

## **Myth and reality**

### **The behaviour of innovative service providers in seven sectors**

## **Summary and conclusions**

### **Background**

From an economic point of view, services are becoming increasingly important. In the developed countries of the OECD, the service industries already account for more than two-thirds of all jobs. The question for policymakers is whether specific innovation policy is needed to stimulate innovation within the service industries. To answer this question, one needs to gain a well-founded insight into the behaviour of innovative service industries first. There is still no comprehensive knowledge of this. Yet all kinds of ideas on innovation in the service industries are doing the rounds, such as for example, that the service sector may be less innovative than the industrial sector, or that service providers only introduce new marketing and/or ICT when innovating. Investigating the behaviour of innovative companies will enable insights to be gained into whether certain ideas are based on fact or fiction.

*Behaviour of innovative service providers unclear*

### **Aim of survey and survey questions**

EIM was commissioned by the Advisory Council for Science and Technology Policy (AWT) to carry out a survey aimed at mapping the behaviour of service industries/companies. The *survey questions* were:

- 1 What behaviour do innovative companies display when they innovate?
- 2 What similarities (and differences) are there between sectors and company size within the service sector?
- 3 Can patterns of behaviour in service industries be distinguished and if so, what are they?

*Survey of innovative behaviour*

Following the results, a survey was undertaken to determine whether certain current beliefs about innovation in the service sector could be confirmed. Furthermore, on the basis of a comparison with secondary sources, a qualitative evaluation of the extent of the differences with the innovative behaviour of companies in the industrial sector was carried out.

### **Approach**

A unique dataset was collected by means of a telephone poll, thereby giving an insight into the behaviour of innovative service providers. First of all, a questionnaire was drawn up for this poll consisting of various blocks:

*Selection of innovative service providers*

- To start with, a number of selection questions were posed. The poll focused on the behaviour of innovative companies; only companies that had produced recent innovations which affected their customers were allowed to take part. Three types of innovation were distinguished: innovations in products/services, innovations in processes, and innovations in the way in which products/services are supplied to customers (distribution system).<sup>1</sup>
- As companies may have introduced several innovations, companies were asked to let their replies refer to their most important recent innovation only. The following questions were posed about their latest innovation:
  - The *initiation* phase. What sources inspired the company to introduce the innovation, and what is their respective importance?
  - The decision about the innovation. Questions were asked about whether the decision to innovate was taken by one or several persons, and in the case of the latter, who was involved in the decision.
  - The *implementation* phase. Questions were asked about the planning and organisation of the innovation process, the costs of innovation, contributions from external parties, and what new knowledge had been acquired by the company.
  - Bottlenecks both the types of bottlenecks experienced as their relative importance.
  - Results. This block concentrated on the various commercial and social consequences of the innovation.
  - Finally, a number of additional questions of a general nature were included, such as, for example, the number of persons employed by the company, and the respondent's job title.

#### *Telephone poll*

The questionnaire was extensively field tested by EIM and a representative selection of service industries was polled. The poll involved contacting companies in seven different sectors: (legal and economic services; research and development (R&D) work - including engineering consultancies; transport; ICT; the wholesale trade; financial services; the retail trade), and four company sizes (5-19, 20-49, 50-99 and 100-499 employees). Of the 1,510 companies contacted, 944 (63%) agreed to take part in the poll. Of them, 532 (56%) had introduced innovations in the recent past. This last group answered the questionnaire.

#### **Behaviour of innovative service providers**

The first survey question was: *What behaviour do innovative companies display when they innovate?* The results of the poll are shown in the following order:

- a Realisation of innovations by service providers (percentage of innovative companies, dimensions of the innovation)
- b Behaviour during the *initiation* phase (sources that stimulated innovation, contacts with knowledge and educational institutes)
- c Decision-making
- d Behaviour during the *implementation* phase (planning and organisation of the innovation process, the costs of innovation, the involvement of external parties, the acquisition of new knowledge)
- e Bottlenecks and
- f Results (how original were the innovations, what are the effects on the company).

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<sup>1</sup> A company must have introduced at least one innovation which affected its customers during the past two years.

