

HIGHLIGHTS

South African Innovation Survey 2008



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Science and Technology
REPUBLIC OF SOUTH AFRICA



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A brief introduction to Innovation Surveys

Innovation is receiving increasing attention in the development debate. The ability to introduce new technologies and organisational innovations is now seen in developing economies as a crucial element in the process of industrialisation and modernisation. It is through innovation that new products are introduced to the market, new production processes are developed and introduced, and organisational changes are made. The survey measures the innovation rate (i.e. the proportion of enterprises with innovation activities); the nature of innovation activities that enterprises undertake; the expenditure they incur on those activities; and the value they derive from new innovations. The survey also provides useful insights on perceptions of enterprises regarding the factors promoting or hampering innovation, sources of information and ideas for

innovation as well as government funding support for innovation in the business sector, amongst others. National Innovation Surveys of the business sector are currently the main statistical instruments for measuring the level of innovation activity in countries. The survey results provide a basis for the better understanding of innovation processes and insights into the effects of innovation on the economy.

Note on Methodology

The South African Innovation Survey 2008 covers the period 2005 to 2007 and is the fourth such survey undertaken in South Africa. CeSTII has worked closely with the Department of Science and Technology (DST) and Statistics South Africa in developing this survey and has followed the lead of Eurostat and the Organisation for Economic Co-operation and Development (OECD) regarding methodology and content in order to make direct international comparisons possible. The survey design was informed by the following: (1) OECD/Eurostat Oslo Manual 2005, (2) more directly by the Eurostat guidelines and core questionnaire for the

Community Innovation Survey (CIS) 2006 , and (3) the structure of the Statistics South Africa business register. A random stratified sample of enterprises (by sector and size of enterprise) was provided by Statistics South Africa from their official business register database. Fieldwork entailed a postal survey with at least two telephonic and two written follow-ups and a non-response survey. The final results were extrapolated to the target population based on the weighted cleaned sample, representing both the industrial and the service sectors. Imputation methodology was developed and used for missing values where required.

Table 1

Key Innovation* Indicators

| Indicator | Reference Period | |
|---|------------------|-----------------|
| | 2002 - 2004 | 2005 - 2007 |
| Innovation Rate (% of enterprises that had technological innovation activities) | 51.7% | 65.4% |
| Number of enterprises that had technological innovation activities | 16 264 | 14 934 |
| Percentage of enterprises with successful innovation activities | 47.3% | 27.2% |
| Expenditure on innovation activities | R27.8 billion | R56.9 billion |
| Innovation expenditure (as % of turnover of all enterprises) | 2.4% | 1.7% |
| Turnover from sales of new to the market products | R 67.8 billion | R 209.5 billion |
| Percentage of innovative enterprises that received financial support for innovation from government sources | 6.5% | 4.1% |

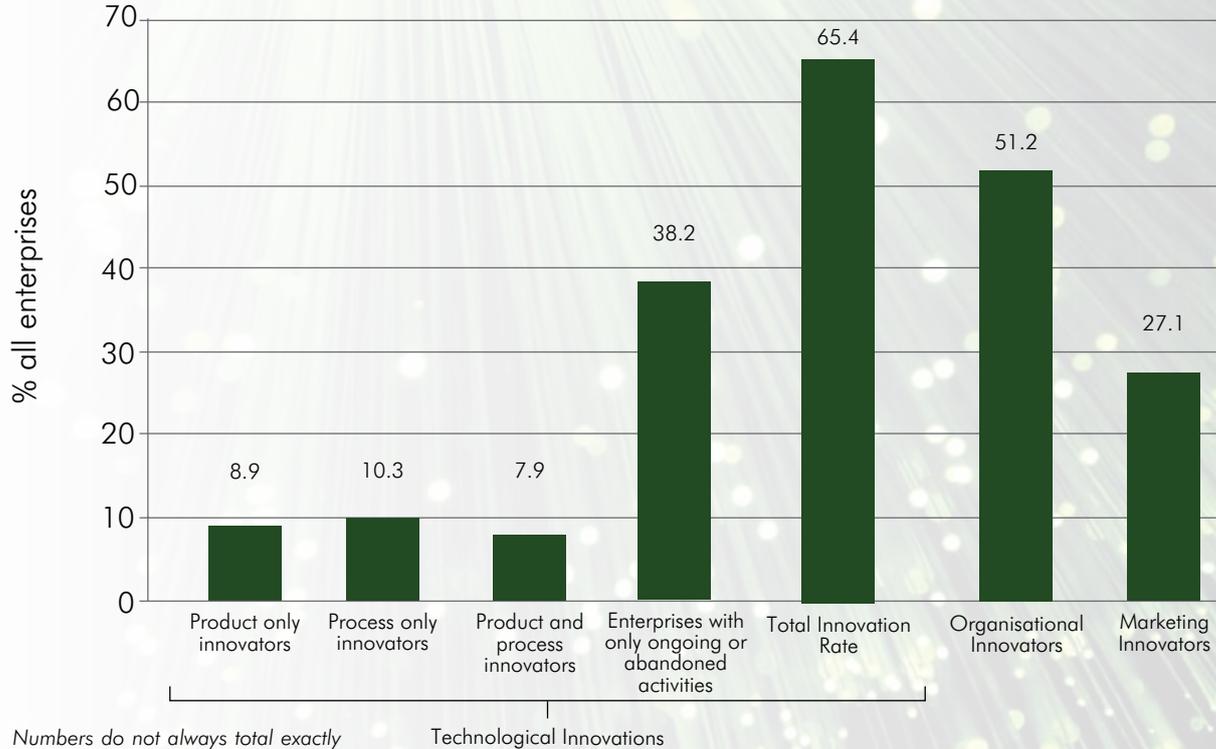
**Technological innovation comprises both product and process innovations. Product innovation is the introduction to the market of a new good or service or a significantly improved good or service with respect to its capabilities. Process innovation is the use of new or significantly improved methods for the production or supply of goods or services.*

It has been observed that innovation rates can be higher in less developed economies since there are more opportunities for introducing new or changed products. A total of 65.4% of South African enterprises had technological innovation activities comprising either product (goods and/or services) or process innovations. Of this total 27.2% had successful innovations, meaning that they completed their product and/or process innovations. A total of 10.3% of innovative enterprises reported having process only innovations, which is slightly more than the 8.9% of innovative enterprises that reported having product only innovations. A further 7.9% of enterprises had been involved in both process and product innovations, whilst the other 38.2% had ongoing or abandoned innovation activities.

