_4 CL_4 + \lambda_5 CL_5 + \lambda_s SIZE + \delta_1 AGE + \delta_2 SEC + \delta_3 Z_{-1} + \mu$$

where Z is the firm performance and characteristics variables which enter the model alternatively, α is the constant term, and μ is the error term which has the normal property.
CL1 to CL5 are cluster dummies which represents cluster 1 to 5, respectively.
SIZE is firm size measured by the number of employees and turnover alternatively.
AGE is firm age, SEC is a vector of industry sector dummies included to control for industry specific effects.
Z_{-1} is previous performance which is only included in the prediction of growth variables. The later three variables are included as control variables.
Details of the definition of variables are described in Table 37.

If the choice of one particular firm type has an significant impact on firm performance, then we expect the estimated coefficient of the corresponding cluster dummy variable to show statistical significance. Given the existence of heteroskedasticity in firm-level data, White heteroskedasticity-consistent standard errors are used in estimation.

In order to test whether the impact of one particular firm type different from the other, a Wald test of restrictions imposed on parameters will be employed with the null hypothesis that the estimated coefficients of the cluster variables are equal to each other:

$$H0: \lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5$$

If the estimated Wald statistics is significant, then we reject the hull hypothesis and conclude that the impact of one particular firm type is different from the other.

Table 37. Definition of variables

EMPG	Employment growth %
SALEG	Sales growth %
R2S	Return to sales measured by net profits to total sales
Y_L	Labour productivity measured by sales per employee
SKILL_MG	Significance of limitation in management skills, range form 1-5.
TRAINC	% of training investment in total labour costs
RDS	R&D expenditure to total sales ratio
NEWSAL	% of new product sales
FINANCE	Dummy variable for attempt for external finance, 1=yes
DCF	Dummy variable for use of discounted cash flow method for appraisal, 1=yes
Accountant	Dummy for use of accountant for advice, 1=yes
Bank	Dummy for use of bank for advice, 1=yes
Solicitor	Dummy for use of solicitor for advice, 1=yes
Consultant	Dummy for use of consultant for advice, 1=yes
SIZE_L	Firm Size measured by number of employees
SIZE_Y	Firm size measured by value of sales
SIZE_D	Firm size dummy, 1=firm with number of employees range from 100-499
EMP_{-1}	Previous employment level
$TURN_{-1}$	Previous sales level

C.2.2 Results

C.2.2.1 Firm performance

Table 38 reports the estimated results of the impact of firm type on business performance. Controlling for firm size, age and sectoral specific effects, cluster 2 and 3 exerts significant positive effect on employment growth; cluster 4 shows significant positive effect on sales growth. The Wald statistics suggest that the estimated coefficients of these cluster dummies are significantly different from each other.

Cluster 1 reveals positive impact on return to sales, but is only significant at the 10 percent level, and the Wald statistics suggests that this effect is not significantly different from those of other cluster dummies. Cluster 5 shows significant positive effect on labour productivity. The Wald statistics indicates that labour productivity of Cluster 5 is significantly higher than that of other clusters.

Firm size, measured by either number of employees or value of sales or size dummy, still shows significant impact on firm performance even the firm-type effect has been controlled for.

C.2.2.2 Labour skills

Table 39 reports the estimation results of the impact of firm type on labour skills. The estimated coefficients of clusters 1, 2, 4 and 5 are all negative and statistically significant for the management-skills-constraint equation. This suggests that limitations in management skills in these clusters are significantly lower than that of the base cluster, cluster 6.

However, there appears no significant cluster effect on training cost, whilst in this case the two firm size variables show statistically significant effects. The larger the firm size, the larger the training cost.

C.2.2.3 Innovation activities

Firm type does not present any significant effect on either R&D intensity or innovation achievement proxied by new sales percentage. However, firm size, particularly measured by value of total sales, exerts statistically significant positive effects, although the magnitude of the estimated coefficients are very small (Table 40).