### *Behaviour of innovative service providers*

Of the service industries with between 5 and 500 employees, 56% had introduced at least one innovation within the past two years.<sup>2</sup> This percentage is considerably higher than the number of innovative companies in the service sector reported by Statistics Netherlands (CBS). In the 2003 edition of *Knowledge and Economy*, Statistics Netherlands gave a score of 30% (p. 100 and p. 161). The difference is created by a broader definition of 'innovation' in the present survey, that does not restrict itself exclusively to technological applications. Innovations in the service sector may involve a broad spectrum of dimensions, varying from new services or service concepts, to modifications in the internal operations of a company. They are by no means restricted to marketing, or the application of ICT. Only 11% of the examples referred to by entrepreneurs contain a marketing component, whereas 34% involve the internal or external application of ICT. In order to do justice to the nature of innovation in the service sector, a broader definition of the concept would seem desirable, if the government is to achieve its objective of stimulating innovation. Approximately half of the innovations of service providers contain a high degree of originality, meaning that within the last two years, 47% of them have introduced innovations that were also new to the particular market or sector.

#### *a Realising innovations*

Service providers mainly find inspiration for their innovations in their immediate vicinity. New client requirements is the most important factor. No less than 79% considered this to be an important source of inspiration. The activities of competitors and new possibilities offered by suppliers may also provide the inspiration, just as developments in the peripheral business environment (in knowledge and educational institutes, the consultancy sector and the government), and information from the media (e.g. Internet, trade fairs, and magazine articles). These sources, however, are less important. What is noticeable is that ideas from a company's own employees are – like the clients' requirements – often quoted as a source of inspiration (75%).

Contacts with knowledge and educational institutes can be a source of information, new knowledge and skills, and the survey examines these contacts in greater detail. More than two-thirds of the innovative service providers (69%) appear to maintain some form of contact with such institutes. In this group, 57% make use of students on work placements. Informal consultation also occurs on a regular basis between companies and knowledge/educational institutes (42%).

#### *b Initiation phase*

Service providers often involve several people in the process of decision-making on innovations (in 84% of the companies polled). In practically all cases the management plays a role in the decision-making. Sometimes the employees involved in the innovation, or a board of directors or holding company operating independently from the management, also

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<sup>2</sup> The percentage of innovative companies would have been higher had the selection criterion been less strict: companies that only introduced 'organisational' improvements, for example, are not included in this survey.

have a say in the decision-making. ~~Occasionally~~ On few occasions only (3%), external advisors, such as consultants, accountants, are allowed to take part in decision-making.

### *c Decision-making*

Further questions were posed about the way that companies structure their implementation phase (planning, organisation). In order to streamline the implementation phase, the majority of the companies (70%) draw up a written plan. Moreover, 52% of the innovative service providers indicate that they evaluate the economic feasibility of their plans beforehand. More than half (59%) of the innovation projects are carried out by an official project team, whereas approximately one in three companies has agreed procedures for dealing with innovation. Finally, 22% of the service providers state that they have employees whose everyday work consists of innovation activities exclusively.

### *d Implementation phase*

The costs of innovation in a service industry/company average 6% of annual turnover. Attracting external funding does not often occur, and only did so in 22% of the innovation projects.

External parties often contribute to innovation during the implementation phase. ~~However, an external party is only involved in one in twenty innovation projects.~~ Only in 5% of the cases no external partner is involved. Knowledge and educational institutes are by no means the most important partner for innovative service providers: clients stand out head and shoulders above the other partners as the most important collaborative partner. 35% of the companies regard clients as the most important collaborative partner. This result confirms the notion that a relatively large number of innovations are developed in the service sector in direct cooperation with clients. Also, suppliers from their own production and marketing chain and ICT suppliers are often the most important partners. They are considered to be so by 18% and 17%, respectively, of the companies polled.

Although innovative service providers do indeed work with knowledge and educational institutes during the implementation, it is clear that such institutes are very rarely considered to be the most important partner (only 3% of the companies polled). Besides external parties, employees from different backgrounds may become involved in the implementation. Besides management officials (in 56% of the innovation projects), employees with a commercial background or those with staff appointments are often given a role in the implementation (33% and 32%, respectively, of the innovation projects).

Technological as well as non-technological knowledge are important in innovations. New technology ~~—mainly involving ICT knowledge—~~ is acquired in a substantial number (44%) of innovations by the companies polled, where ICT is predominant. The acquisition of non-technical knowledge occurs less often – in 21% of the companies polled. The nature of this knowledge, moreover, is extremely diverse (service-specific, legal, commercial, organisational and/or management, etc.).

Service providers often find technical knowledge in the immediate vicinity of their companies, whereas non-technical knowledge is primarily sourced from the periphery of their companies. Suppliers are often the ones who are able to offer the technical knowledge that is missing, whereas hired-in commercial consultants are the most important party in the case of a company lacking non-technical knowledge.

e *Bottlenecks*

According to the innovative service providers, 69% of them experience obstacles during the innovation process. The most frequently mentioned bottlenecks concern a lack of knowledge and a shortage of skills within their own organisation (38%), a limited acceptance of the innovation by users (24%), and the lack of standards (22%). The development of standards is a particular area that the government could support.

