Detailed Results from the Third UK Community Innovation Survey (CIS3)

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INTRODUCTION

The survey

The Community Innovation Survey (CIS) takes place every 4 years in European countries to investigate levels of innovation in business. This is the third time this survey has been conducted and it covers the period 1998–2000. Results are gathered via a postal questionnaire asking questions on topics such as "effects of innovation", "factors hampering innovation" and "innovation-related expenditure". Existing analysis of the UK results can be found at: http://www.dti.gov.uk/iese/ecslist.htm

The Statistical Office of the European Commission (Eurostat) publishes international comparisons of CIS data on its New Cronos website (http://europa.eu.int/newcronos/). Note that there will be some minor discrepancies between the UK and Eurostat published results due to differences between the UK sectoral coverage for CIS3 and the European core sectors. Further details of the survey methodology may be found in Annex B of the following report: http://www.dti.gov.uk/iese/industrial2001.pdf

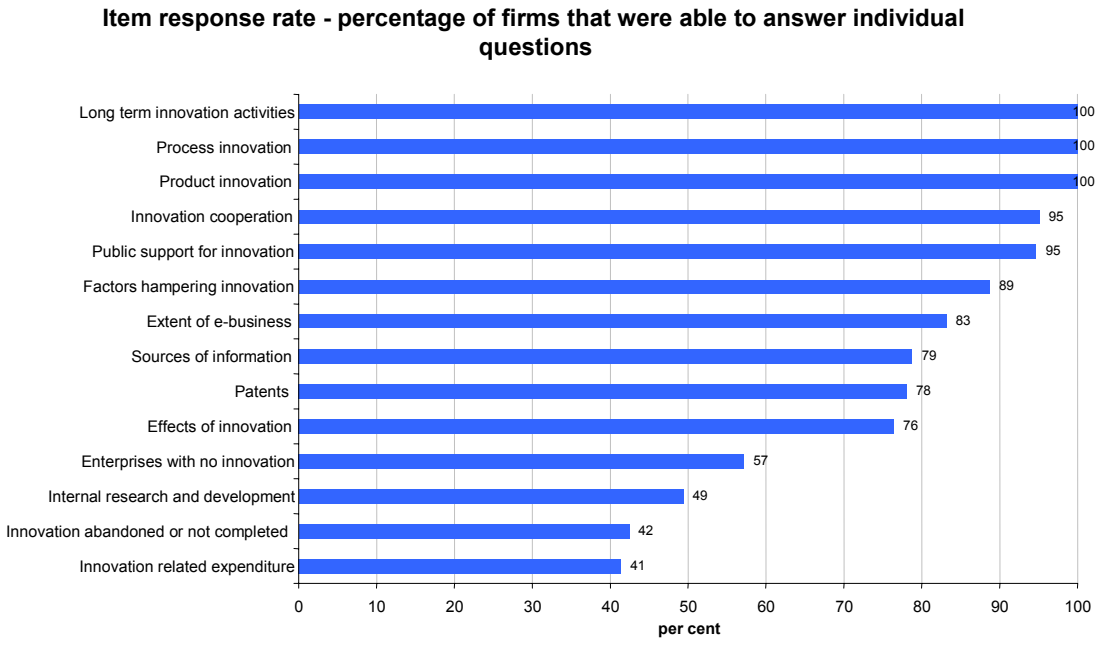
The Sample

The Office for National Statistics' Interdepartmental Business Register (IDBR) was used to identify the sample frame for the survey. Firms in 12 broad industrial sectors of interest with 10 or more employees, across all UK regions, were identified as the population of interest. This resulted in a population of around 127,000 firms, from which a sample of about 19,000 was selected; more detail can be found in the attached appendix. The sample was chosen to be statistically representative of small, medium and large businesses, all UK regions and the broad industrial sectors. SMES refer to those enterprises with 10 to 249 employees, large firms refer to enterprises with 250 or more employees.

Response rates

8,172 businesses responded, giving a response rate of approximately 43%. The results presented in this report have been weighted; that is, the sample responses have been grossed up to be representative of the whole population of interest (namely the 127,000 firms). The response rate for individual questions varied within the questionnaire. Chart 1 gives a simple analysis of response rates per question.

Chart 1



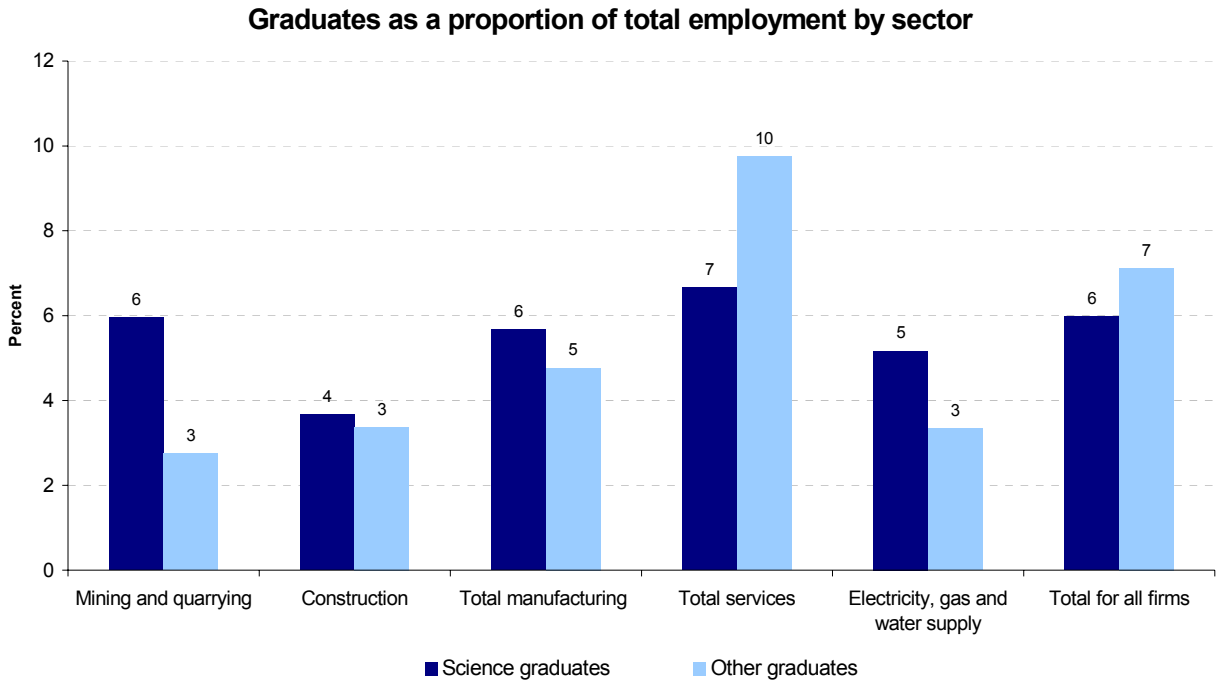
- The item response rates vary from about 40% to 100%.

PRELIMINARY INDICATORS

Graduates

Firms were asked to indicate the approximate percentage of total employees that were educated to degree level or above in science or other subjects. Chart 2 shows the average percentage of science and other graduates as a proportion of total employment in the major sectors.

Chart 2



- The proportions of science and other graduates are highest in the service sector at around 7% and 10% respectively.
- The lowest proportion of science graduates could be found in the construction industry (4%), while the lowest proportion of other graduates was observed in the mining & quarrying and utility sectors (3%).

Markets

Firms were asked to indicate the locality of their largest market, be it local (within approximately 50 miles of the enterprise), regional (within approximately 100 miles of the enterprise), national or international. The results are shown in table 1:

Table 1: Respondents' largest market

(%)	Local	Regional	National	International
Mining and quarrying	45	24	20	10
Food, clothing, wood, paper, publishing and printing	28	20	45	6
Fuels, chemicals, plastics metals & minerals	19	19	50	13
Electrical and optical equipment	8	11	52	29
Transport equipment	13	13	53	21
Manufacturing not elsewhere classified	16	14	60	11
Total manufacturing	**20**	**18**	**49**	**12**
Electricity, gas and water supply	32	20	41	8
Construction	48	33	19	1
Wholesale & commission trade (not cars & bikes)	25	19	48	8
Transport, storage and communications	40	14	36	10
Financial intermediation	22	12	44	22
Real estate, renting and business activities.	43	16	30	10
Total services	**36**	**16**	**37**	**10**
All firms	**32**	**19**	**39**	**10**

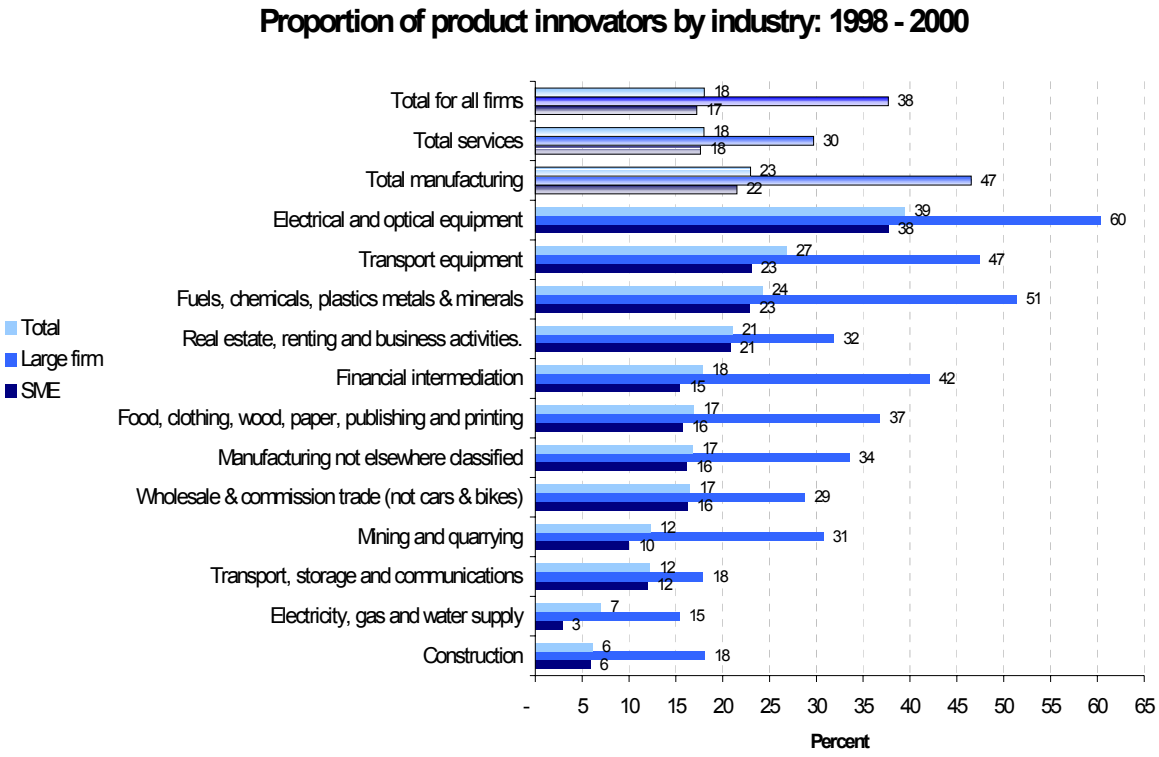
- **39% of all firms have a national market as their largest share.**
- Firms in the mining & quarrying, and construction sectors are heavily dominated by local and regional markets.
- Nearly half of respondents from the manufacturing sector and over a third from the service sectors have a national market as their largest share.
- Firms in manufacturing of electrical and optical equipment were most likely to quote the international market as being of most importance.

RESULTS

Product innovation

This section covers all new and improved products, including those not necessarily introduced to the firm's market. Firms were first asked to state whether, during the period 1998-2000, they had introduced any technologically new or significantly improved products (goods or services), **which were new to the firm**, even if they were already on the market. Results can be found in chart 3:

Chart 3



Key points to note:

- **18% of all firms were product innovators.**
- Firms in the manufacturing sector were generally more likely to introduce new products than those in the services sector.
- The electrical and optical equipment industries had the highest proportion of firms reporting the introduction of new or improved products, with an average of 39%. The three largest proportions were all from the manufacturing sector.
- The proportion of product innovators was consistently higher among large firms.
- Within services, firms in the real estate, renting and business activities sector reported the highest level of product innovation at 18%.
- The lowest level of product innovation was observed in the construction sector (6%).

How were products developed?

Those firms that stated that they had introduced new or improved products to their firm were then asked whether the products were developed mainly by the enterprise, mainly through cooperation or mainly by other enterprises. Results are summarised in table 2:

Table 2: Main source of new product development (as a percentage of product innovators): 1998 - 2000

	SME			Large			Total		
(%)	The enterprise	Co-operation	Other Enterprises	The enterprise	Co-operation	Other Enterprises	The enterprise	Co-operation	Other Enterprises
Mining and quarrying	31	55	14	16	72	13	27	60	13
Food, clothing, wood, paper, publishing and printing	59	23	18	64	28	9	59	24	17
Fuels, chemicals, plastics metals & minerals	71	21	8	74	24	2	71	21	8
Electrical and optical equipment	70	17	13	76	14	10	71	16	13
Transport equipment	84	12	5	56	44		76	21	3
Not elsewhere classified	82	15	3	85	13	3	82	15	3
Manufacturing total	**69**	**20**	**11**	**70**	**25**	**5**	**69**	**20**	**10**
Electricity, gas and water supply	c	c	c	c	c	c	c	c	c
Construction	42	22	36	25	69	7	41	24	34
Wholesale & commission trade (not cars & bikes)	45	24	31	71	13	16	46	24	30
Transport, storage and communications	47	32	21	44	27	29	47	32	21
Financial intermediation	63	19	18	70	28	2	64	21	15
Real estate, renting and business activities.	58	22	20	60	32	8	58	22	19
Services total	**54**	**23**	**23**	**63**	**26**	**11**	**54**	**24**	**22**
All firms	**60**	**22**	**18**	**66**	**27**	**7**	**60**	**22**	**17**