C.2.2.4 Financial characteristics

Table 41 reports the estimation results of the association between firm type and financial characteristics. There is significant firm-type effect on the attempt to seek external finance. Controlling for firm size, age and sector effects, firms in clusters 1 and 2 are significantly less likely to seek external finance than the base cluster, cluster 6. However, there is no significant difference in the use of Discount Cash Flow method for appraisal among the clusters.

C.2.2.5 External advice

Table 42 reports the estimation results of the association between firm type and the sources of external advice. There are some cluster effects in the choice of external advices for the selected advice sources. Clusters 2 and 4 are significantly less likely to use accountants and banks as advice sources than cluster 6. Cluster 5 is significantly more likely to use solicitors as advice source, but cluster 4 is significantly less likely to use consultants as advisor than cluster 6.

We note that firm size, mainly measured by the value of total sales exerts significant positive effect on all the four sources suggesting the larger the firm size, the more likely to use external advice.

C.3 Conclusions

The six clusters show considerable difference in their performances and most of the analysed characteristics. In respect of production scale and labour productivity, cluster 5 has the highest scores. In respect of growth performance and profitability, firms in cluster 1 have the best performance. They appear to be the most dynamic group among all the SMEs.

Controlling for firm size, age and sector specific effects, the statistical significance of the impact of firm type on firm performance and characteristics is mixed.

- There is significant firm-type effect on employment growth, sales growth and labour productivity, but not on returns to sales.
- There are significant differences among the clusters in management skills constraints, the attempts to seek external finance, and the sources of external advice.
- There is no significant difference among the clusters in training investment, R&D intensity, innovation output, and the use of investment appraisal methods.

Table 38. Firm type and business performance

	EMPG		SALEG		R2S		Y_L		EMPG		SALEG		R2S	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	2.530***	0.000	0.961***	0.004	-0.178	0.807	71.882***	0.000	2.307***	0.001	1.023***	0.001	-0.184	0.801
CL1	0.576	0.327	1.327	0.194	0.030*	0.075	13.748	0.179	0.528	0.381	1.293	0.199	0.029*	0.080
CL2	0.137*	0.073	0.086	0.534	0.006	0.783	2.376	0.795	0.079	0.325	0.074	0.542	0.008	0.701
CL3	0.234**	0.045	0.531	0.367	0.011	0.759	3.031	0.748	0.332**	0.022	0.668	0.264	0.003	0.921
CL4	0.200	0.110	0.604*	0.072	-0.072	0.406	7.258	0.516	0.369**	0.037	0.688**	0.038	-0.082	0.368
CL5	0.102	0.439	0.251	0.339	-0.044	0.423	33.627***	0.003	0.352*	0.080	0.293	0.296	-0.063	0.259
SIZE_L	0.015***	0.003	0.006**	0.025	0.000*	0.060								
SIZE_Y									0.000**	0.010	0.000***	0.003	0.000	0.983
SIZE_D[1]							-11.986*	0.090						
AGE	-0.003	0.159	-0.012**	0.037	0.000	0.499	-0.059	0.465	-0.005*	0.064	-0.010*	0.059	0.000	0.517
EMP_{-1}	-0.016***	0.006							-0.006***	0.007				
$TURN_{-1}$			0.000*	0.055							0.000***	0.006		
Adjusted R-squared	0.052		0.005		0.019		0.021		0.022		0.028		0.017	
Wald (F-statistic)	3.591***		6.398***		1.417		3.781***		3.851***		8.736***		1.546	
No. observations	956		941		931		1025		941		946		936	

Note: 1. SIZE_D is a firm size dummy which equals to 1 for firms with numbers of employees range from 100 to 499, and 0 for those whose numbers of employees are below 100.