Funding difficulties occur far less frequently. In 2004, staff recruitment problems are a thing of the past (both factors are a problem in only 8% of the companies). The latter fact illustrates the way that bottlenecks are very much a product of their age. Staff recruitment problems were still bottleneck No. 1 a few years back.

f *Results*

According to the respondents, innovation leads to happier clients and employees, and to a better quality of service. This is consistently reported by more than 80% of the respondents. Remarkably, 29% of the companies say that innovations lead to increased foreign turnover. It is often considered that services are not exportable. In addition, 64% of respondents indicate that cost savings have been achieved. This throws a new light on the notion that service providers hardly have any opportunities to increase their productivity through innovation, since the majority of the innovative companies has in fact experienced such opportunities.

**Sector differences and differences arising from company size**

The second survey question was: *What similarities (and differences) are there between sectors and company size within the service sector?*

~~*Sector differences and differences arising from company size*~~

~~*Only differences in the innovative output of companies*~~

If the innovative behaviour of companies is examined, the similarities between the various sectors and company sizes are greater than their differences. The same applies to the occurrence of bottlenecks and the innovative results realised. Only in the realisation of innovations a few clear differences can be seen. In general, companies in the knowledge-intensive sectors (legal and economic services, research and development companies (including engineering consultancies) and ICT companies) are more often regarded as innovative. One star performer is the ICT sector, in which many product innovations are realised (by 84% of the companies, compared with the average of 48%). Knowledge-intensive companies are also more likely to introduce innovations that contain a higher degree of originality (original to the market/sector). The same interrelationship is found with larger companies (>20 employees): a higher number of companies with recent innovations that contain a greater degree of originality.

Differences in innovative behaviour are less pronounced between sectors and company size. These differences are only subtle, and certainly do not amount to major contrasts. All differences are summarised in table 1. The differences are often fairly self-explanatory: one sector or company size deviating for obvious reasons from the average of all the service companies polled, whereas there is little difference between the other sectors/company sizes.

For example: transport companies deploying many logistics employees in the implementation phase of the innovation process.

Table 1 Differences in relation to average, by sector and company size

Characteristic	Deviations by sector*	Deviations by company size
<b>a Innovative output:</b>		
- Innovative companies	ICT, legal/economic services, R&D (more); transport and retail trade (less).	Smaller companies (less)
- Throughput time of innovations	R&D services (longer)	Larger companies (longer)
- Innovations that are original to the sector/industry	Legal and economic services, R&D services, ICT (more frequent); retail trade (less frequent).	-
<b>b Initiation phase:</b>		
- Sources of inspiration	ICT (more often through internet); retail trade (more often through suppliers' own production and marketing chain + consultants)	-
- Contact with knowledge and educational institutes	R&D services, ICT (more frequent contact); R&D services (more diversity in contacts)	-
<b>c Decision-making:</b>		
- Number of persons involved	-	Smaller companies (decision more often taken by one person).
<b>d Implementation phase:</b>		
- Written plan		Larger companies (more often)
- Use of standard approach for innovation	Retail trade (more often); R&D services (less often)	-
- Employees specialised in innovation (work)	ICT and transport (more often)	Larger companies (more often)

Table 1 Differences in relation to average, by sector and company size

Characteristic	Deviations by sector*	Deviations by company size
- Working with project team		Larger companies (more often)
- Deployed job areas	ICT (many ICT employees); transport (logistics employees); wholesale trade (logistics + commercial + staff); retail trade (commercial); financial services (commercial + staff + non-technical specialists); R&D services (staff + technical specialists).	Larger companies carry out the implementation using more different job areas without further accentuation
- Using external funding	Retail trade (more often); financial services (less often)	-
- Contributions from external partners	ICT (clients); retail trade (peer companies + suppliers from own production and marketing chain); transport (ICT suppliers); financial services (ICT suppliers + external consultants); wholesale trade (suppliers from own production and marketing chain); R&D and legal/econ. services (knowledge and educational institutes).	Larger companies more often use ICT suppliers and commercial consultants.
- Most important knowledge in innovation process	Transport (more often logistics and ICT knowledge) ICT (more often knowledge of market/clients).	-
<b>e Bottlenecks</b>		
- Occurrence of bottlenecks	Retail trade (less often)	Large companies (more often)
- Nature of the bottlenecks	Differences in, and lack of, knowledge and skills (more often in ICT and the financial services); financing (R&D, ICT), and the accessibility of external knowledge, and staff recruitment problems (legal/econ. services, ICT and R&D).	Smaller companies (more often problems with financing); large company (more often lack of knowledge & shortage of skills).
<b>f Results</b>		
- Consequences of innovation for company	More foreign turnover in transport and wholesale trade, and less in retail trade; Cost savings often in transport.	Smallest companies (5-19 employees) report cost savings less frequently.