Note: figures may not sum to 100% due to rounding
c denotes disclosive figures

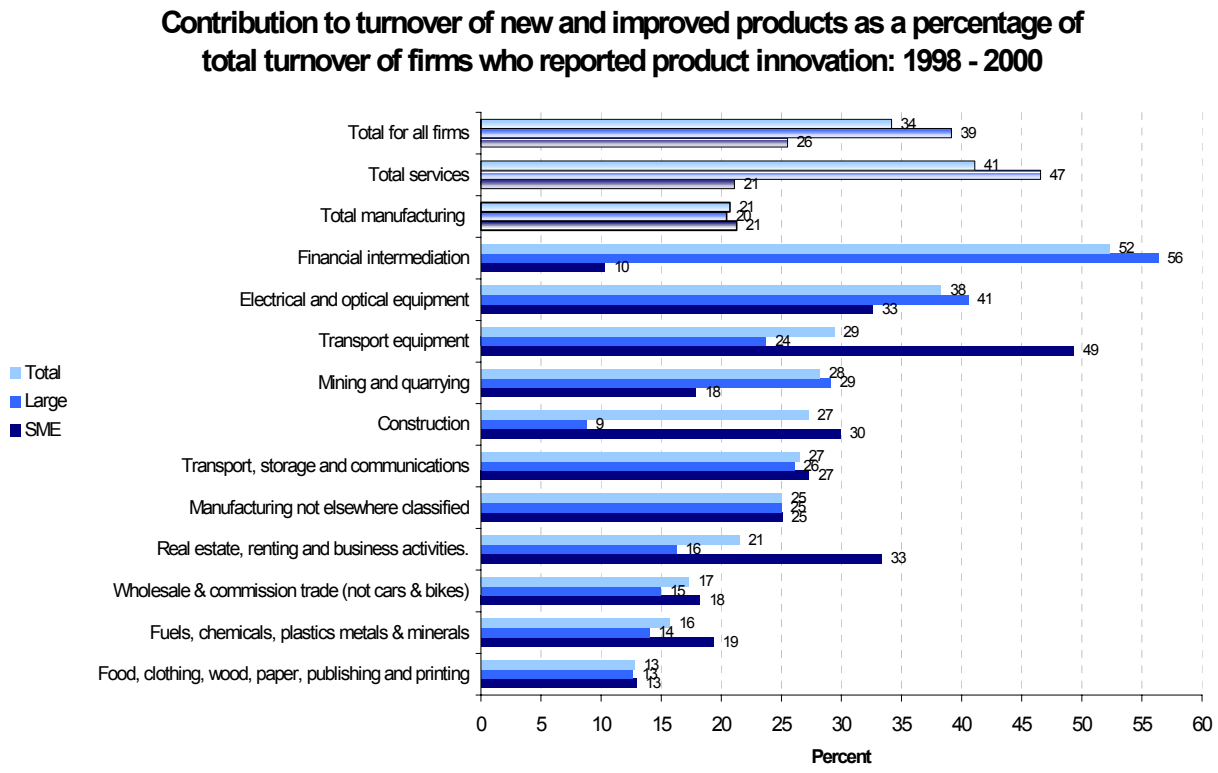
Key points to note:

- **60% of firms reported that new product innovation took place mainly within the enterprise, 22% in co-operation with other enterprises and 17% within other enterprises or institutions.**
- Around two thirds of manufacturers and just over half of service firms introduced new products developed them within the enterprise.
- Around a third of firms in the construction industry introduced new or improved products that were mainly developed by other enterprises.

Contribution to turnover of new and improved products

Those firms who indicated that they were product innovators were then asked the percentage contribution to turnover of new and improved products. The chart below shows the contribution of turnover from new and improved products as a percentage of total turnover by industry and sector.

Chart 4



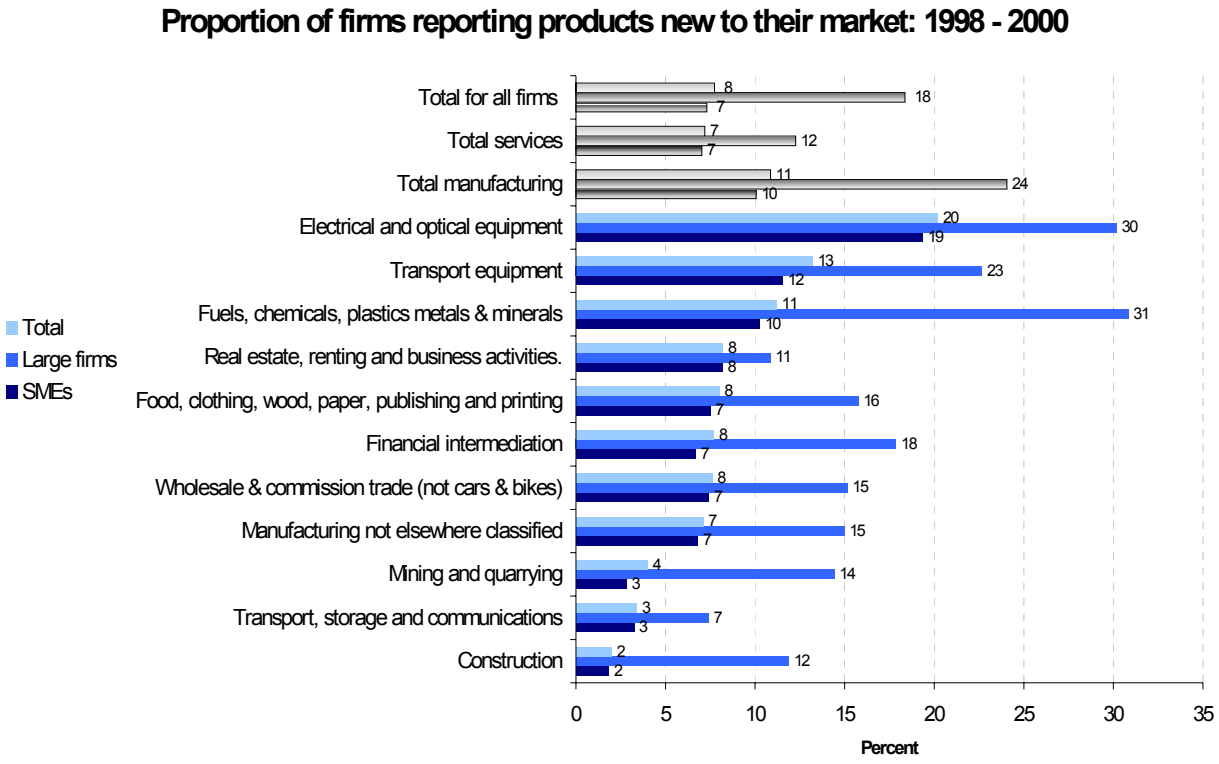
Key points to note:

- **New or improved products contributed to 34%of total turnover for all product innovators.**
- On the whole, new or improved products contributed to a higher proportion of turnover within the service sector (41%). The service sector figures are skewed by the high share of turnover reported by large firms in the financial intermediation sector (56%).
- The electrical and optical equipment sector had the second highest contribution to turnover (38%).
- The food, clothing, wood, paper, publishing and printing industries had the lowest contribution to turnover from new and improved products (13%).

Novel product innovation

This section focuses on patterns of novel product innovation. Firms that had introduced new or improved products were then asked whether, during the period 1998-2000, they had introduced any technologically new or significantly improved products (goods or services), **which were new to the firm's market**. Results are summarised in chart 5:

Chart 5



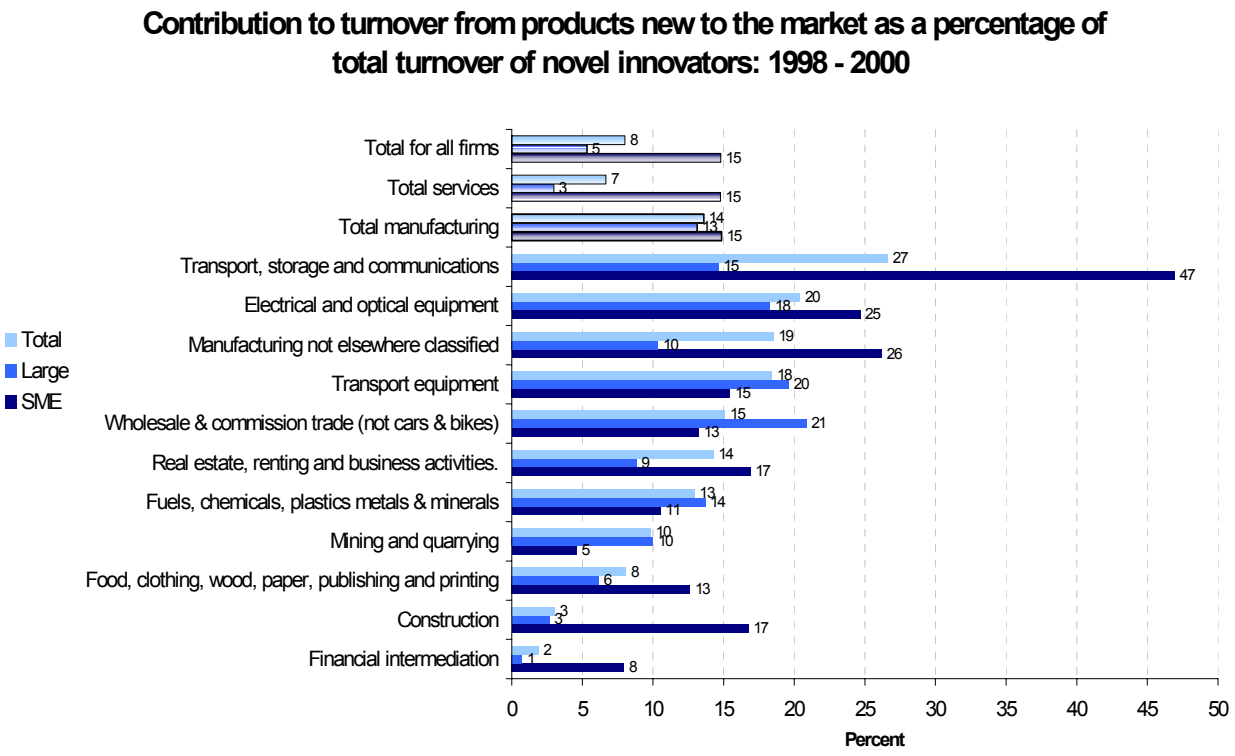
Key points to note:

- **8% of all firms introduced products that were new to their market.**
- Overall, firms in the manufacturing sector were more likely to introduce new products to their market (11%) than those in the service sector (7%).
- Novel product innovation was highest in the electrical and optical equipment sector (20%), and lowest in the construction sector (2%).

Proportion of turnover from products new to the market

Those firms that indicated that they were novel product innovators were then asked to indicate the percentage contribution to turnover of the products that were new to the market. The results are summarised in chart 6:

Chart 6



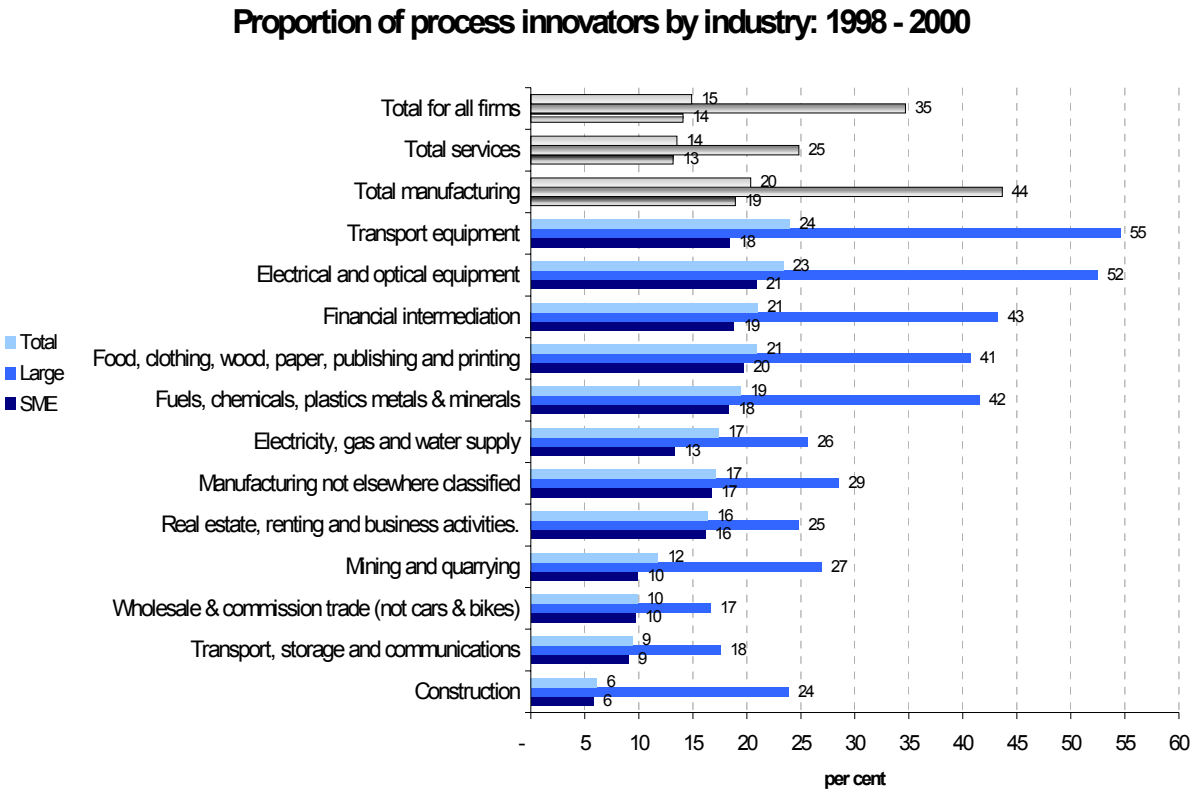
Key points to note:

- **Products new to the market contributed to 8% of total turnover for all novel innovators.**
- Overall, the proportion of turnover from products new to the market is slightly higher in the manufacturing sector (14%)
- The transport storage and communications industries had the highest contribution to turnover (27%).
- The financial intermediation sector had the lowest contribution to turnover (2%).

Process innovators

This section covers the extent to which firms introduced new and improved processes, which were new to the **firm**. Firms were first asked to state whether, during the period 1998-2000, they had introduced any new or significantly improved processes for producing or supplying products (goods or services), which were new to the **firm**, even if already in use in their industry. Results are shown in chart 7:

Chart 7



Key points to note:

- **15% of all firms were process innovators,** this disguises very wide variation by sector and by size.
- As with product innovation, firms in the manufacturing sector were more likely to report process innovation than those in the service sector.
- In the manufacturing sector, transport equipment had the highest shares of process innovators (24%). In the service sector, the highest share was in financial intermediation (21%).
- The lowest rate of process innovation was in the construction sector (6%)
- Large firms were consistently more likely to introduce process innovations than SMEs.

How were processes developed?

Those firms that stated that they had introduced new or improved processes to their firm were then asked whether the processes were developed mainly by the enterprise, mainly through cooperation or mainly by other enterprises. Results are summarised in table 3.