2. Results of sector dummies are not reported.

3. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table 39. Firm type and labour skills

	SKILL_MG		TRAINC		SKILL_MG		TRAINC	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	2.717***	0.000	1.087***	0.000	2.755***	0.000	1.113***	0.000
CL1	-0.222*	0.092	0.031	0.850	-0.225*	0.091	0.027	0.870
CL2	-0.242**	0.029	-0.104	0.484	-0.269**	0.017	-0.111	0.470
CL3	-0.060	0.590	0.095	0.545	0.019	0.866	0.154	0.323
CL4	-0.305**	0.026	-0.214	0.240	-0.215	0.123	-0.125	0.496
CL5	-0.367***	0.007	-0.049	0.786	-0.204	0.124	0.142	0.435
SIZE_L	0.003***	0.000	0.003***	0.000				
SIZE_Y					0.000	0.094*	0.000**	0.012
AGE	-0.001	0.493	-0.001	0.326	0.000	0.914	-0.001	0.579
Adjusted R-squared	0.027		0.037		0.003		0.020	
Wald (F-statistic)	23.210***		3.567***		24.911***		3.527***	
No. observations	1034		1005		1016		986	

Note: Results of sector dummies are not reported.
*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table 40. Firm type and innovation activities

	RDS		NEWSAL		RDS		NEWSAL	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	0.910	0.167	23.016**	0.012	0.935	0.159	23.239**	0.011
CL1	-0.029	0.253	1.028	0.754	-0.026	0.286	1.577	0.638
CL2	0.092	0.275	-4.471	0.106	0.086	0.286	-4.398	0.120
CL3	-0.016	0.596	4.105	0.183	0.016	0.383	4.706	0.127
CL4	0.138	0.306	2.088	0.582	0.197	0.178	1.985	0.590
CL5	-0.090	0.194	1.767	0.628	0.011	0.618	3.339	0.342
SIZE_L	0.001	0.169	0.024*	0.092				
SIZE_Y					0.000*	0.099	0.000**	0.024
AGE	-0.001*	0.088	-0.049**	0.024	-0.001*	0.071	-0.057**	0.033
Adjusted R-squared	0.042		0.072		0.031		0.072	
Wald (F-statistic)	1.075		4.021***		1.156		4.299***	
No. observations	933		950		924		940	

Note: Results of sector dummies are not reported.
*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table 41. Firm type and financial characteristics

	External Finance		DCF		External Finance		DFC	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	0.530***	0.000	0.147	0.150	0.539***	0.000	0.148	0.142
CL1	-0.169***	0.001	-0.017	0.553	-0.156***	0.004	-0.008	0.785
CL2	-0.138***	0.004	0.003	0.905	-0.137***	0.005	0.003	0.901
CL3	-0.021	0.675	0.021	0.500	0.017	0.736	0.030	0.322
CL4	-0.089	0.126	-0.007	0.838	-0.041	0.495	0.001	0.985
CL5	-0.063	0.309	0.145***	0.003	0.012	0.848	0.155***	0.001
SIZE_L	0.001***	0.000	0.000	0.271				
SIZE_Y					0.000	0.526	0.000	0.638
AGE	-0.001***	0.001	0.000***	0.003	-0.001***	0.002	-0.001***	0.004
Adjusted R-squared	0.039		0.037		0.028		0.034	
Wald (F-statistic)	7.458***		0.761		8.860***		0.766	
No. observations	1041		911		1023		902	

Note: Results of sector dummies are not reported.
*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table 42. Firm type and uses of external advice

	Accountant		Bank		Solicitor		Consultant		Accountant		Bank		Solicitor		Consultant	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	0.786***	0.000	0.599***	0.000	0.555***	0.000	0.371***	0.003	0.788***	0.000	0.607***	0.000	0.574***	0.000	0.378***	0.002
CL1	-0.029	0.521	-0.082	0.154	0.051	0.376	-0.021	0.722	-0.035	0.430	-0.072	0.210	0.044	0.452	-0.031	0.596
CL2	-0.089*	0.054	-0.120**	0.030	-0.087	0.119	-0.050	0.373	-0.107**	0.018	-0.140**	0.011	-0.105*	0.063	-0.055	0.327
CL3	-0.005	0.909	0.013	0.812	0.084	0.117	-0.057	0.304	-0.012	0.773	0.017	0.740	0.099*	0.062	-0.068	0.220
CL4	-0.098*	0.091	-0.124*	0.064	-0.043	0.514	-0.109*	0.100	-0.079	0.137	-0.098	0.132	-0.018	0.780	-0.128**	0.045
CL5	-0.069	0.203	-0.024	0.706	0.101*	0.100	-0.104	0.104	-0.069	0.165	0.009	0.881	0.156***	0.007	-0.129**	0.033
SIZE_L	0.000	0.904	0.000	0.108	0.001***	0.000	0.000	0.386								
SIZE_Y									0.000***	0.000	0.000***	0.001	0.000***	0.003	0.000***	0.000
AGE	0.000	0.551	0.000	0.556	0.000	0.969	0.000	0.844	0.000	0.618	0.000	0.351	0.000	0.995	0.000	0.819
Adjusted R-squared	0.001		0.009		0.044		-0.008		0.007		0.010		0.029		-0.007	
Wald (F-statistic)	12.397***		7.32***		6.801***		2.674**		13.132***		7.882***		7.671***		3.017**	
No. observations	882		882		882		882		863		863		863		863	