It should be noted that the qualitative questions in the innovation survey reflect the measurement of perceptions that can be influenced by cultural and regional contexts and the subjectivity of the opinions of individuals.

Figure 1

Innovation rate by type of innovation, 2005 - 2007

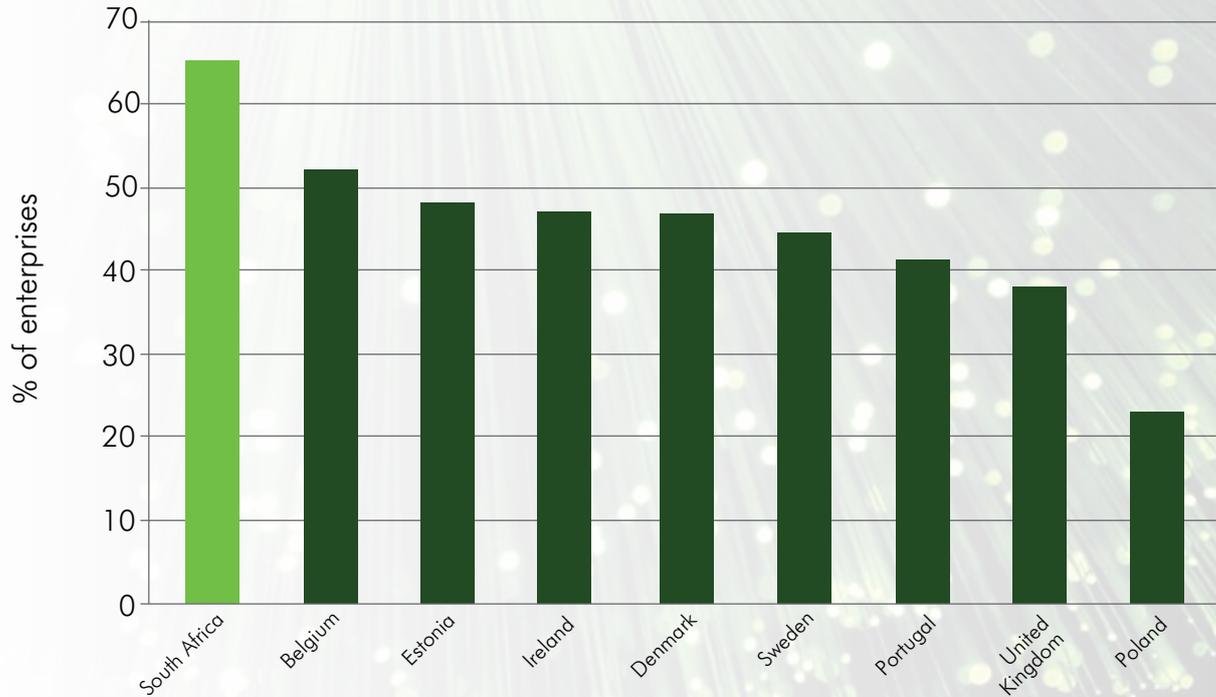


Numbers do not always total exactly because of rounding effects

The South African rate of innovation expressed as the percentage of all enterprises that reported innovation activities during the period 2005 to 2007, is relatively high at 65.4% and is greater than that of European Union countries. This rate of innovation also includes the 38.2% of enterprises that had ongoing or abandoned innovation activities during this period. The threshold for a firm to be recorded as an innovating one is that it introduced a new or significantly improved product (goods or services) to the market that was new to the firm, but not necessarily new to the market. The innovation could have been originally developed by the enterprise or procured from another organisation. South Africa's relative performance in this area needs to be understood in a wider context. The performance on other indicators related to innovation such as patents, new enterprise formation, manufacturing activity and exports share of global trade, GERD as a percentage of GDP and workforce structure, is relatively weak compared to the same set of selected countries for the comparison.

Figure 2

South African share of enterprises with innovation activities compared to selected EU-countries* (%), 2005 – 2007



* EU-countries data reported for the time period 2004 - 2006

Enterprises spent a total of R56.9 billion on innovation activities in 2007. This represents about 1.7% of the total turnover of the 22 849 enterprises in both the industrial* and service sectors**. About 21.2% of expenditure on innovation was devoted to intramural R&D and a further 11.4% was spent on outsourced R&D. The pattern of expenditure on innovation activities is similar to that recorded in the previous survey with the bulk of innovation expenditure (59.6%) devoted to the acquisition of new machinery, equipment and software. Acquisition of other external knowledge accounted for about 7.8% of innovation expenditure.

Eurostat recommends using the following sectors to report on the industrial and service sectors in innovation surveys.