Table 3: Main source of new process development (as a percentage of process innovators): 1998 - 2000

	SME			Large			Total		
(%)	The enterprise	In co-operation	Other enterprises	The enterprise	In co-operation	Other enterprises	The enterprise	In co-operation	Other enterprises
Mining and quarrying	44	21	35	25	43	32	39	26	35
Food, clothing, wood, paper, publishing and printing	45	20	35	41	37	22	45	22	33
Fuels, chemicals, plastics metals & minerals	56	26	18	48	42	10	55	28	17
Electrical and optical equipment	42	32	26	47	38	16	43	33	24
Transport equipment	65	22	14	46	49	5	58	31	11
Not elsewhere classified	49	33	17	41	42	16	49	34	17
Manufacturing total	**50**	**25**	**24**	**45**	**41**	**14**	**50**	**27**	**23**
Electricity, gas and water supply	38		62	20	80		29	39	32
Construction	37	29	34	53	43	5	38	30	32
Wholesale & commission trade (not cars & bikes)	41	36	22	55	37	8	42	36	22
Transport, storage and communications	34	31	35	54	26	20	36	31	33
Financial intermediation	35	37	28	41	55	4	36	40	24
Real estate, renting and business activities.	48	26	26	53	40	7	48	26	26
Services total	**44**	**30**	**27**	**49**	**42**	**8**	**44**	**30**	**26**
All firms	**46**	**27**	**26**	**46**	**41**	**12**	**46**	**29**	**25**

Note: figures may not sum to 100% due to rounding

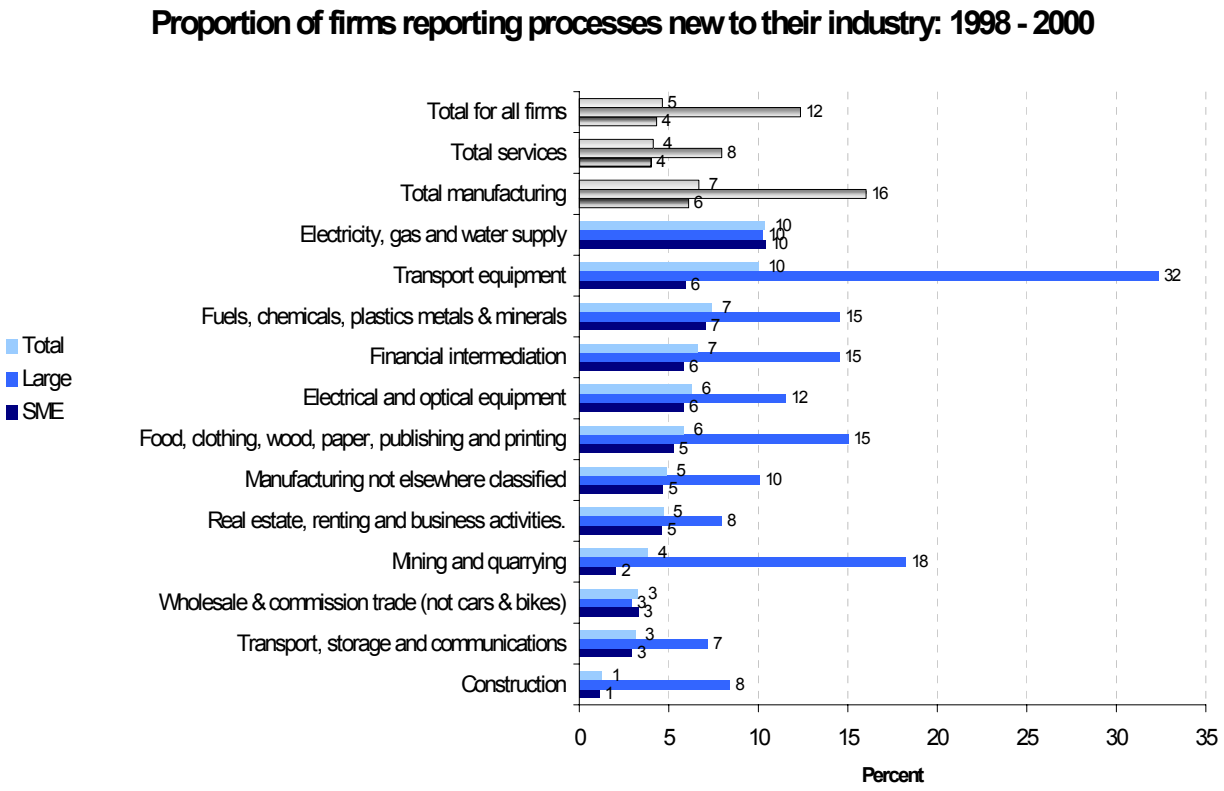
Key points to note:

- **46% of new process innovations were developed within the enterprise, 29% in co-operation with other enterprises and 25% derived the process innovations wholly from other enterprises or institutions.**
- Overall patterns of process innovation were broadly similar in the manufacturing and service sector.
- Firms in the mining and quarrying sector were most likely to introduce new processes developed mainly by other enterprises (35%).

Novel Process Innovation

This section covers novel process innovation, namely where firms introduced new or significantly improved processes that were new to the **industry**. Chart 8 shows the proportions of firms in each sector that stated that, during the period 1998-2000, they had introduced new or significantly improved processes for producing or supplying products (goods or services), which were new to the **industry**:

Chart 8



Key points to note:

- **5% of all firms introduced processes which were new to the industry.**
- Overall, the manufacturing sector had a larger proportion of firms who introduced new processes (7%) than the service sector (4%).
- The utilities and transport equipment sectors had the highest proportions of novel process innovators (both at 10%).
- Financial intermediation led the way on novel process innovation in the service sector (7%).
- In general, large firms were more likely to introduce processes new to the industry than SMEs.

Innovation activities not completed or abandoned

This section looks at the extent to which firms had innovation activities that were incomplete or abandoned. The table below shows, for those firms that answered the question, the percentage of firms reporting innovation activities that were abandoned, incomplete or not even started. In addition, table 4b shows the actual number and proportion of firms who responded to the question.

Table 4a: Proportion of firms reporting innovation projects abandoned, incomplete or not even started: 1998 - 2000

(%)	Innovation activities abandoned			Innovation activities not yet completed but on time			Innovation activities not yet completed and delayed			Innovation activities not started		
	SME	Large	Total	SME	Large	Total	SME	Large	Total	SME	Large	Total
Mining and quarrying	12	27	14	9	27	11	13	34	16	80	75	79
Food, clothing, wood, paper, publishing and printing	13	32	14	14	34	15	8	18	9	67	43	65
Fuels, chemicals, plastics metals & minerals	16	38	17	20	44	22	18	36	19	61	34	60
Electrical and optical equipment	18	35	19	27	62	30	28	47	30	42	38	42
Transport equipment	22	32	23	21	62	27	17	9	16	54	20	49
Manufacturing not elsewhere classified	12	17	12	20	39	21	14	14	14	65	42	64
Total manufacturing	**15**	**50**	**17**	**19**	**66**	**21**	**16**	**43**	**17**	**61**	**52**	**60**
Electricity, gas and water supply	0	38	19	7	71	38	9	62	35	83	71	77
Construction	8	18	8	6	42	7	5	10	5	87	49	86
Wholesale & commission trade (not cars & bikes)	9	20	9	17	39	17	11	15	11	70	58	70
Transport, storage and communications	9	10	9	14	39	14	9	13	9	74	58	73
Financial intermediation	9	43	12	21	57	25	22	21	22	52	36	50
Real estate, renting and business activities.	14	26	14	18	39	19	15	27	15	64	49	64
Total services	**11**	**26**	**12**	**17**	**44**	**18**	**13**	**20**	**13**	**67**	**50**	**66**
All firms	**12**	**37**	**13**	**16**	**55**	**18**	**13**	**31**	**14**	**68**	**51**	**67**

Key points to note:

- Large firms were more likely to start innovation projects that were abandoned (37%) or incomplete (55% and 31%).
- SMEs however, were more likely to have projects that were not even started (68%).
- Firms in the manufacturing sector were generally more likely to have abandoned, incomplete or delayed projects than those in the service sector.

Table 4b: Count and percent of those who answered the question on innovation activities not completed or abandoned.

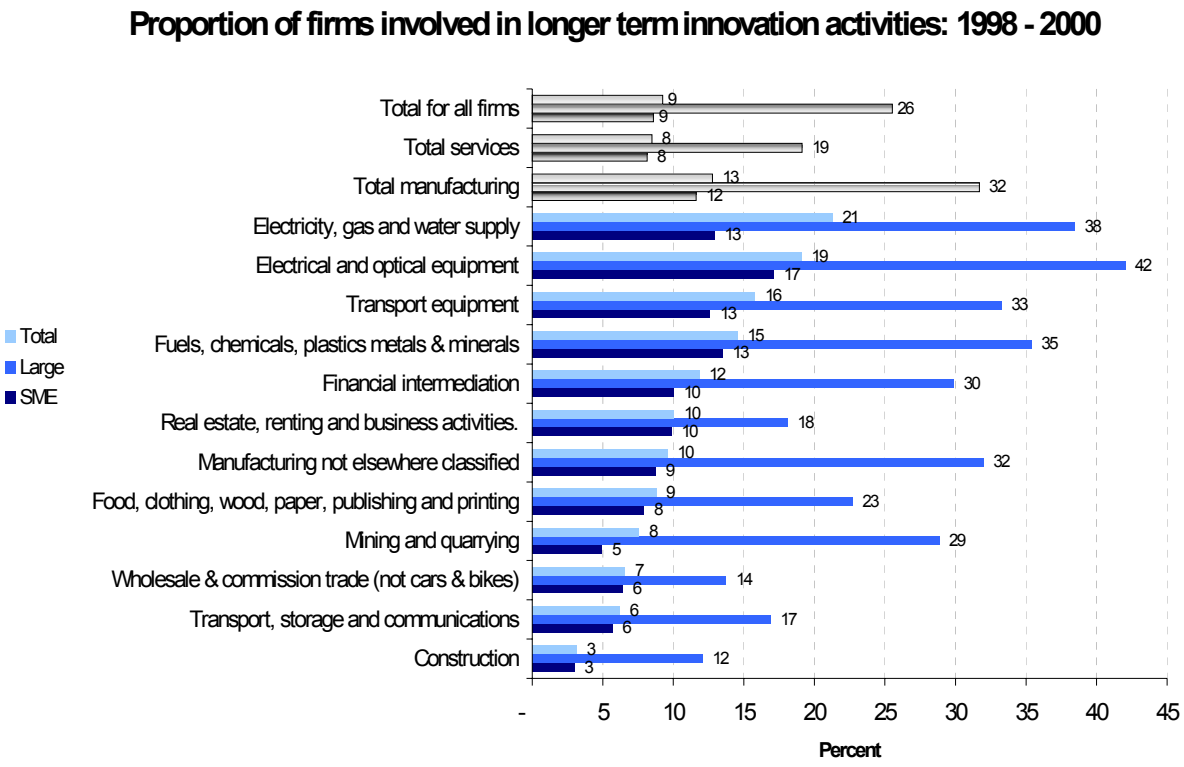
	Count of firms responding unweighted	*Unweighted response rate*
	Total	*Total*
Mining and quarrying	*48*	*38*
Total manufacturing	*1571*	*46*
Electricity, gas and water supply	*18*	*34*
Construction	*378*	*40*
Total services	*1447*	*40*
All firms	*3462*	*42*

- When considering the results presented in table 4a it is important to bear in mind that only 42% of all firms responded to the question, as shown in table 4b.

Longer-term innovation activities

Firms were asked if, during the period 1998–2000, they had any other innovation activities to develop or implement technological change, not directly aimed at imminent new products or processes (e.g. basic R&D or technology watch). Chart 9 shows the proportions of firms in each sector reporting longer-term innovation activities.

Chart 9



Key points to note

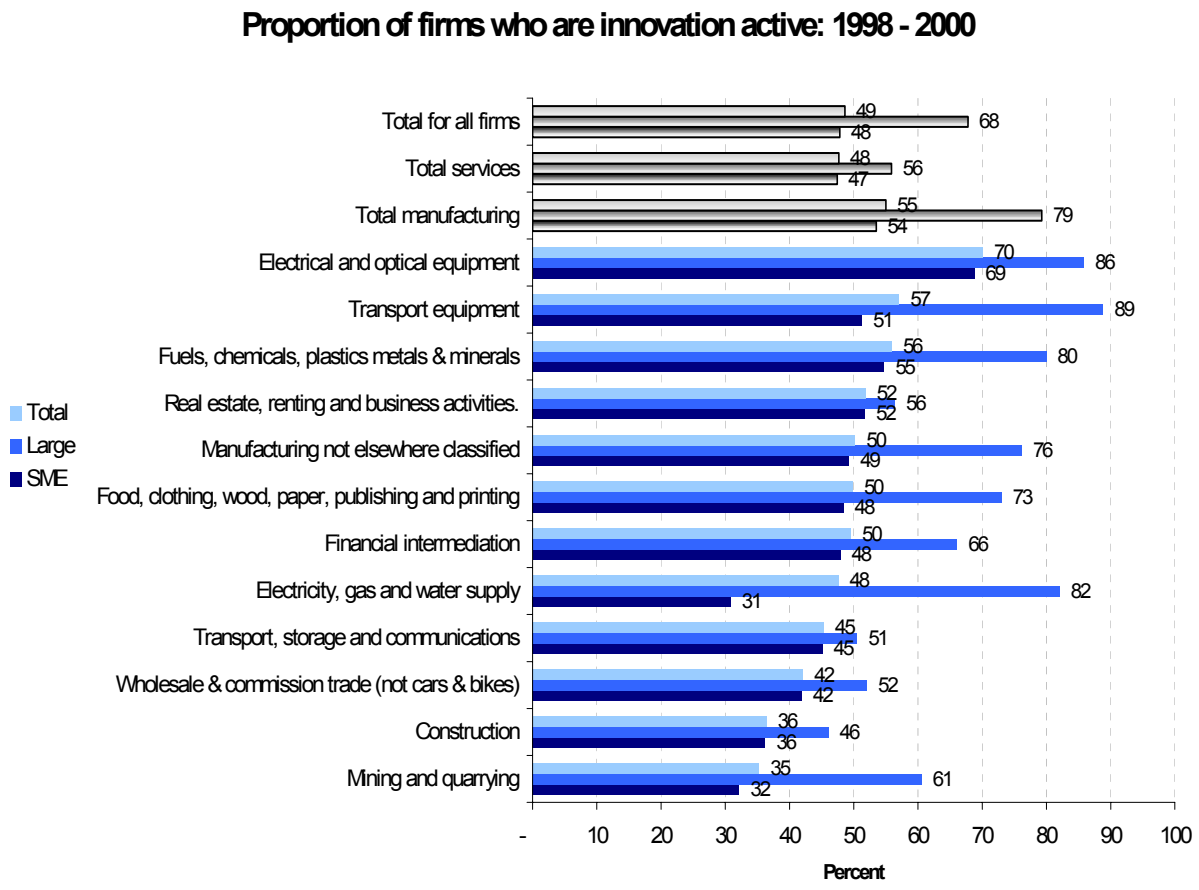
- **9% of all firms were involved in long term innovation activities.**
- The manufacturing sector had a higher proportion of firms that were involved in longer-term innovation activities (13%) than the services sector (8%).
- Large firms had a consistently higher proportion of long-term innovation activities than SMEs.
- The utilities sector had the highest proportion of long-term innovation activities (21% of firms), followed by the electrical and optical equipment industries (19%).
- Construction had the lowest proportion of firms who were involved in longer-term innovation activities (3%).