Note: Results of sector dummies are not reported.

*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Appendix 1

Variable Name	Variable Description	Total sample :2130	Eligible to Answer	Missing (N)	%	Minimum	Maximum
Section A	**General Characteristics of the Business**						
YEAR6	Year the firm began trading		2130	35	1.6	1327	2002
TURN6	Turnover (latest) (£th)		2130	178	8.4	0	1200000
TURN6A	Turnover (3 years ago) (£th)		2130	398	18.7	0	150015
EXP6	Exports (latest) (£th)		2130	788	37.0	0	53286
EXP6A	Exports (3 years ago) (£th)		2130	908	42.6	0	93653
PROF6	Pre-tax profits/losses (latest) (£th)		2130	407	19.1	-34631	36112
PROF6A	Pre-tax profits/losses (3 years ago) (£th)		2130	583	27.4	-8370	21182
AVEMPP6	Average number of part-time employees (latest)		2130	99	4.6	0	490
AVEMPF6A	Average number of full-time employees (3 years ago)		2130	345	16.2	0	559
CSP61	CE/SP/Pr years with the firm		2130	53	2.5	0.5	70
CSP62	CE/SP/Pr years as CE/SP/Pr		2130	69	3.2	0	65
CSPAGE6	CE/SP/Pr age		2130	56	2.6	25	91
CSPGEN6	CE/SP/Pr gender		2130	39	1.8	1	2
INVDEC6	What's the CE/SP/Pr's role in decision-making?		2130	116	5.4	0	5
STRUC6	What is the management structure?		2130	107	5.0	0	6
BUSPL6	Does firm have business plan?		2130	25	1.2	0	1
HRPL6	Does firm have human resources plan?		2130	25	1.2	0	1
WEBTRD6	Does firm have web site for trading?		2130	23	1.1	0	1
CO6	What is the legal status of the firm?		2130	19	0.9	1	4
SHARE61	% of shares owned by Chief Executive		1550	190	12.3	0	100
SHARE62	% of shares owned by whole Board of Directors		1550	218	14.1	0	100
SHARE63	% of shares owned by largest single shareholder		1550	159	10.3	0	100
TYPE6	What type is the largest single shareholder?		1152	36	3.1	0	6
DIR6	Total number of directors		1152	20	1.7	0	28
MEET6	Number of board meetings per year		1152	84	7.3	0	999
EXTFND6	Seeking external finance has led to how many board appointments?		1152	46	4.0	0	8
SOPTSCM6	Is there an employee stock option scheme?		1152	16	1.4	0	1