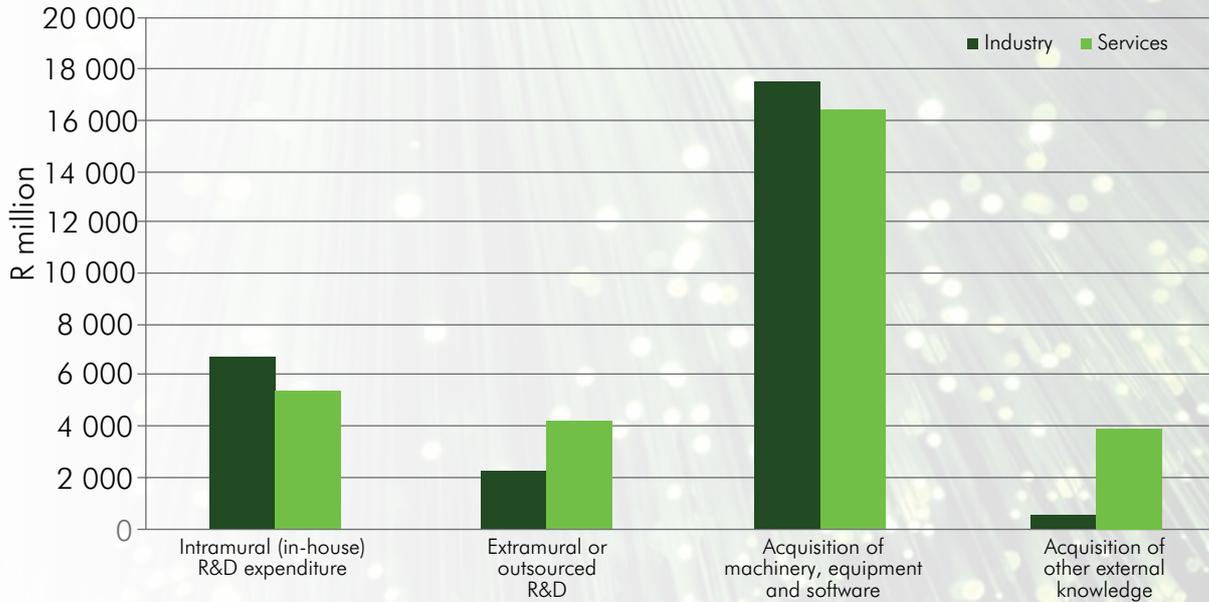
*Industry = Mining and quarrying; Manufacturing; Electricity, Gas and Water Supply

**Services = Wholesale and Retail Trade; Transport, Storage and Communication; Financial Intermediation; Architectural, Engineering and other Technical Activities

Figure 3

Expenditure (in million rands) of enterprises on innovation activities, 2007 (year specific question)

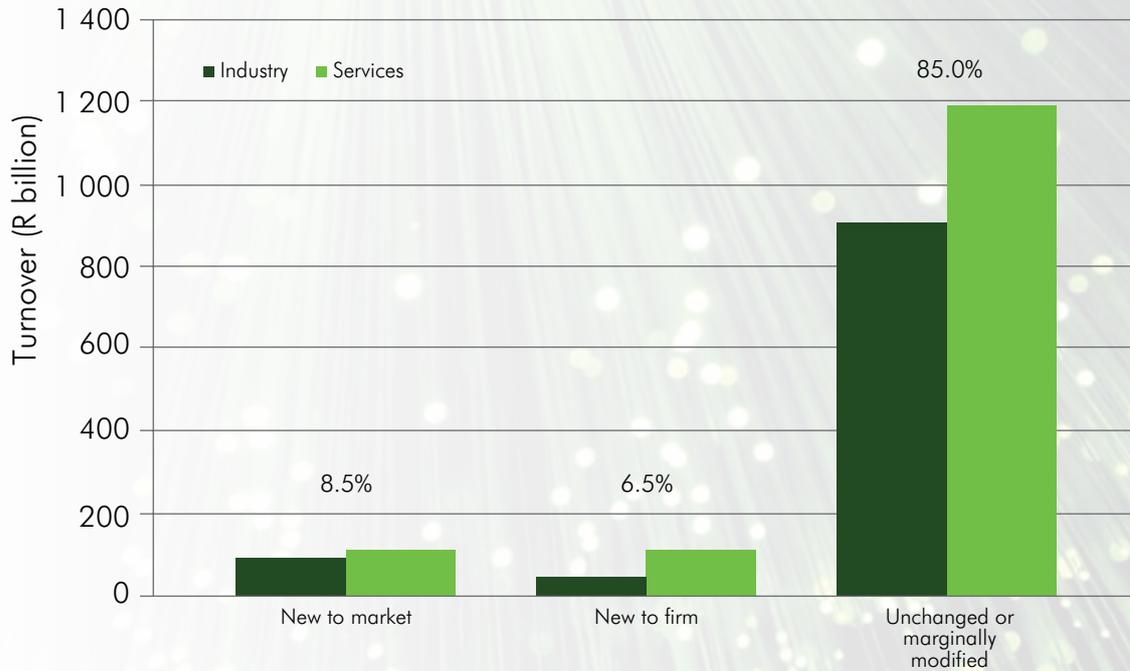
Total = 56.9 billion
Industry = 27.0 billion
Services = 29.9 billion



Enterprises that had product innovations (comprising innovations in either goods or services produced) accounted for the majority of innovators in the survey. Approximately 8.5% of the turnover of product innovators in 2007 was generated by innovations that were new to the market, representing a turnover of about R209.5 billion. The bulk of turnover of innovative enterprises comprises of goods and services that were unchanged or marginally modified. A further 6.5% of turnover (or R160.5 billion) was generated by the sale of products that were new to the firms concerned, but not necessarily new to the market.