Firms who are innovation active

It is often desirable to consider a concept of whether firms are "innovation active" or not. Chart 10 presents a summary of a broader definition of firms who were engaged in innovation activities in 1998-2000. We defined firms as being innovation active if they had any of the following:

- New or improved products and/or processes
- Innovation projects not yet completed or abandoned
- Longer term innovation activities such as basic R&D or technology watch
- Expenditure in R&D, machinery and equipment, training and acquisition of external knowledge.
- Formal co-operation agreements with other enterprises or institutions.

Chart 10

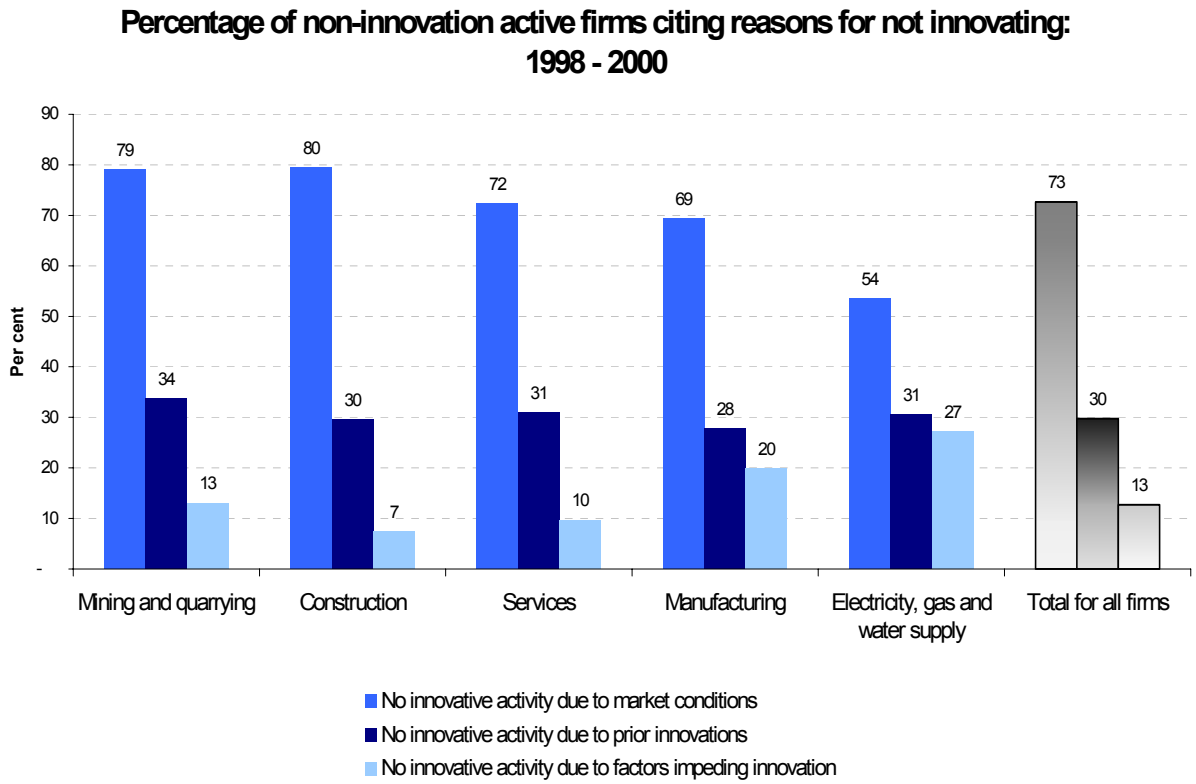


- **Using this definition, 49% of all firms were innovation active.**

Reasons for no innovation activity

Where firms had no technological innovation activities in the period 1998-2000, (see page 16) they were asked to indicate why it had not been possible, desirable or necessary to innovate. Results by broad sectors are shown in chart 11:

Chart 11



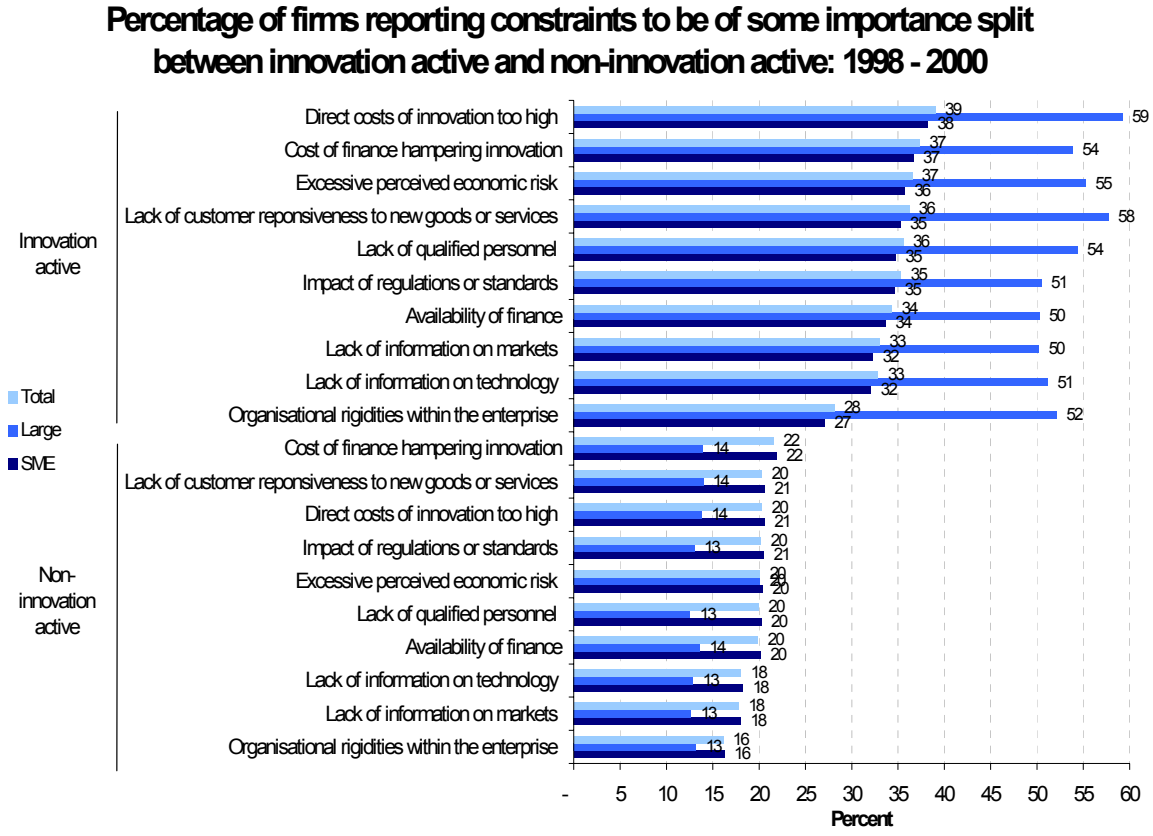
Key points to note:

- The most commonly cited reason for not innovating was due to market conditions (73% of all firms).
- The least commonly cited reason for not innovating was due to factors impeding innovation (13% of all firms).
- Patterns were broadly similar in the manufacturing and services sectors.

Factors hampering innovation

Firms were presented with a list of factors that could have potentially inhibited their ability to innovate during the period 1998-2000 and were asked to rate the importance of each constraint, be it “none”, “low”, “medium” or “high”. The chart below shows the percentage of firms that indicated each constraint to be of **some** importance, split by innovation active and non-innovation active, (see page 16). Chart 12b shows the percentage of firms that indicated each constraint to be of **high** importance, also split by innovation active and non-innovation active.

Chart 12a

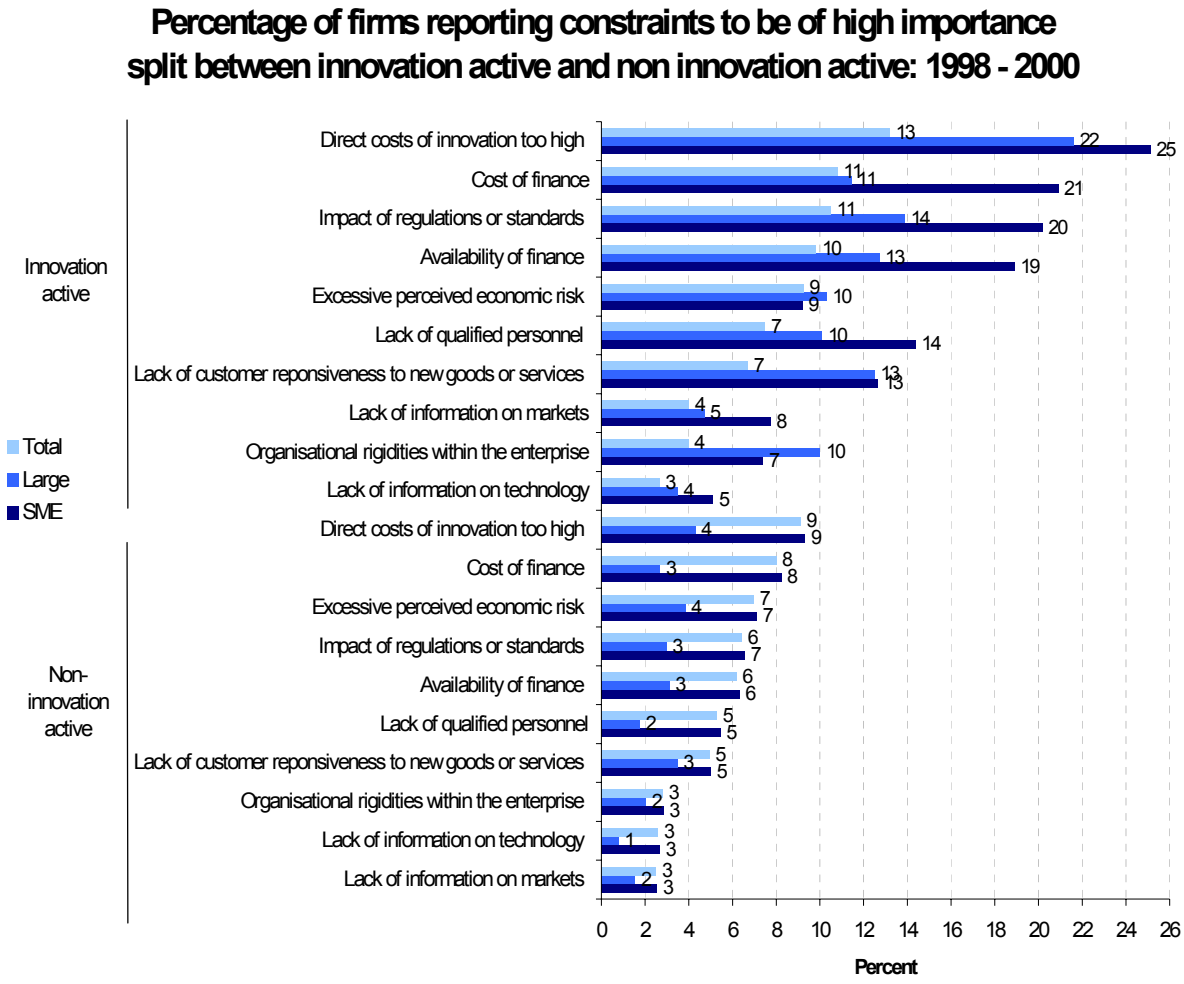


Key points to note:

- A large proportion of innovation active firms reported being hampered in their efforts to innovate.
- The three most common threads hampering innovation were all associated with economic or financial factors.
- Innovators were much more likely to cite hampering factors than were non-innovators.
- Within the innovation/non-innovation active split, there is not a big difference between the highest and lowest factors affecting innovation. **This suggests that firms are experiencing a range of obstacles, which makes it difficult to innovate, rather than firms being hampered by a few major factors.**
- Among innovation active firms, large firms were generally more likely to cite factors that inhibited their ability to innovate. However, among non-innovation active firms, SMEs were generally more likely to cite factors that inhibited their ability to innovate.

Factors hampering innovation - continued

Chart 12b



Key points to note:

- When analysing the percentage of firms that indicated that each constraint was of **high** importance, innovators and non-innovators showed broadly similar patterns.
- The reasons firms were constrained were again dominated by economic factors in the top five among both innovation and non-innovation active firms.
- Lack of information on markets and technologies, and organisational rigidities were least likely to be cited as reasons for hampering innovation activity.
- Among non-innovation active firms, SMEs were generally more likely to cite factors that inhibited their ability to innovate.

Innovation related expenditure

Firms were asked whether they had any innovation-related expenditure and they were given a list of expenditure categories to complete. The chart below shows, for those firms that answered the question, the breakdown of expenditure by category. Table 5 below shows the count and percentage of firms who reported having any expenditure**, including those who did not give a figure.**

Chart 13

Share of innovation related expenditure by category of expenditure: 2000

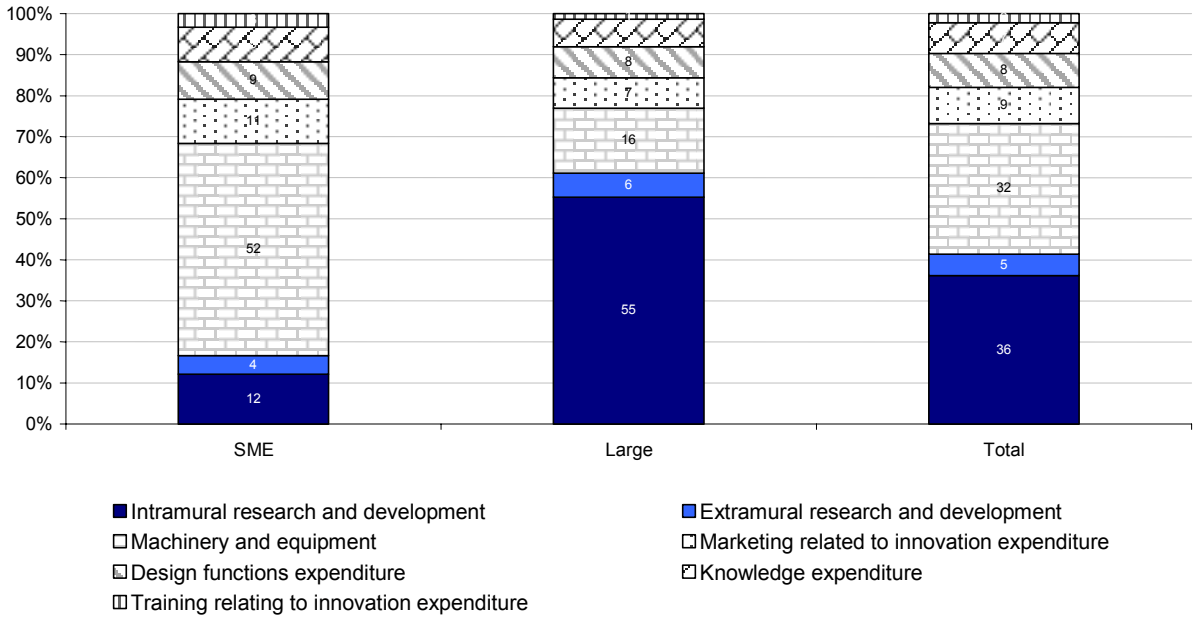


Table 5: Count and percentage of firms who reported having any expenditure, including those who did not give a figure.