Variable Name	Variable Description	Total sample :2130 Eligible to Answer	Missing (N)	Missing %	Minimum	Maximum
Section B	**Workforce and Training**					
TCOST6	Training costs as a proportion of labour costs	2130	130	6.1	0	5
LAB6	% rate of labour turnover	2130	134	6.3	0	5
ACCIP6	Is firm accredited by or implementing Investors in People?	2130	80	3.8	0	1
WKCH61	Change in type of workers employed:self-employed	2130	774	36.3	1	3
WKCH62	Change in type of workers employed:casual	2130	863	40.5	0	3
WKCH63	Change in type of workers employed:on fixed-term contracts	2130	887	41.6	1	3
WKCH64	Change in schemes used:total quality management	2130	812	38.1	1	3
WKCH65	Change in schemes used:quality circles	2130	949	44.6	1	3
WKCH66	Change in schemes used:job rotation/multi-skilling	2130	736	34.6	1	3
WKCH67	Change in schemes used:performance-related pay	2130	726	34.1	1	3
Section C	**Competitive Situation and Collaborative Ability**					
LARGEST6	Percent of sales due to largest customer	2130	121	5.7	1	5
TOP65	Percent of sales due to top 5 customers	2130	115	5.4	1	5
MARKET6	What is the geographical scope of the firm's largest market?	2130	12	0.6	1	4
PARTARR6	Has the firm entered into partnership arrangements?	2130	9	0.4	0	1
GOV601	Obtained assistance from:Teaching Company Scheme	592	15	2.5	0	1
GOV603	Obtained assistance from:Small Firms Training Loans	592	15	2.5	0	1
GOV604	Obtained assistance from:LINK	592	15	2.5	0	1
GOV605	Obtained assistance from:Regional Supply Offices	592	15	2.5	0	1
GOV606	Obtained assistance from:Export Credit Guarantees/Information Service	592	15	2.5	0	1
GOV610	Obtained assistance from:British Trade Intl/Trade Partners UK	592	15	2.5	0	1
GOV607	Obtained assistance from:Small Firms Loan Guarantee Scheme	592	15	2.5	0	1
GOV608	Obtained assistance from:Regional Selective Assistance/Enterprise Grants/RIN	592	15	2.5	0	1
GOV609	Obtained assistance from:SMART	592	15	2.5	0	1
GOV611	Obtained assistance from:other	592	15	2.5	0	1
OTHGOV6	Obtained assistance from:other (please specify)	39	13	33.3	1	2

Variable Name	Variable Description	Total sample :2130 Eligible to Answer	Missing (N)	%	Minimum	Maximum
GSAT601	Level of satisfaction:Teaching Company Scheme	54	16	29.6	1	4
GSAT603	Level of satisfaction:Small Firms Training Loans	24	15	62.5	1	4
GSAT604	Level of satisfaction:LINK	116	21	18.1	1	4
GSAT605	Level of satisfaction:Regional Supply Offices	30	17	56.7	1	4
GSAT606	Level of satisfaction:Export Credit Guarantees/Information Service	49	16	32.7	1	4
GSAT610	Level of satisfaction:British Trade Intl/Trade Partners UK	86	19	22.1	1	4
GSAT607	Level of satisfaction:Small Firms Loan Guarantee Scheme	38	17	44.7	1	4
GSAT608	Level of satisfaction:Regional Selective Assistance/Enterprise Grants/RIN	63	19	30.2	1	4
GSAT609	Level of satisfaction:SMART	40	16	40.0	1	4
GSAT611	Level of satisfaction:other	45	21	46.7	1	4

Section D **Innovation**

NEW611	Innov new to firm not industry:manuf product	2130	37	1.7	0	1
NEW612	Innov new to firm not industry:manuf production methods	2130	36	1.7	0	1
NEW613	Innov new to firm not industry:supply systems, manuf prod	2130	36	1.7	0	1
NEW614	Innov new to firm not industry:service product	2130	36	1.7	0	1
NEW615	Innov new to firm not industry:service production methods	2130	35	1.6	0	1
NEW621	Innov new to firm and industry:manuf product	2130	37	1.7	0	1
NEW622	Innov new to firm and industry:manuf production methods	2130	36	1.7	0	1
NEW623	Innov new to firm and industry:supply systems, manuf prod	2130	36	1.7	0	1
NEW624	Innov new to firm and industry:service product	2130	36	1.7	0	1
NEW625	Innov new to firm and industry:service production methods	2130	35	1.6	0	1
SALPC63	Sales distributed across:new products/services	2130	215	10.1	0	100
SRC601	Internal info sources:within the firm	2130	670	31.5	1	5
SRC602	Internal info sources:within the group (if subsid/assoc companies)	2130	673	31.6	1	5
SRC604	External info sources:suppliers	2130	670	31.5	1	5
SRC605	External info sources:customers	2130	670	31.5	1	5