Figure 4

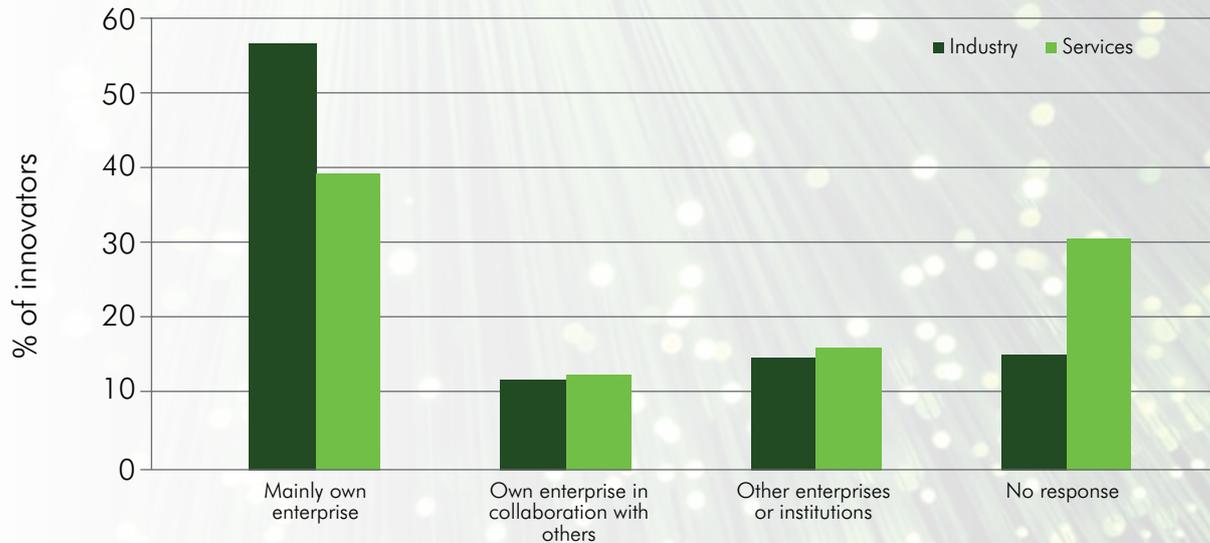
Product (goods and services) innovators – breakdown of turnover by product type, 2007 (year specific question)



The majority of product innovations were produced within enterprises themselves but this was more common in the industrial enterprises (57.1%) than in the services-oriented enterprises (39.6%). In the services sector 12.8% of innovative enterprises collaborated with other enterprises to produce their product innovations. A total of 76.0% of innovative enterprises indicated that their product innovations were mainly developed in South Africa, while 24.0% indicated that their product innovation originated predominantly from foreign sources.

Figure 5

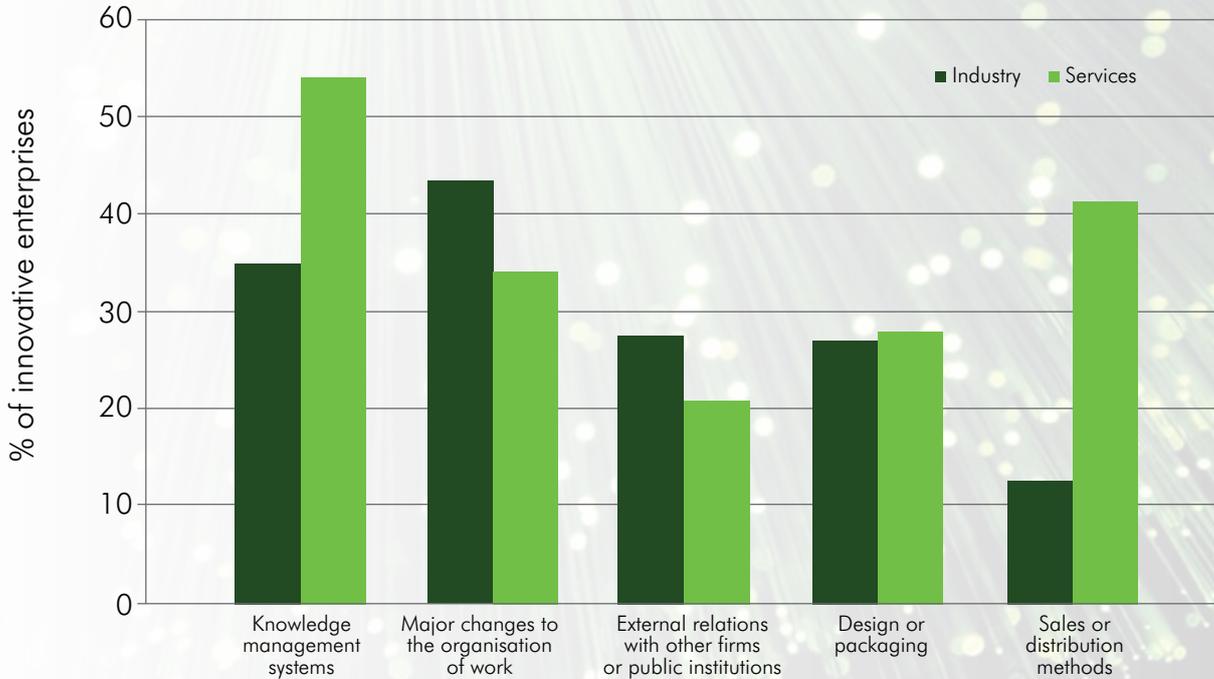
Innovative enterprises (%) – responsibility for the development of product innovations, 2005 – 2007



Enterprises with only product innovations (excluding process innovations), that also had organisational and/or marketing innovations amounted to 13.0%. Businesses in the service sector were more likely to engage in these types of innovation. In the services sector 53.9% of enterprises introduced new or improved knowledge management systems compared to 34.9% in industry. Sales distribution methods were improved or changed by 41.2% of enterprises in the services sector, compared with only 12.7% in the industrial sector. Major changes to the organisation of work within the enterprise was reported by 43.4% of enterprises in the industrial sector and 34.1% in the industrial sector.