	Unweighted count of firms responding	Unweighted response rate
SME	2660	39
Large	719	52
Total	3379	41

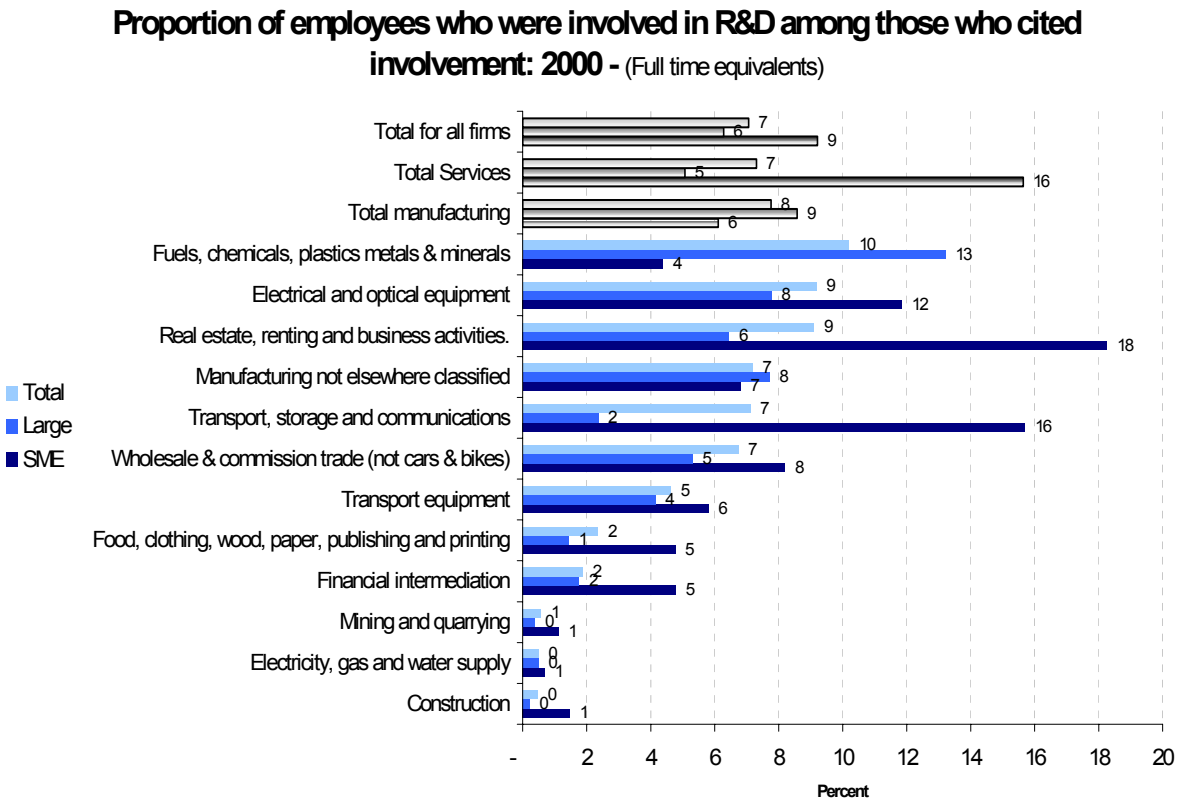
Key points to note:

- The patterns of expenditure were different for large firms and SMEs, with R&D the main item for large firms at 56% and innovation related capital expenditure the largest item for SMEs at 52%.
- Total R&D accounts for approximately 41% of total innovation expenditure overall.
- Table 5 shows that firms found this question quite difficult to answer, with only 41% of all firms doing so.

Employment in Research and Development (R&D)

Those respondents who cited involvement in R&D were then asked how many full time employees were involved in R&D activities within their enterprise in the year 2000. The results are shown as a percentage of total employment among R&D active firms by sector in chart 14:

Chart 14



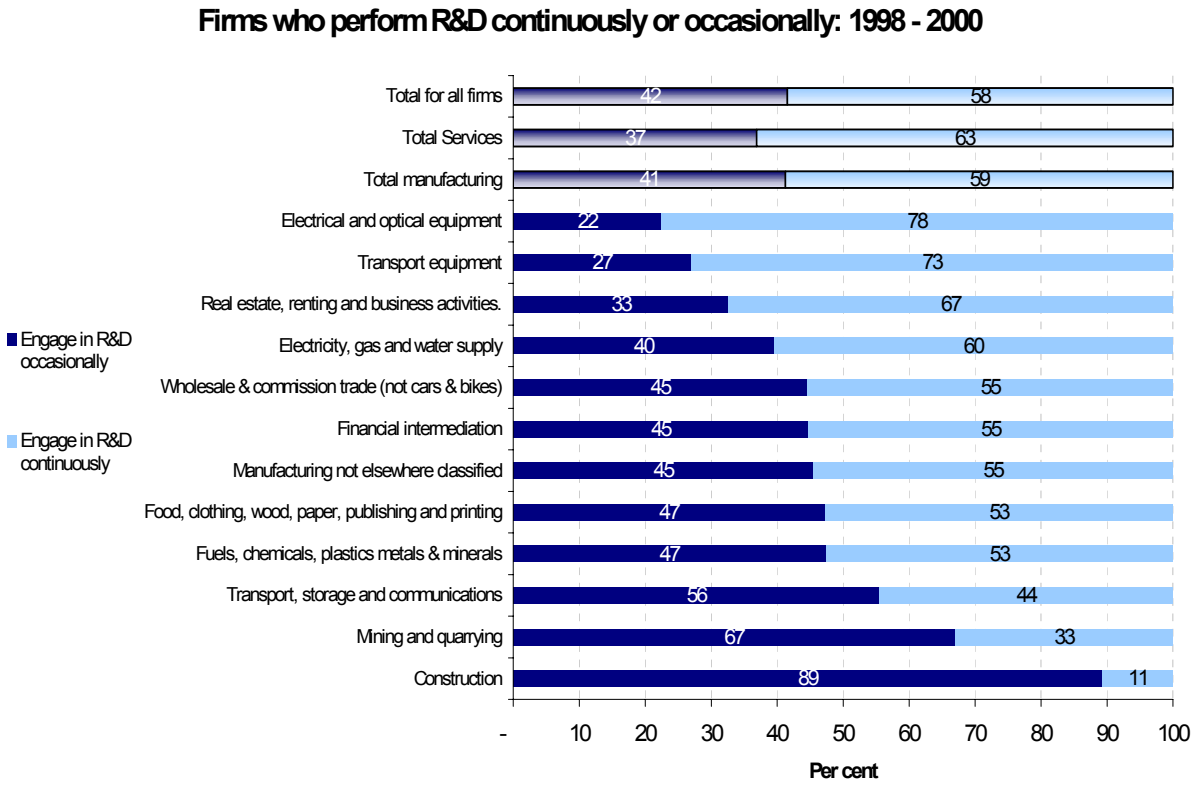
Key points to note:

- **7% of employees in all firms who cited involvement were engaged in R&D activities.**
- The manufacturing sector had a similar proportion of employment in R&D (8%) compared to the services sector (7%).
- The fuels, chemicals, plastics, metals and minerals industries had the highest proportion of employment in R&D (10%).
- Within services, the real estate, renting and business activities industries have the highest proportion of employment in R&D (9%).
- The construction sector had the lowest proportion of employment in R&D (less than 1%)

Continuous or occasional research and development

Firms were asked to indicate whether they were engaged in R&D continuously or occasionally in the period 1998-2000. The results can be found in chart 15a. Chart 15b shows the share of intramural and extramural R&D split among firms who engaged in R&D continuously or occasionally.

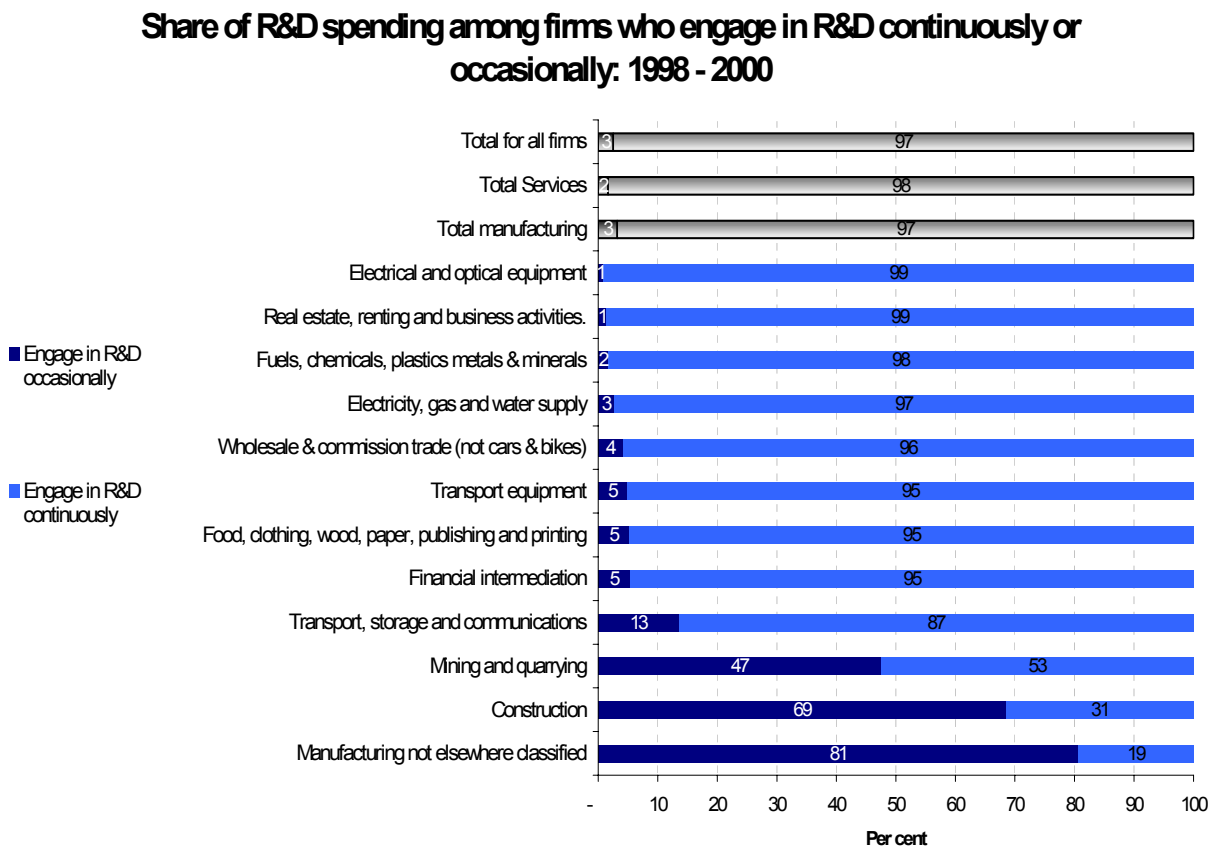
Chart 15a



Key points to note:

- **58% of R&D performers engaged in R&D continuously, while 42% engaged in R&D occasionally.**
- R&D performing firms were most likely to carry out their R&D continuously in the electrical and optical equipment sector (78% of firms).
- Firms in the construction industry were least likely to engage in R&D continuously, with only 11% of firms doing so.
- Trends were broadly similar in manufacturing and services.

Chart 15b



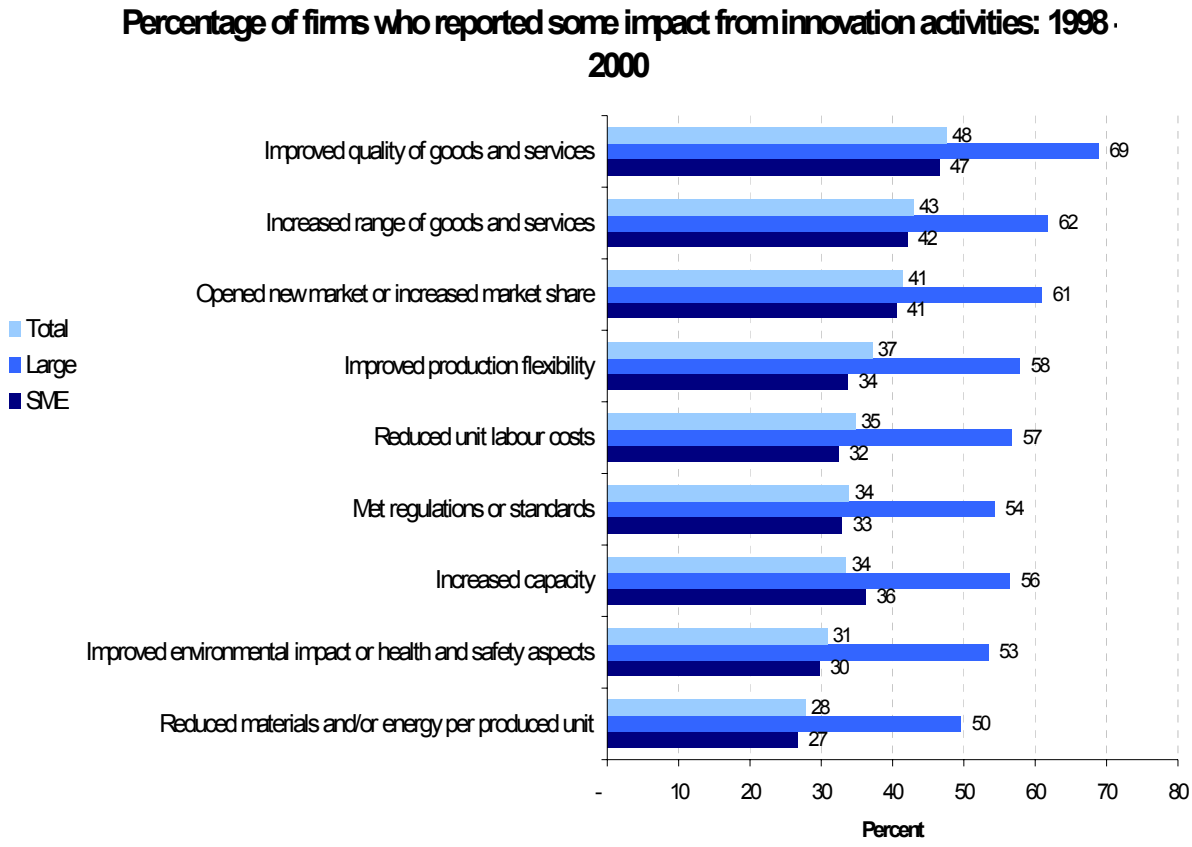
Key points to note:

- **97% of total R&D spending in all firms were performed by those engaged in R&D continuously.**
- Nearly all R&D spending in the electrical and optical equipment sectors was carried out by firms who engaged in R&D continuously.
- The manufacturing not elsewhere classified sector had the smallest share of R&D spending among those who engaged in R&D continuously (19% of total R&D spend).