Variable Name	Variable Description	Total sample :2130 Eligible to Answer	Missing (N)	%	Minimum	Maximum
SRC606	External info sources:competitors	2130	670	31.5	1	5
SRC607	External info sources:consultants	2130	671	31.5	1	5
SRC618	External info sources:financiers	2130	671	31.5	1	5
SRC608	External info sources:higher educ institutes	2130	671	31.5	1	5
SRC616	External info sources:govt/priv non-prof research institutes	2130	671	31.5	1	5
SRC610	External info sources:patent disclosures	2130	672	31.5	1	5
SRC611	External info sources:professional conferences/journals	2130	672	31.5	1	5
SRC612	External info sources:fairs/exhibitions	2130	670	31.5	1	5
SRC6134	External info sources:trade assoc/chambers of commerce	2130	671	31.5	1	5
SRC617	External info sources:computer-based info networks	2130	670	31.5	1	5
OBJ601	Innovation objectives:replacing phased-out products	2130	642	30.1	1	5
OBJ602	Innovation objectives:extending product range	2130	642	30.1	1	5
OBJ609	Innovation objectives:reducing production lead times	2130	642	30.1	1	5
OBJ6034	Innovation objectives:gaining market share/new market	2130	642	30.1	1	5
OBJ605	Innovation objectives:reducing labour costs	2130	642	30.1	1	5
OBJ606	Innovation objectives:reducing materials consumption	2130	642	30.1	1	5
OBJ607	Innovation objectives:reducing energy consumption	2130	642	30.1	1	5
OBJ610	Innovation objectives:improving production flexibility	2130	643	30.2	1	5
OBJ613	Innovation objectives:improving product quality	2130	643	30.2	1	5
OBJ614	Innovation objectives:reducing environmental damage	2130	642	30.1	1	5
OBJ617	Innovation objectives:fulfilling regulations/standards	2130	642	30.1	1	5
BAR601	Economic barriers to innovation:excessive perceived risk	2130	177	8.3	1	5
BAR602	Economic barriers to innovation:inavailability of appropriate finance	2130	178	8.4	1	5
BAR603	Economic barriers to innovation:innovation costs to high	2130	178	8.4	1	5
BAR604	Economic barriers to innovation:pay-off period too long	2130	178	8.4	1	5
BAR605	Firm-level barriers to innovation:firm's innovation potential too small	2130	180	8.5	1	5
BAR606	Firm-level barriers to innovation:lack of skilled personnel	2130	180	8.5	1	5
BAR607	Firm-level barriers to innovation:lack of technological information	2130	179	8.4	1	5

Variable Name	Variable Description	Total sample :2130 Eligible to Answer	Missing (N)	%	Minimum	Maximum
BAR608	Firm-level barriers to innovation:lack of market information	2130	179	8.4	1	5
BAR609	Firm-level barriers to innovation:innovation costs hard to control	2130	179	8.4	1	5
BAR610	Firm-level barriers to innovation:organisational rigidities	2130	179	8.4	1	5
BAR613	Other barriers to innovation:lack of technological opportunities	2130	179	8.4	1	5
BAR614	Other barriers to innovation:still exploiting earlier innovations	2130	179	8.4	1	5
BAR615	Other barriers to innovation:innovation too easy to copy	2130	179	8.4	1	5
BAR616	Other barriers to innovation:regulations_taxes	2130	179	8.4	1	5
BAR617	Other barriers to innovation:lack of customer responsiveness	2130	179	8.4	1	5
BAR618	Other barriers to innovation:uncertainty in timing	2130	179	8.4	1	5
RD64	Number of staff in R_D:full-time	2130	105	4.9	0	70
RD65	Total R_D expenditure (£th)	2130	210	9.9	0	100000
PAT6	Number of patents applied for in last 3 years	2130	79	3.7	0	50