Figure 6

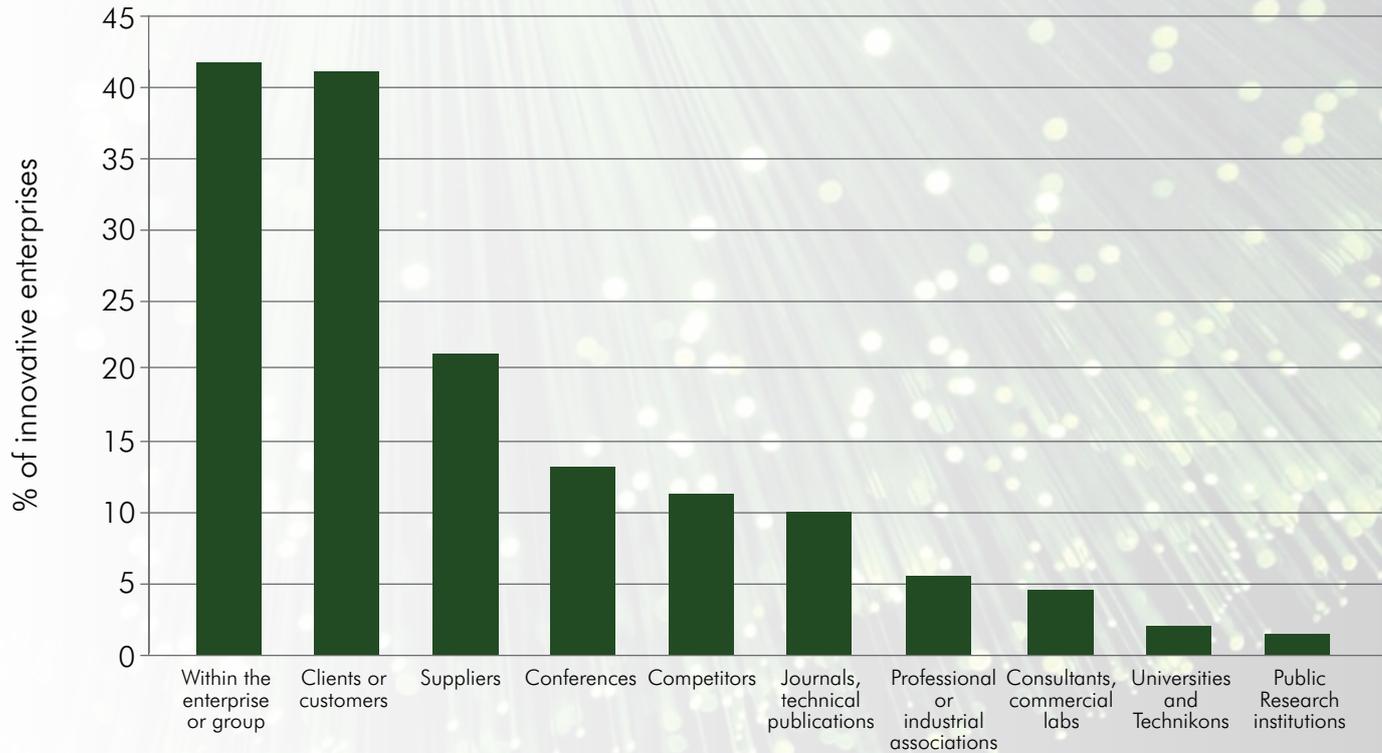
Proportion of innovative enterprises that introduced organisational or marketing innovations, 2005 – 2007



Sources of information within the enterprise (or enterprises group) were rated as 'highly important' for innovation activities by 41.7% of all innovative enterprises. Clients or customers provided 'highly important' sources of information for 41.2% of innovative enterprises. As in the previous survey, Universities and Technikons were not highly rated with only 2.1% of enterprises rating them as 'highly important' sources of information. These trends could reflect the well known challenge of encouraging the business sectors' use of higher education research findings. Public research institutions were ranked as the least important, with only 1.5% of innovative enterprises rating them as 'highly important' sources of information.

Figure 7

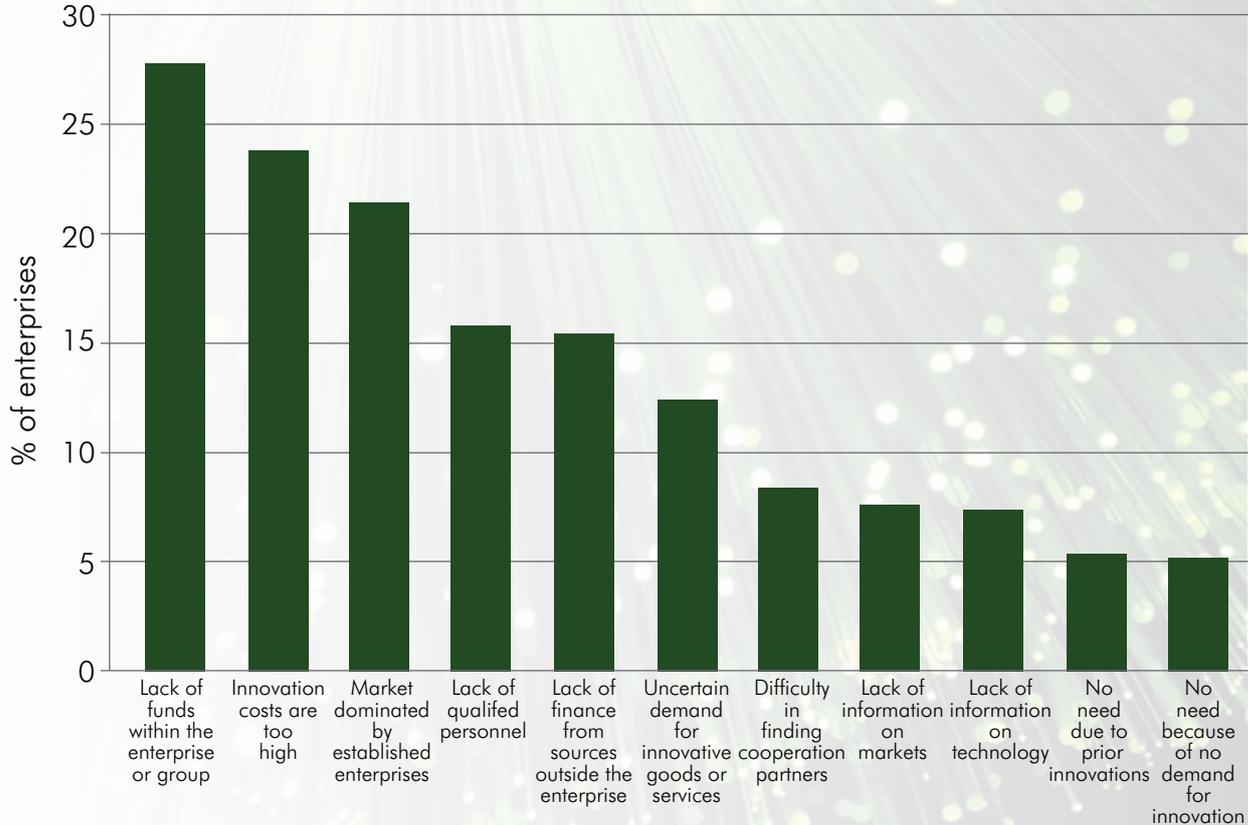
Sources of information rated as 'highly important' by innovative enterprises, 2005 – 2007