Impact of innovation

Firms were presented with a list of potential impacts of innovation activities on the business in the period 1998–2000, and were asked to rate the degree of each impact, as "none", "low", "medium" or "high". The chart below shows the percentage of firms that indicated each effect to have had **some** degree of impact and chart 16b shows the percentage of firms that indicated each effect to have had a **high** degree of impact:

Chart 16a



Key points to note:

- A higher proportion of large firms reported impacts resulting from their innovation activities.
- Improved quality of goods and services was the most highly cited effect of innovation (48% of firms), followed by an increased range of goods and services (43%) and opening of new markets or increased market share (41%).
- Reduction in material use or energy per produced unit was the least commonly cited effect of innovation (28%).

Impact of innovation - continued

Chart 16b

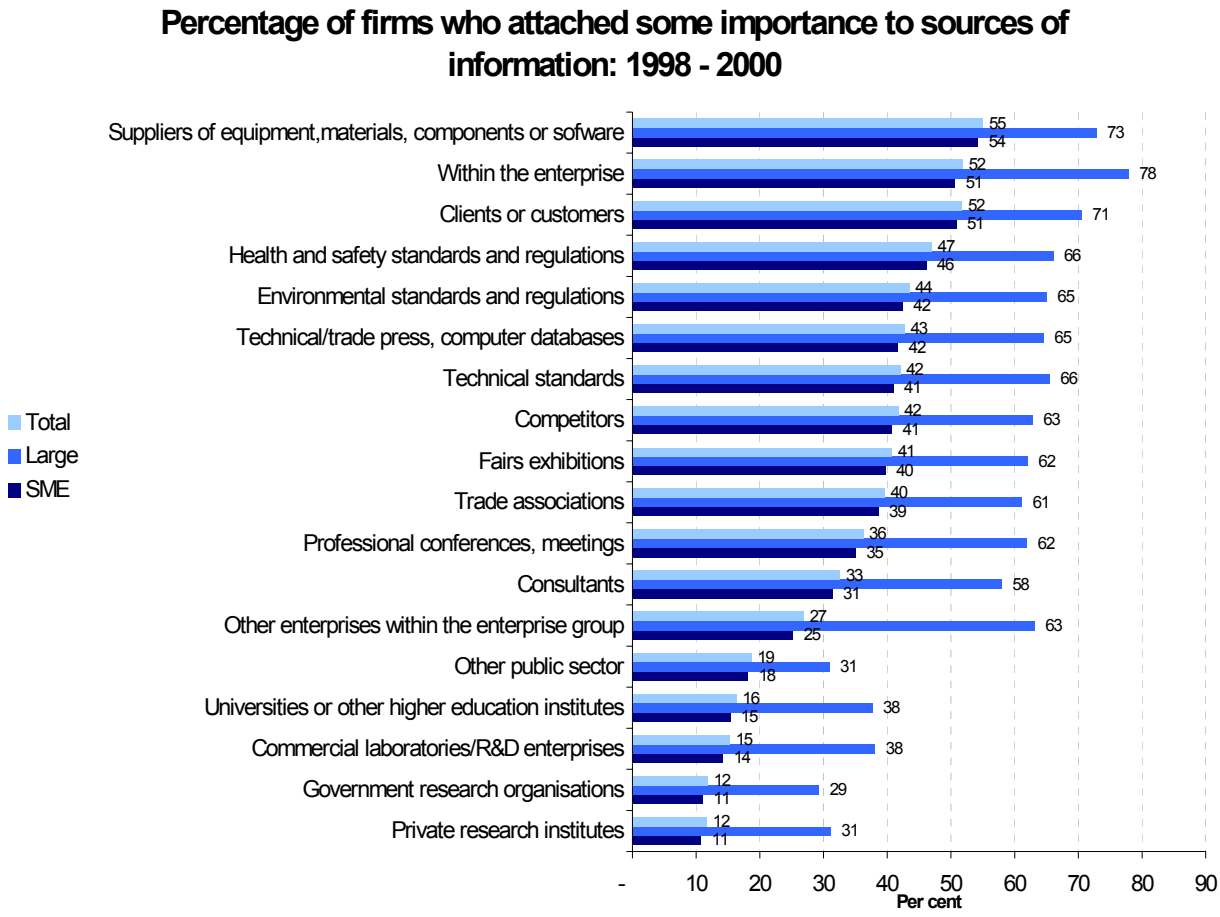
Key points to note:

- Chart 15b shows a similar pattern to chart 15a, with broadly the same types of business effect ranked highest.

Sources of information

Firms were asked to indicate their sources of knowledge or information used in their technological innovation activities in the period 1998-2000, and also to indicate the importance of that source, be it “none”, “low”, “medium” or “high”. The chart below shows the percentage of firms that quoted each source as being of **some** importance and chart 17b shows the percentage of firms that quoted each source as being of **high** importance.

Chart 17a

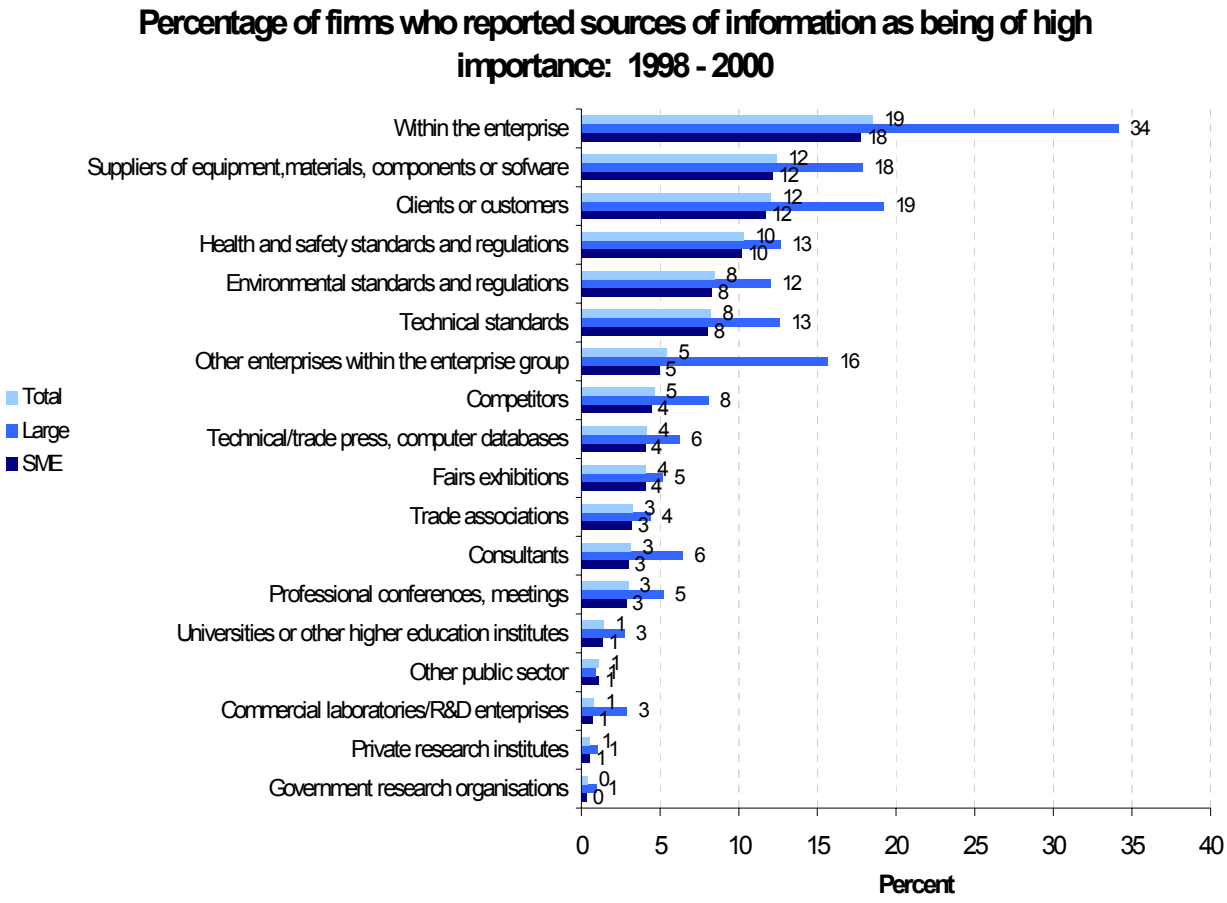


Key points to note:

- Large firms were consistently more likely to cite sources of information for their innovation activities.
- The most frequently cited sources were commercial and internal, such as suppliers of equipment (55%), clients or customers (52%) or within the enterprise (52%).
- Government and the public research base institutions such as universities were less frequently cited as sources of information, with the proportions ranged from 19% to 12%.

Sources of information - continued

Chart 17b



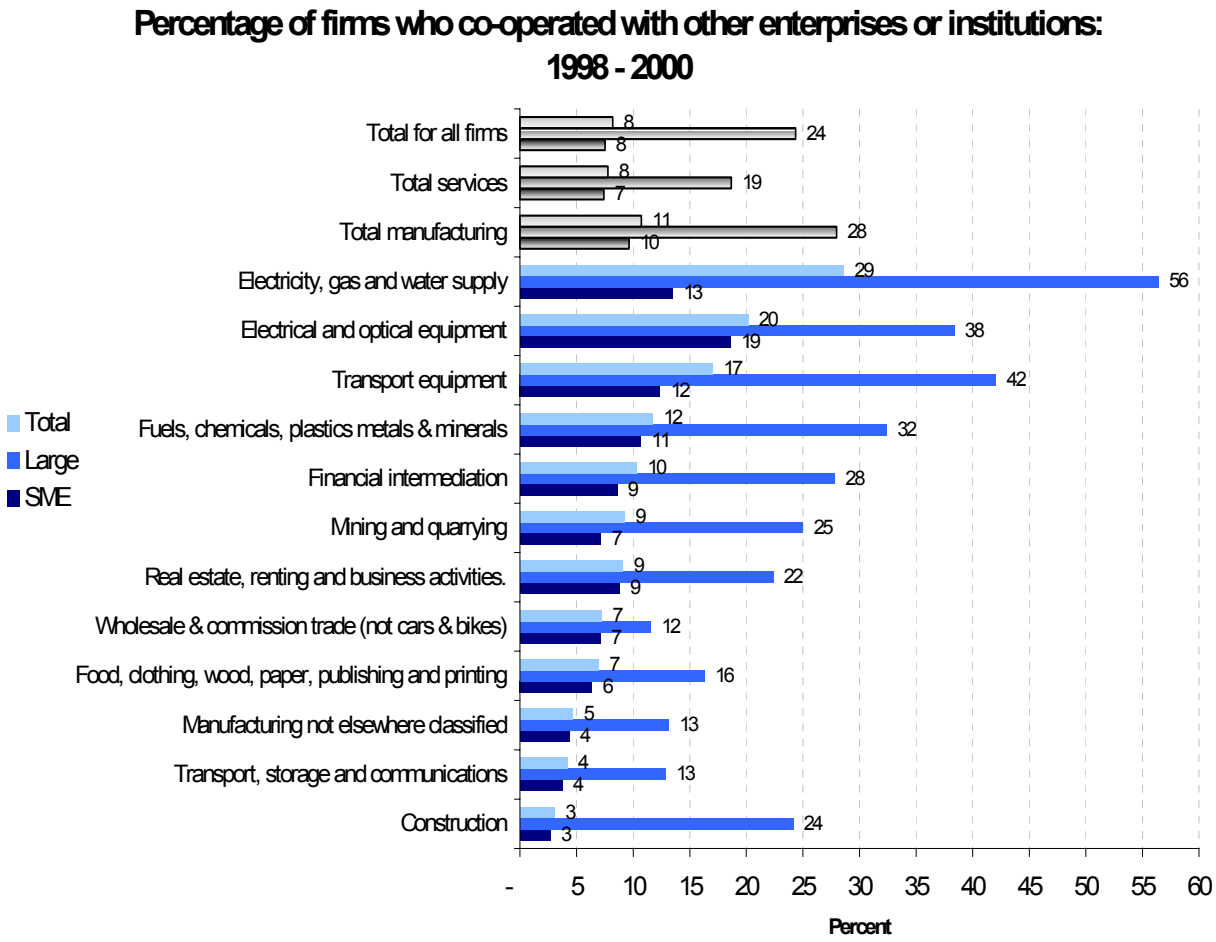
Key points to note:

- The pattern is similar to that in chart 17a, although the difference is more pronounced
- The most cited important sources of information came from within the enterprise (19% of firms) and those on the “front line” such as suppliers (12% of firms) and clients or customers (12% of firms).
- The sources of information least likely to be cited as being of high importance were public sector bodies and research organisations (all at only 1% of firms).

Innovation Co-operation

This section covers innovation cooperation - the extent to which firms actively participated in joint innovation projects (including R&D) with other organisations in the period 1998-2000. The chart below shows the proportion of firms by sector that indicated any cooperation arrangements on innovation activities with other enterprises or institutions.

Chart 18



Key points to note:

- **8% of all firms said they had co-operation agreements on innovation activities with other enterprises or institutions.**
- The manufacturing sector cooperated a little more (11%) than the service sector (8%).
- The utilities sector had the highest level of cooperation agreements (29%).
- The construction sector had the lowest level of cooperation agreements (3%)
- Large firms were consistently more likely to report cooperation arrangements than SMEs.