Section E	Factors Affecting Expansion and Efficiency					
BOB601	Business objectives:profit margin on sales	2130	60	2.8	1	5
BOB602	Business objectives:return on capital employed	2130	61	2.9	1	5
BOB603	Business objectives:growth in sales	2130	60	2.8	1	5
BOB604	Business objectives:growth in exports	2130	60	2.8	1	5
BOB605	Business objectives:growth in employment	2130	60	2.8	1	5
BOB606	Business objectives:market share in UK	2130	60	2.8	1	5
BOB607	Business objectives:market share overseas	2130	60	2.8	1	5
BOB608	Business objectives:other1	2130	104	4.9	1	5
OTHBOB61	Business objectives:other1 (please specify)	160	6	3.8	1	14
BOB609	Business objectives:other2	2130	621	29.2	1	5
OTHBOB62	Business objectives:other2 (please specify)	7	5	71.4	11	13
LIM601	Limitations to success:finance for expansion	2130	66	3.1	1	5

Variable Name	Variable Description	Total sample :2130 Eligible to Answer	Missing (N)	%	Minimum	Maximum
LIM602	Limitations to success:overdraft finance	2130	66	3.1	1	5
LIM603	Limitations to success:skilled labour	2130	66	3.1	1	5
LIM604	Limitations to success:management skills	2130	66	3.1	1	5
LIM605	Limitations to success:marketing/sales skills	2130	67	3.1	1	5
LIM606	Limitations to success:acquisition of technology	2130	66	3.1	1	5
LIM607	Limitations to success:difficulties in implementing new tech	2130	67	3.1	1	5
LIM608	Limitations to success:availability of appropriate premises	2130	67	3.1	1	5
LIM609	Limitations to success:access to overseas markets	2130	67	3.1	1	5
LIM610	Limitations to success:growth of market demand	2130	67	3.1	1	5
LIM611	Limitations to success:increasing competition	2130	66	3.1	1	5
GROWTH6	Firm's growth or size objective	2130	49	2.3	1	4
ESC601	Advice source:accountant	1609	27	1.7	0	1
ESC602	Advice source:solicitor	1609	27	1.7	0	1
ESC603	Advice source:bank	1609	27	1.7	0	1
ESC604	Advice source:business friend/relative	1609	27	1.7	0	1
ESC605	Advice source:customers	1609	27	1.7	0	1
ESC606	Advice source:suppliers	1609	27	1.7	0	1
ESC607	Advice source:consultants	1609	27	1.7	0	1
ESC614	Advice source:venture capitalist	1609	26	1.6	0	1
ESC615	Advice source:business angel/private individual	1609	28	1.7	0	1
ESC608	Advice source:local Chamber of Commerce	1609	27	1.7	0	1
ESC609	Advice source:trade/prof assoc	1609	28	1.7	0	1
ESC612	Advice source:Business Link/Shop/Connect	1609	24	1.5	0	1
ESC610	Advice source:local Enterprise Agency	1609	27	1.7	0	1
ESC616	Advice source:Local Learning and Skills Council	1609	27	1.7	0	1
ESC611	Advice source:Scottish Enterprise/Reg Development Agency	1609	27	1.7	0	1
IMPAC621	Advice source:impact of accountant	1299	57	4.4	1	5
IMPAC622	Advice source:impact of solicitor	843	45	5.3	1	5

Variable Name	Variable Description	Total sample :2130 Eligible to Answer	Missing (N)	%	Minimum	Maximum
IMPAC623	Advice source:impact of bank	957	50	5.2	1	5
IMPAC624	Advice source:impact of business friend/relative	683	37	5.4	1	5
IMPAC625	Advice source:impact of customers	940	52	5.5	1	5
IMPAC626	Advice source:impact of suppliers	703	52	7.4	1	5
IMPAC627	Advice source:impact of consultants	506	35	6.9	1	5
IMPAC634	Advice source:impact of venture capitalist	112	30	26.8	1	5
IMPAC635	Advice source:impact of business angel/private individual	127	29	22.8	1	5
IMPAC628	Advice source:impact of local Chamber of Commerce	393	44	11.2	1	5
IMPAC629	Advice source:impact of trade/prof assoc	596	53	8.9	1	5
IMPAC632	Advice source:impact of Business Link/Shop/Connect	528	100	18.9	1	5
IMPAC630	Advice source:impact of local Enterprise Agency	155	32	20.6	1	5
IMPAC636	Advice source:impact of Local Learning and Skills Council	129	29	22.5	1	5
IMPAC631	Advice source:impact of Scottish Enterprise/Reg Development Agency	133	28	21.1	1	5