Of all enterprises, 27.8% indicated that they lacked the funds within their enterprises or enterprise group to be actively involved in innovation projects. Innovation costs being too high and the market being dominated by established enterprises were also cited as 'highly important' in hampering innovation activities by 23.8% and 21.4% of enterprises, respectively. Lack of qualified personnel was seen as a 'highly important' factor by approximately 15.8% of enterprises.

Figure 8

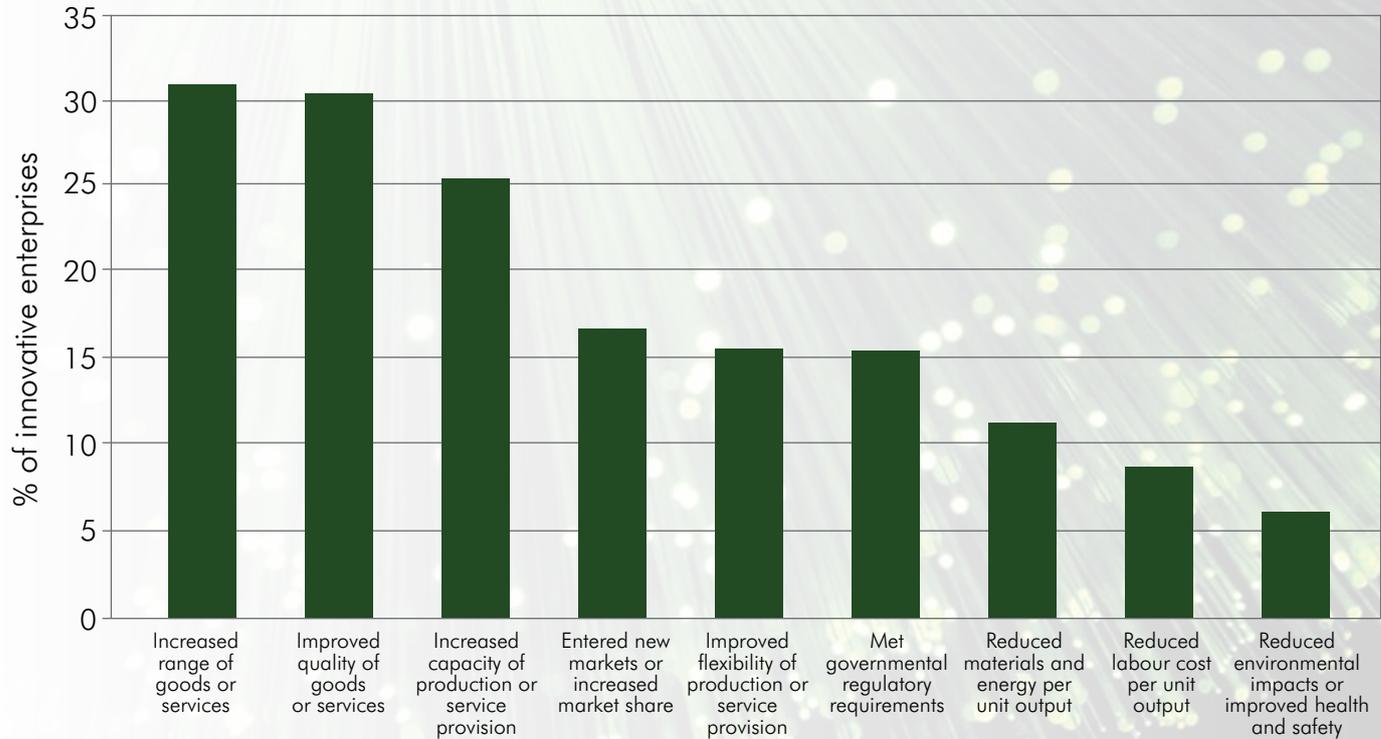
'Highly important' factors that hampered innovation activities, 2005 – 2007



Increased range of goods and services, and improved quality of goods or services were cited as the most important effects of innovation (31.2% and 30.7% respectively). Also of importance for South African firms was an increased capacity of production or service provision (25.6%). Only 15.7% of innovative firms cited that meeting government regulatory requirements was of importance to their innovation outcomes. Reducing labour costs and environmental impacts or improved health and safety appeared relatively less important than the other effects, accounting for 8.9% and 6.3% of responses, respectively.