Innovation Co-operation - continued

Firms were presented with a list of potential partners and asked to indicate which they had co-operation arrangements with, and in which geographical locality. The results are summarised in table 6:

Table 6: Percentage of co-operation partners by location: 1998 - 2000

	Local[1]			National			Europe			US			Other		
(%)	SME	Large	Total	SME	Large	Total	SME	Large	Total	SME	Large	Total	SME	Large	Total
Suppliers of equipment, materials, components or software	14	11	14	35	45	36	14	26	16	7	20	9	5	3	5
Clients or customers	14	8	14	33	40	34	13	25	14	9	14	10	5	6	5
Consultants	11	8	11	18	24	19	1	8	2	2	7	3	1	3	1
Universities or other higher education institutes	15	13	15	17	32	18	6	9	6	1	5	2	1	2	1
Other enterprises within enterprise group	14	11	13	14	35	17	11	30	13	11	21	12	5	10	6
Competitors	7	3	7	11	15	11	4	9	5	3	4	3	1	2	1
Commercial labs/R&D enterprises	5	1	4	10	17	11	3	8	4	3	4	3	0	1	0
Government research organisations	5	2	4	8	15	9	3	2	3	1	2	1	1	1	1
Private research institutes	3	1	3	7	12	8	2	3	2	2	2	2	0	1	0

[1] Located within approximately 50 miles of the enterprise

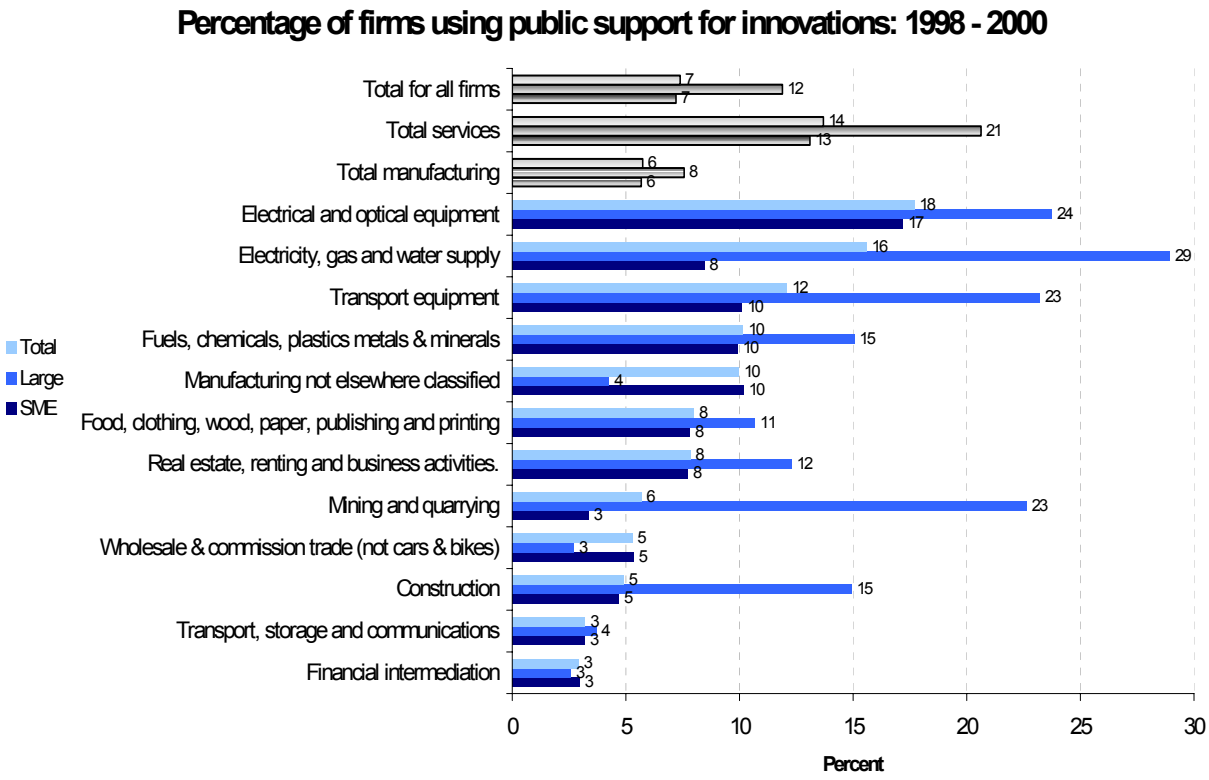
Key points to note:

- Firms involved in co-operation arrangements were most likely to cite national partners.
- SMES were more likely to cooperate with local partners than large firms, while large firms were more likely to cooperate with partners overseas.

Public support for innovation

Firms were asked if they had received any public support (financial or other assistance and advice) for innovation-related activities during the period 1998–2000. The chart below shows the percentage of firms by sector that received public support.

Chart 19



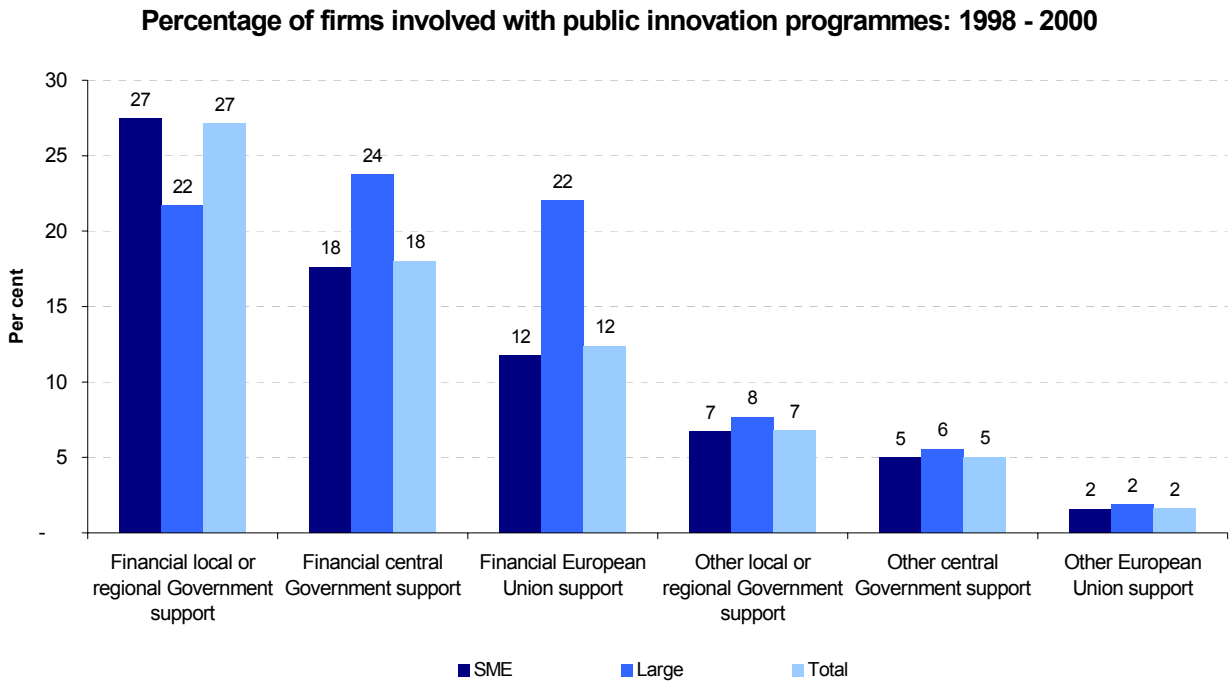
Key points to note:

- **7% of all firms said they received some kind of public support.**
- The services sector was more likely to use public support (14% of firms) than the manufacturing sector (6% of firms).
- The highest proportion of firms using public support was the electrical and optical equipment sector (18% of firms).
- Financial intermediation had the lowest proportion of firms using public support (3% of firms).

Public support for innovation - continued

If firms had received public support, they were asked to indicate the source of the support, be it - local or regional Government, central Government or the European Union, and also whether the support to a financial or other form. Results are shown in chart 20:

Chart 20



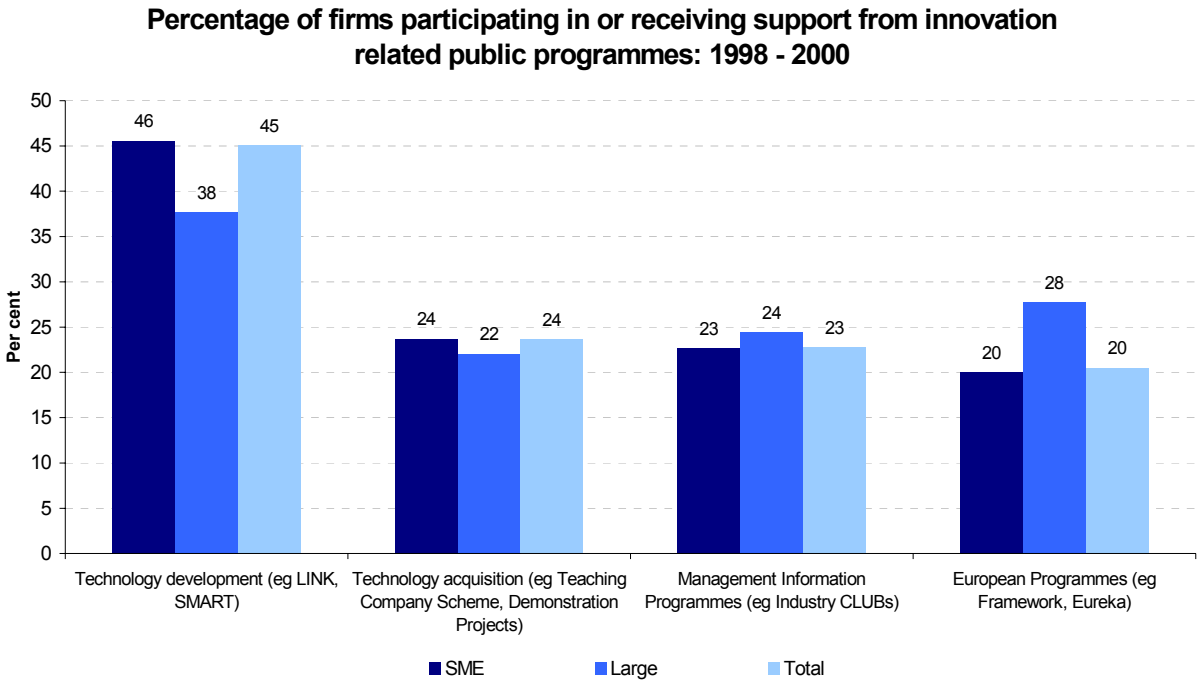
Key points to note:

- Public support was most likely to take the form of financial assistance.
- Of the 7% of firms receiving support, the leading source, for 27% of firms, was local or regional government.
- Only 2% of firms received **other kinds of support** from European sources.

Public support for innovation – Continued: Innovation related public programmes

Firms were also asked about their involvement with innovation-related public programmes, see chart 21.

Chart 21



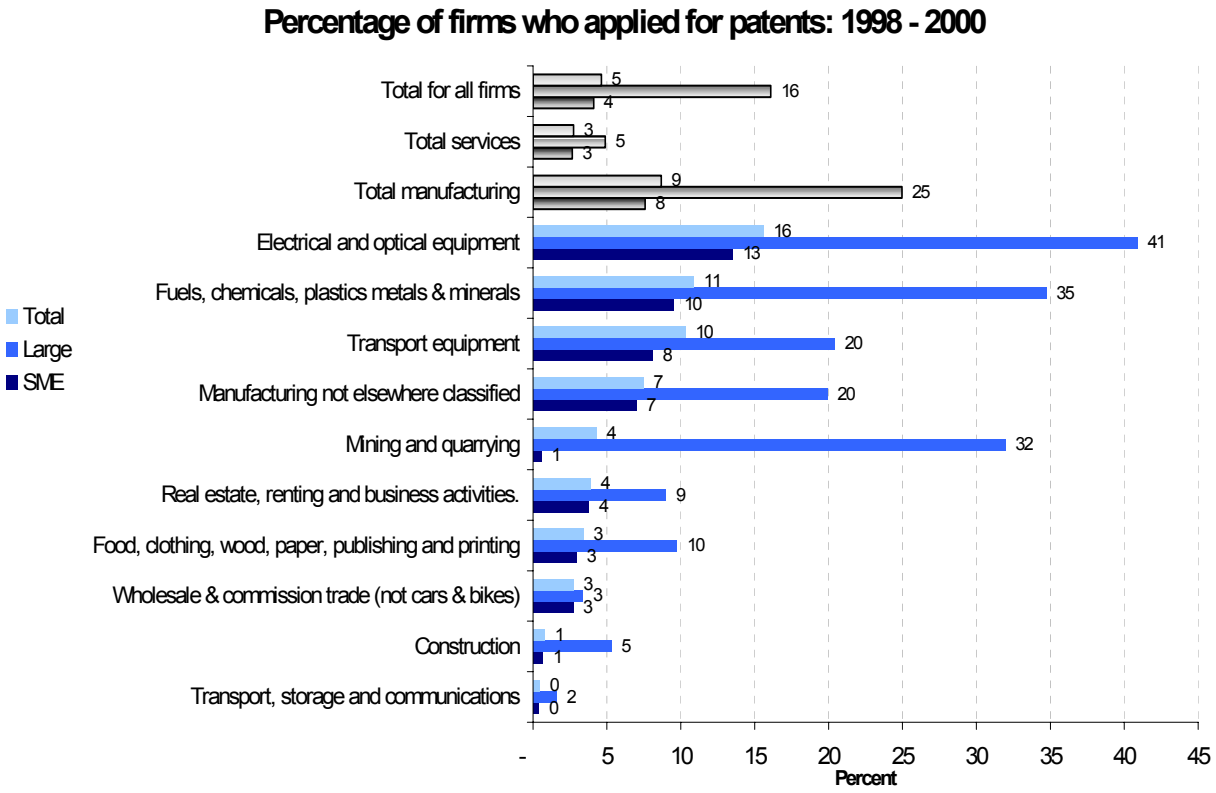
Key points to note:

- Technology Development was the most commonly cited type of innovation related public programme (45% of firms).
- Similar proportions of firms reported involvement in “Technology Acquisition”, “Management Information Programmes” and “European Programmes” (around 20%)
- There was no discernible link between size of firm and propensity to engage in public support programmes.