\* R&D = Research & Development (including Engineers)

### Patterns of innovative behaviour

The third survey question was: *Can patterns of behaviour in service industries be distinguished and if so, what are they?* The fact that there are no major differences to be found between sectors and company sizes does not mean that all innovative service providers go about things in the same way.

[Patterns of innovative behaviour](#)

~~Approach using cluster analysis~~

Using a cluster analysis, the companies polled are divided into four clusters which are homogeneous in the way in which they tackle innovation programmes. In Dutch innovation policy, the concept of so-called system-thinking has been introduced, according to which innovation is regarded as the combined action of several parties. The composition of clusters is therefore based on the contacts that companies have with other parties in both the initiation phase and the implementation phase. It is also dependent on the question whether companies have introduced a high degree of originality in their recent innovations. Such innovations usually have a greater impact on the innovative capacities of other companies and their mutual market conditions, and consequently have a greater impact on the economic development.<sup>3</sup>

*Four clusters of innovative companies*

Innovative service providers can be divided into four homogeneous groups:

- 1 Client-driven innovators (36% of the innovative service providers): clients' requirements are the most important reason, and are often the sole reason to innovate; clients are the most important partner in the implementation phase.
- 2 Supplier-driven innovators (20%): new opportunities offered by suppliers from own production and marketing chain are an important reason to innovate; in the implementation phase, these suppliers make a relatively large contribution; innovations are often adaptations of applications that have already been developed elsewhere, and contain a low degree of originality.
- 3 ICT users (24%): innovation involves the application of information and communication technology; ICT suppliers and consultants are important sources of inspiration and contribute to the implementation.
- 4 Active networkers (20%): have more diverse contacts with the outside world, involve many parties during the implementation phase, are involved in many issues with knowledge and education institutes, and more often manage to come up with an original innovation for the market/sector than the average innovation offers.

Table 2 contains a summary of the key behaviour characteristics by cluster.

Table 2 Key behaviour characteristics by cluster				
Characteristic	1: Client-driven	2: Supplier-driven	3: ICT users	4: Active networkers
Key sources of inspiration to innovate	Only clients	Clients; suppliers from own production and marketing chain	Clients; ICT suppliers	Clients; knowledge/educational institutes; government legislation
Most important implementation partners	Clients	Suppliers from own production and marketing chain; peer companies	ICT suppliers; hired-in consultants	Clients; knowledge/educational institutes; students on work

<sup>3</sup> in a separate test, the cluster analysis was repeated excluding the originality of the innovation as a cluster parameter. The composition of the clusters was virtually identical to the case presented here.



				placement
Innovations with a high degree of originality	Average	Relatively few	Average	Relatively many
Other characteristics	Come up against few bottlenecks	Less often acquire new knowledge	Systematic approach	Greater need for knowledge and more bottlenecks; work a great deal with knowledge and educational institutes

*No major sector and company-size differences*

Companies from the four clusters are more or less homogeneously spread across the sectors and company sizes that were surveyed. It is impossible to localise companies from a specific cluster mainly in one sector or company size. One exception, perhaps, is the retail trade, which contains many supplier-driven innovators. Moreover, ICT users and active networkers are found slightly more often in large companies (100-499 employees) (table 3).

Table 3 Frequency distribution of clusters by sector and company size (as a percentage of the number of innovative companies)				
	1: Client-driven	2: Supplier-driven	3: ICT users	4: Active networkers
<i>Sector:</i>				
- Legal/economic services	38	8	25	29
- R&D/engineers/architects	37	11	23	29
- Transport/logistics	28	13	36	24
- ICT services	46	8	17	29
- Wholesale trade	44	18	16	22
- Financial services	37	11	31	20
- Retail trade	30	36	25	9
<i>Company size:</i>				
- 5-19 employees	42	28	13	16
- 20-49 employees	30	20	24	26
- 50-99 employees	47	26	19	8
- 100-499 employees	30	8	37	26
General (services, 5-499 employees)	36	20	24	20

This result confirms the earlier conclusion that deviations between sectors and company sizes are typically minor differences, not major ones. A sector or company-size approach to influencing innovative service providers would be a less obvious one to policymakers; a cross-sector and cross-company-size approach that focuses on innovative behaviour seems to be a better gauge.