Figure 9

'Highly important' effects of innovation on outcomes for enterprises, 2005 – 2007



National funding agencies appear to be the most active in supplying financial support to firms especially in the industrial sector where 2.5% of innovative enterprises received funding. Only 0.4% of innovators in the services sector received funding from these sources. National government provided 1.7% of service sector innovators with funding and a further 0.7% in the industrial sector received domestic funding from this source. Altogether about 4.1% of innovators received public funding for their innovation activities between 2005 – 2007.

Table 2

Financial support received from government sources by innovative enterprises, 2005 – 2007

| Percentage of innovative enterprises (%) | Total | Industry | Services |
|--|-------------|------------|------------|
| Metros and municipalities | 0.0 | 0.0 | 0.1 |
| Provincial government | 0.0 | 0.0 | 0.0 |
| National government | 1.2 | 0.7 | 1.7 |
| National funding agencies | 1.6 | 2.5 | 0.4 |
| Foreign government/public sources | 1.2 | 2.0 | 0.3 |
| Total | *4.1 | 5.2 | 2.5 |

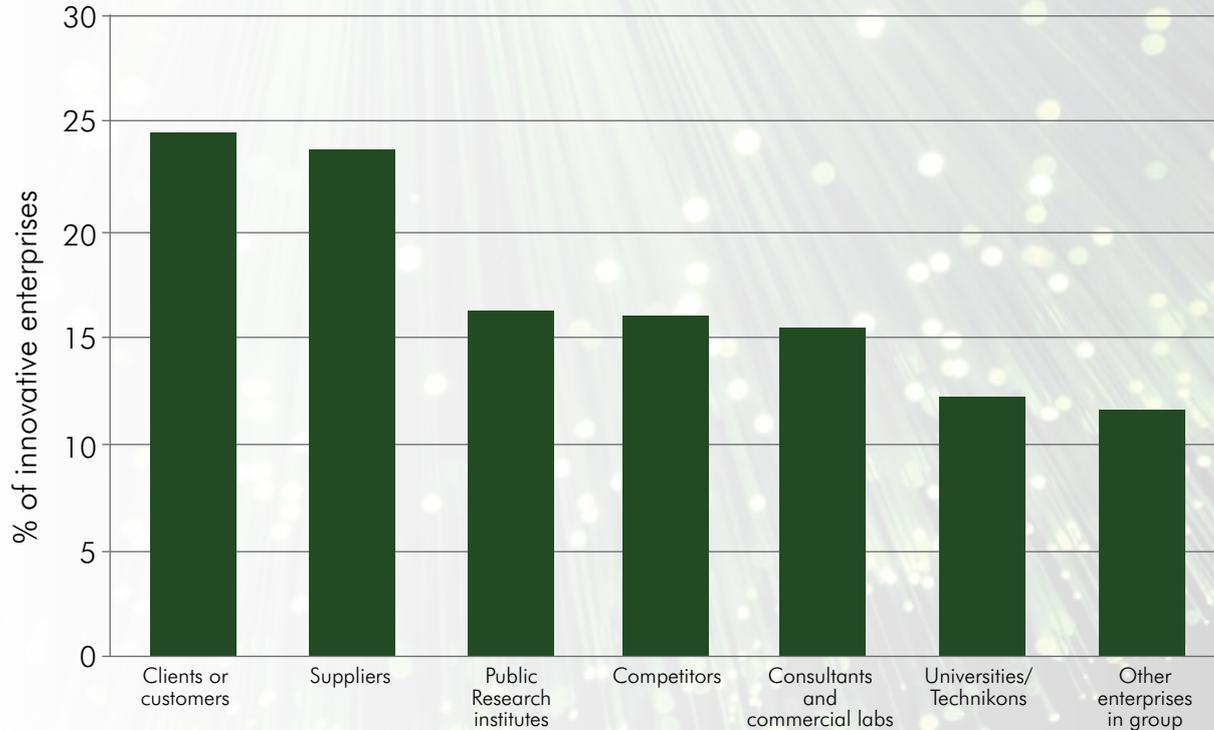
** Numbers do not always total exactly because of rounding effects*

South African enterprises are well attuned to both the demand and supply aspects of the market. The most important collaborative partnerships for innovation were between enterprises and their clients or customers, which comprised 24.4% of collaborative partnerships. Collaborative efforts between enterprises and their suppliers were at 23.6%. Approximately 16.1% of innovative enterprises collaborated with public research institutes and a further 15.9% also collaborated with their competitors. Universities and technikons* were rated as 'highly important' collaborative partners by 12.1% of innovative enterprises.