Patents

Firms were asked to indicate how many patents they had applied for in the period 1998-2000. Chart 22 shows the proportion of firms in each sector that indicated that they had applied for at least one patent:

Chart 22



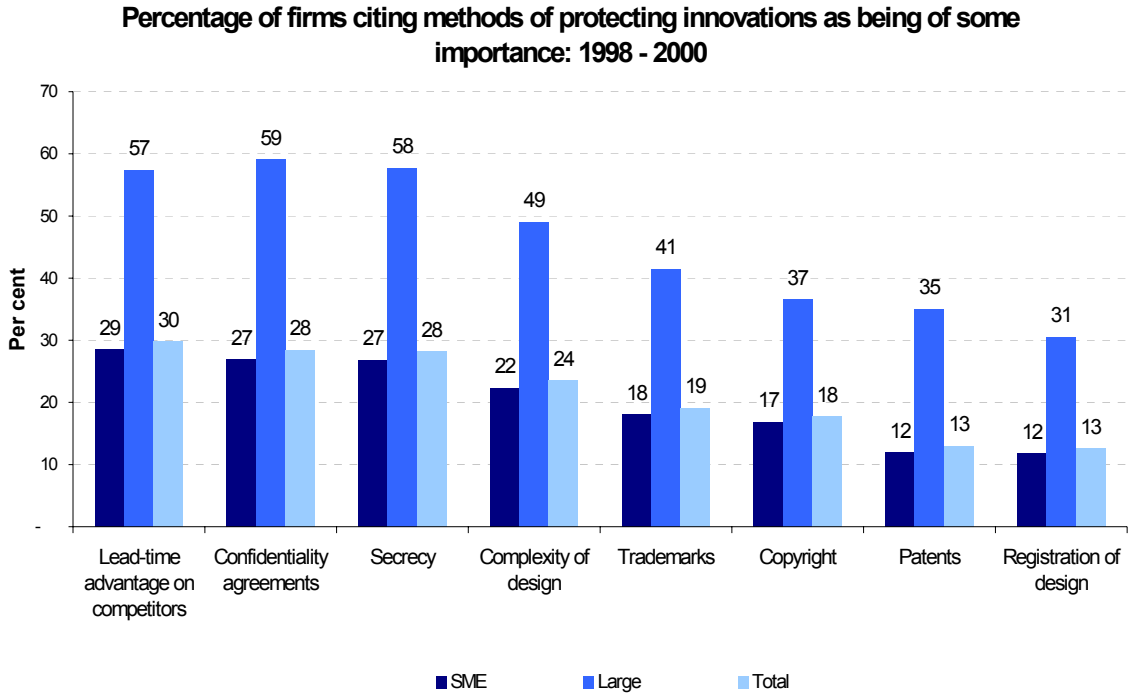
Key points to note:

- **On average, around 5% of firms applied for patents in the period 1998-2000.**
- Propensity to patent is generally higher in the manufacturing sector (9% of firms) than in the service sector (3% of firms).
- In all sectors, large firms are more likely to apply for patents than SMEs.
- Firms in the electrical and optical equipment sector were most likely to apply for patents (16%), followed by the fuels, chemicals, plastics, metals & minerals and transport equipment sectors (11% and 10% respectively).
- Firms in the transport, storage and communications were least likely to apply for patents (less than 1%)

Protection methods

Firms were presented with a list of possible methods of protecting their innovations, covering both formal intellectual property rights, such as patents and design registrations and ”strategic” protection such as secrecy, and asked to indicate the importance of each, be it “none”, “low”, “medium” and “high”. The chart below shows the percentage of firms that cited methods of protecting innovations as being of **some** importance and chart 23b shows the percentage of firms that cited methods of protecting innovations as being of **high** importance

Chart 23a

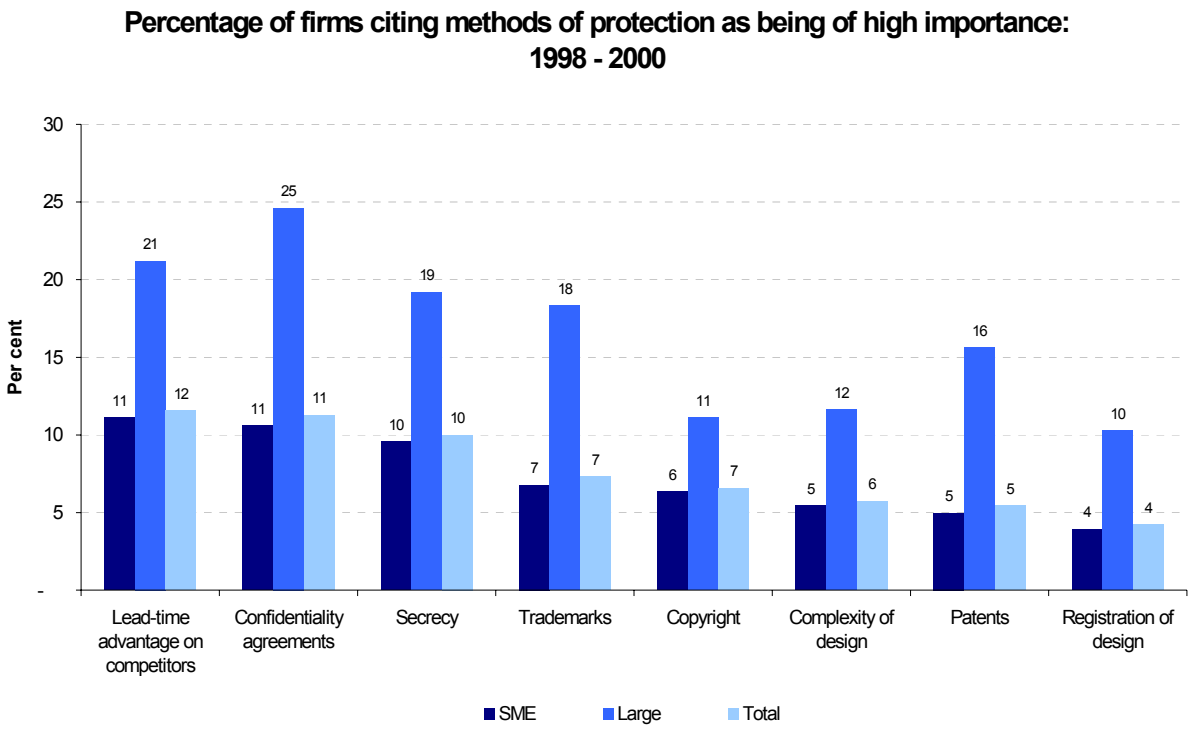


Key points to note:

- Strategic protection is more widely used than formal Intellectual Property. Lead-time advantage was the most commonly cited method for protecting innovations, with 30% of firms stating that it was of some importance. This was closely followed by confidentiality agreements and secrecy (28%).
- Large firms were more likely to use methods to protect innovations.
- Registration of designs and patents were the least commonly cited methods of protection (both 13%).

Protection methods – continued

Chart 23b



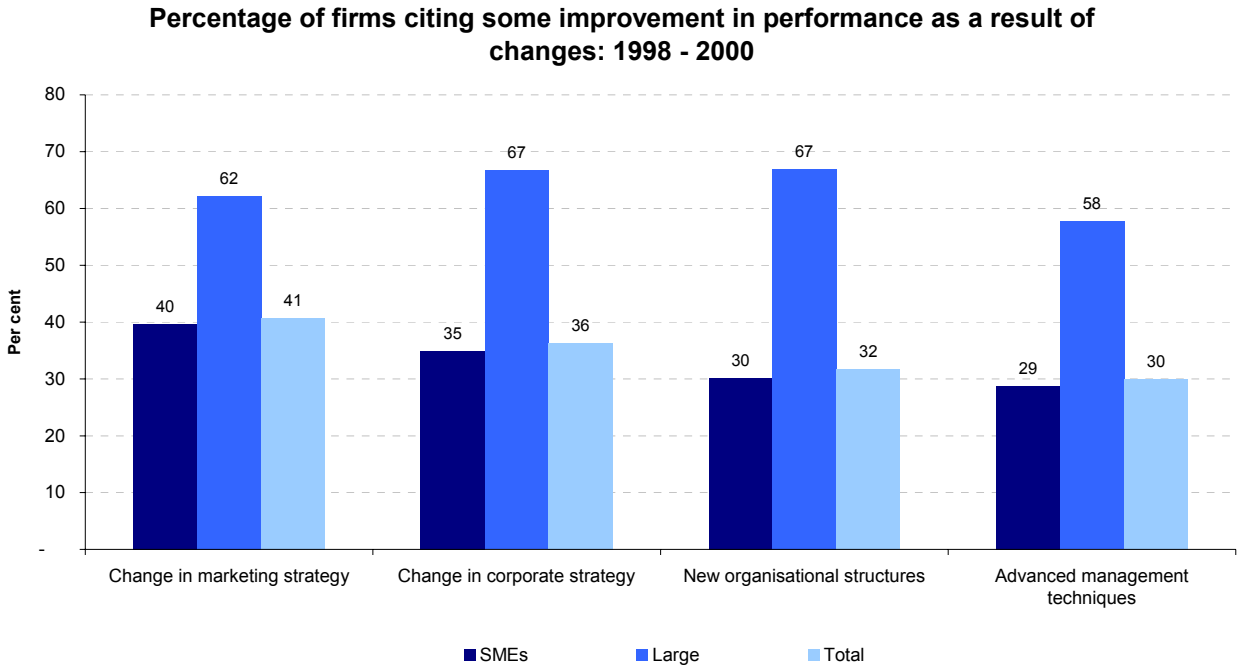
Key points to note:

- The pattern is broadly similar to that of chart 23a.
- Lead-time advantage over competitors was most commonly cited as being of high importance (12%).
- While patents and registration of design were least likely to be cited (5% and 4% respectively).

Wider innovation activities and the impact on performance

Firms were presented with a list of possible changes to areas of business structure and practises and asked whether they have seen some improvement within their firms. They were asked to rate the impact on performance be it “none”, “low”, “medium” and “high”. The chart below shows the percentage of firms who cited impact on performance as being of **some** importance and chart 24b shows the percentage of firms who cited impact on performance as being of **high** importance

Chart 24a

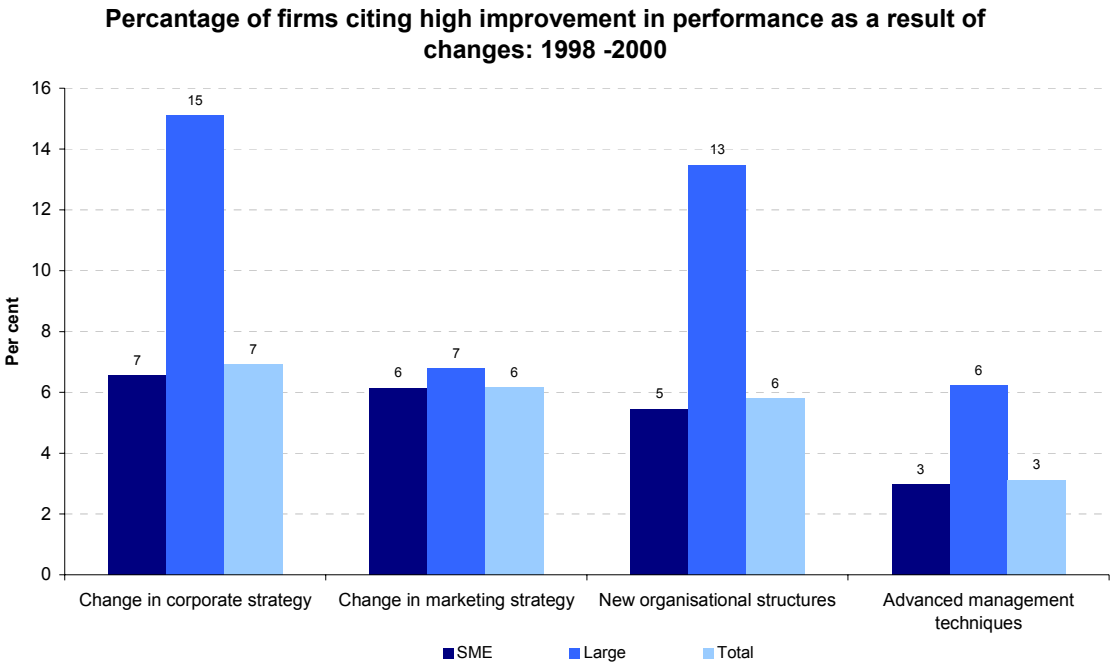


Key points to note:

- A change in marketing strategy was the most commonly cited form of “softer” innovation (41% of firms).
- Large firms were more likely to report all forms of wider innovation as having an impact on performance than SMEs.

Wider innovation activities and the impact on performance

Chart 24b



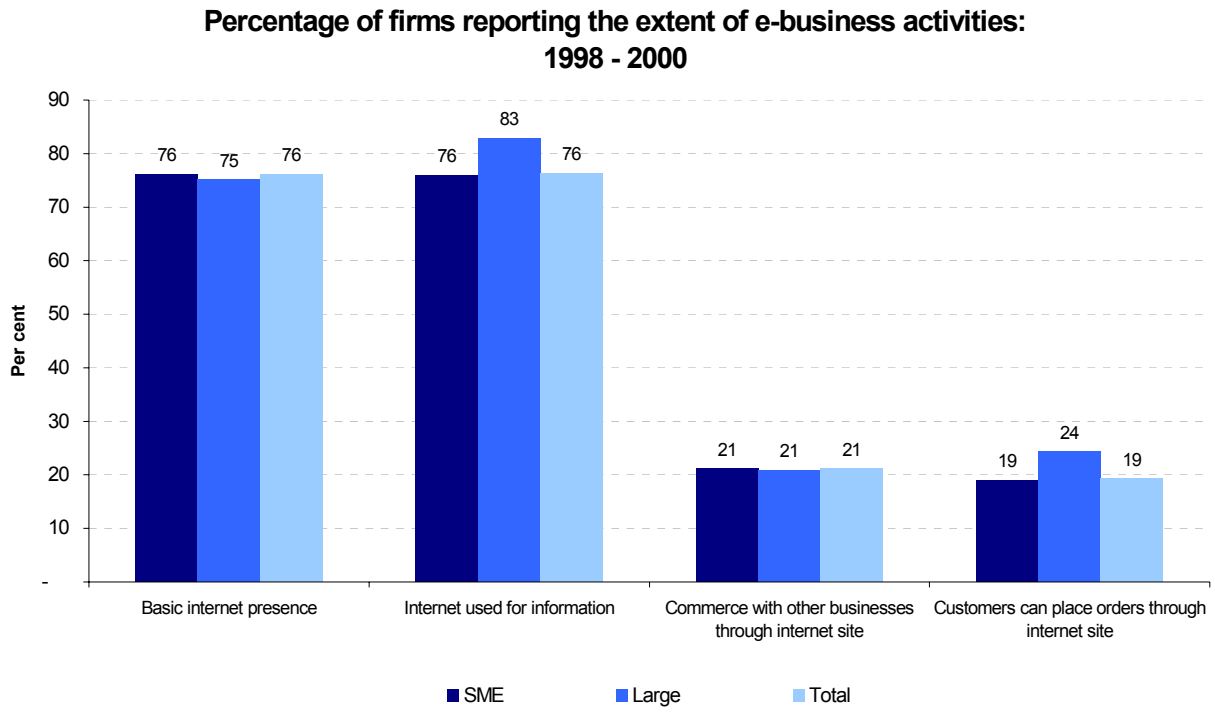
Key points to note:

- Chart 24b tells a similar story to chart 24a, although changes in corporate strategy had the greatest impact on performance, especially for large firms.
- Implementation of advanced management techniques was least commonly cited as having a high impact on improved performance.

Extent of e-business activities

Firms were asked about the extent of the enterprises' use of e-business activities during the period 1998 – 2000. The results are shown in chart 25.

Chart 25



Key points to note:

- Three quarters of firms used the Internet for information and maintained a basic presence on the Internet.
- However, only a fifth of firms used the Internet for commerce with other businesses and to allow customers to place orders through the Internet.
- There was little difference between SMEs and Large firms.