**Fact and fiction surrounding innovation in the service sector**

In practice, there is a range of beliefs about innovation in the service sector, which colour policymakers' views, such as (see also Dankbaar, 2003):

- i The service sector contains fewer innovative companies than the industrial sector.
- ii Service providers mainly apply new marketing and/or ICT when innovating.
- iii The differences in the way service companies tackle innovation processes depend on the sector they belong to.
- iv Service providers copy innovations, particularly those of competitors.
- v Service providers do not have much contact with knowledge institutes.
- vi Service providers do not adopt a systematic/methodical approach towards the development of innovations; their innovation management is practically undeveloped.
- vii Service providers spend little in order to be able to push through innovations.
- viii Service providers often innovate in direct conjunction with their customers.
- ix Service providers hardly have any opportunities to increase their productivity, because their services are largely based on the deployment of people.

*Are these current beliefs well-founded?*

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Based on the results of the poll, conclusions can be drawn as to which of these beliefs about innovation in the service sector are confirmed, which must be rejected and which require qualification (table 4).

<b>Belief</b>	<b>Conclusion</b>	<b>Explanation</b>
i. Less innovative companies	Requires qualification	A broader definition of the definition of <i>innovation</i> than the (technologically-oriented) definition of Statistics Netherlands (CBS) would substantially increase the number of innovative companies.
ii. Mainly marketing	Fiction	Only 11% of the innovations concern the market or marketing, and 34% concern the application of ICT.
iii. Sector differences	Fiction	Differences do occur, but these are usually minor in nature and are not major differences.
iv. Ideas from competitors	Fiction	The activities of competitors do figure among the sources of inspiration, but the clients' requirements and ideas from employees are much more important.
v. Little contact with knowledge and educational institutes	Requires qualification	The majority of service providers who have introduced recent innovations have contact with knowledge and educational institutes.
vi. Unsystematic/methodical approach towards innovation	Requires qualification	70% of the innovative service providers draw up a written plan before the implementation phase; more than half evaluate the feasibility of their plans with a project team; 22% employ people who specialise in innovation (work).
vii. Limited expenditure on innovation	No conclusion can be drawn	Average project costs amount to 6% of annual turnover; due to the lack of benchmark data, it is not clear whether this percentage is high or low.
viii. Development in conjunction with client	Fact	Clients' requirements are the most important source of inspiration, and clients are the most important partner in the implementation phase.
ix. No improvement in productivity	Fiction	64% of the innovative service providers state that they have realised cost savings through innovation.

### **Differences with the industrial sector**

Although not the primary reason for this survey, the survey also compared other studies to see whether the innovative behaviour of service providers differs from innovative behaviour in industrial companies. The tentative conclusion is that the differences are not great. The four clusters show, for example, that there are many similarities with the classification that Pavitt (1984) devised for the industrial sector. Pavitt's classification contains four distinct groups, which are:

- specialised suppliers (companies that primarily innovate for, and together with, individual clients);
- supplier-dominated (companies that appeal to suppliers for their innovations);
- scale-intensive (companies for whom economies of scale are important; process innovations in particular play an important role here (and include ICT), and
- science-based (companies with contacts with knowledge institutes, which will be the first to make use of the new technologies).

### *Nature of the behaviour patterns are comparable*

The four clusters in this survey correspond closely with those of Pavitt (compare client-driven innovators with specialised suppliers; supplier-driven innovators with supplier-dominated; ICT users with scale-intensive; active networkers with science-based). This suggests that the *nature* of the behaviour patterns between the service sector and the industrial sector do not differ that much. Of course, a broader survey at the company level, in which the behaviour of both industrial and service companies are investigated, would provide a definitive answer on this.

### *Innovation is not just about interaction with knowledge institutes*

It ought to be mentioned that Dutch innovation policy places a strong emphasis on the interaction between knowledge institutes and companies. The classification put forward, like Pavitt's 1984 classification, however, reveals that other cooperative partners are often much more important to innovative companies.

### **A few notes**

The survey was subject to the following restraints:

- The survey focused on the behaviour of innovative service providers. Companies without a recent history of innovation were left out. The results of the survey cannot be used to draw conclusions about how to encourage other companies to innovate.
- The service industries selected for our sample is not completely representative. A number of sectors which traditionally produce fewer innovations (e.g. the hotel and catering trade) were not included. The consequence of this is that the relationship between the four behaviour patterns (the percentage population of innovative service companies) probably differs somewhat in practice: the percentage of supplier-driven innovators is probably higher.
- Not all the company sizes were included in the survey. Companies with more than 500 employees (a limited number from which AWT collects information itself through interviews), and companies with fewer than five employees were not included (to avoid contaminating the datasets). What picture of innovative behaviour would have emerged had those companies been included in the sample, remains unclear.