*now Universities of Technology

Figure 10

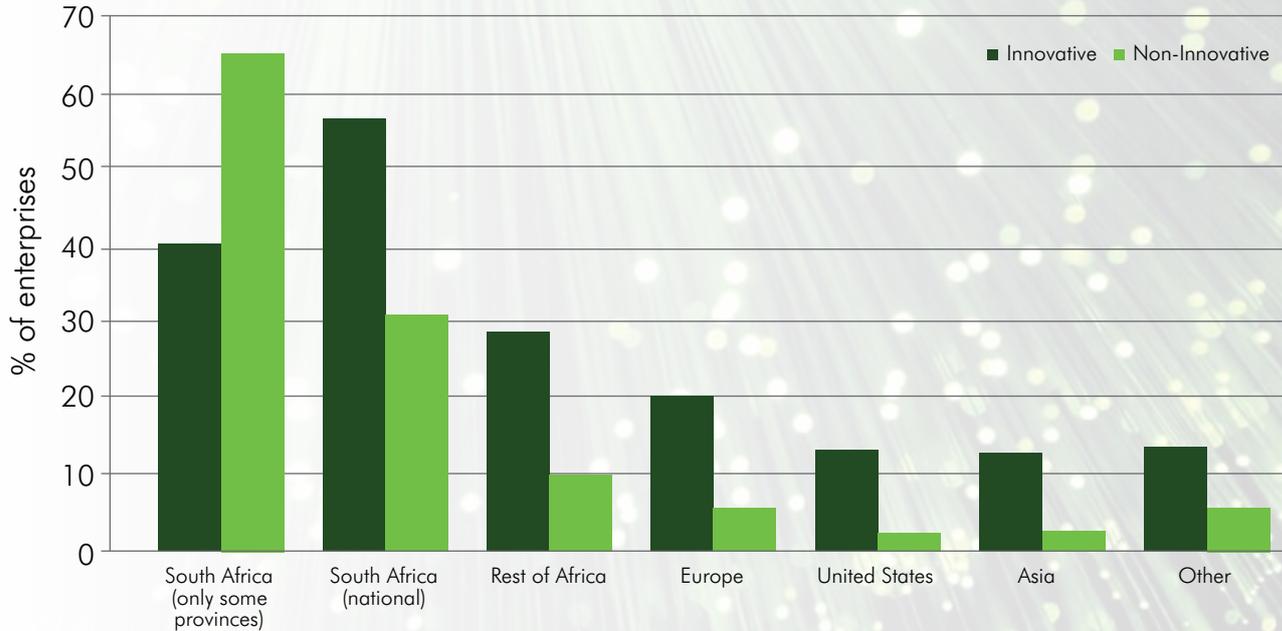
Collaborative partnerships for innovation activities by type of partner, 2005 – 2007



Innovative South African enterprises appear to be more export-orientated compared to non-innovative enterprises. A total of 56.6% of innovative enterprises sold their goods and services throughout South Africa compared with 30.8% of non-innovative enterprises. Other African countries were an important market for 28.8% of innovative enterprises in terms of the goods and services they produced. European countries accounted for 20.4% of exports by innovative enterprises compared with 13.3% for the United States and 12.9% for Asia.

Figure 11

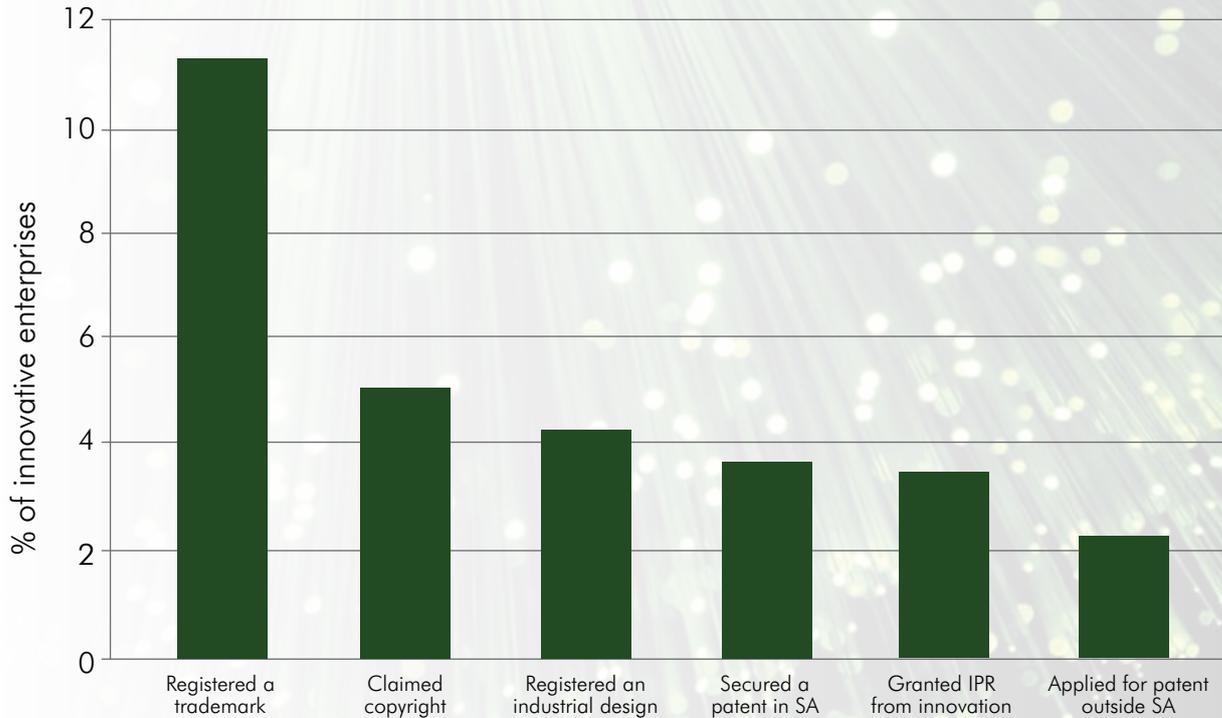
Geographic distribution of goods and services sold by innovative and non-innovative enterprises, 2005 – 2007



Of all the innovative enterprises in South Africa, 11.3% registered a trademark between 2005 and 2007 while 5.1% claimed a copyright. About 3.5% of innovative enterprises granted intellectual property rights (IPR) originating from their own innovation activities to third parties. About 2.3% of innovative companies applied for patents outside South Africa and a total of 3.7% of innovative enterprises secured a patent in South Africa. This profile is almost identical to the one recorded in the previous Survey for 2002 – 2004, indicating that South African enterprises continue to make fairly low use of intellectual property rights and government is introducing measures to improve the use of IPR in South Africa.

Figure 12

Enterprises with innovation activity that made use of intellectual property rights, 2005 – 2007









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