Section F Finance and Capital Expenditure

FINANC6	Attempted to obtain external finance?	2130	25	1.2	0	1
OBTPC6	IF YES, percentage obtained	2130	114	5.4	0	100
APPR61	Finance from:banks	2130	34	1.6	0	4
APPR63	Finance from:HP/leasing firms	2130	34	1.6	0	4
APPR64	Finance from:factoring/invoice discounting firms	2130	34	1.6	0	4
APPR65	Finance from:trade customers/suppliers	2130	34	1.6	0	4
APPR621	Finance from:venture capital firm (equity finance)	2130	34	1.6	0	4
APPR622	Finance from:venture capital firm (loan finance)	2130	34	1.6	0	4
APPR661	Finance from:partners/working shldrs (equity finance)	2130	34	1.6	0	4
APPR662	Finance from:partners/working shldrs (loan finance)	2130	34	1.6	0	4
APPR671	Finance from:other priv individuals (equity finance)	2130	34	1.6	0	4

Variable Name	Variable Description Total sample :2130	Eligible to Answer	Missing (N)	%	Minimum	Maximum
APPR672	Finance from:other priv individuals (loan finance)	2130	34	1.6	0	4
APPR68	Finance from:other source	2130	34	1.6	0	4
OTHAPPR6	Finance from:other source (please specify)	99	38	38.4	1	9
NOADD61	Why additional finance not sought:internal cash flows sufficient	1313	62	4.7	0	1
NOADD62	Why additional finance not sought:unwilling to dilute equity shareholding	1313	61	4.6	0	1
NOADD63	Why additional finance not sought:cost of external too high	1313	61	4.6	0	1
NOADD64	Why additional finance not sought:unwilling to increase borrowing risk	1313	60	4.6	0	1
NOADD65	Why additional finance not sought:other reasons	1313	67	5.1	0	1
OTHNOAD6	Why additional finance not sought:other reasons (please specify)	69	7	10.1	1	4
INAP61	Investment appraisal method:payback	2130	412	19.3	0	1
INAP62	Investment appraisal method:discounted cash flow	2130	412	19.3	0	1
INAP63	Investment appraisal method:other	2130	412	19.3	0	1
OTHINAP6	Investment appraisal method:other (please specify)	204	31	15.2	1	6
MERGE6	How many firms has it acquired/merged with in last 2 years?	2130	52	2.4	0	14
ACQ618	Acquisition activity:market share in existing markets	244	53	21.7	1	5
ACQ619	Acquisition activity:new product markets	244	53	21.7	1	5
ACQ617	Acquisition activity:access to overseas markets	244	54	22.1	1	5
ACQ602	Acquisition activity:economies of scale	244	53	21.7	1	5
ACQ611	Acquisition activity:skilled labour	244	53	21.7	1	5
ACQ612	Acquisition activity:management skills	244	53	21.7	1	5
ACQ613	Acquisition activity:marketing_sales skills	244	53	21.7	1	5
ACQ614	Acquisition activity:acquire technology	244	53	21.7	1	5
ACQ615	Acquisition activity:more continuous employment for staff	244	53	21.7	1	5
ACQ616	Acquisition activity:vertical integration	244	53	21.7	1	5
ACQ620	Acquisition activity:other reasons	244	53	21.7	1	5
OTHACQ61	Acquisition activity:other reasons (please specify)	18	0	0.0	1	5
BID61	Subject of takeover bid:larger firm?	2130	82	3.8	0	3
BID62	Subject of takeover bid:firm of similar size?	2130	83	3.9	0	3
BID63	Subject of takeover bid:smaller firm?	2130	82	3.8	0	3