RESULTS OF THE 2011 UIS PILOT DATA COLLECTION OF INNOVATION STATISTICS

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1. The 2011 UIS pilot data collection on innovation statistics

The relationship between innovation and economic development is widely acknowledged. Innovation is a key element in the growth of output and productivity, and therefore crucial for poverty alleviation. While research and experimental development (R&D) plays a vital role in the innovation process, many of the related activities rely on highly-skilled workers, interactions with other firms and public research institutions, as well as an organizational structure that is conducive to learning and exploiting knowledge (Oslo Manual, §72).

These factors should be taken into account by policymakers. To this end, data are required to better understand innovation and its relation to economic growth, as well as to provide indicators for benchmarking national performance.

Over the last few decades, work has been undertaken to establish analytical frameworks and guidelines for innovation studies. Efforts to standardize innovation definitions and indicators came to the forefront with the publication of the first version of the Oslo Manual (OM) by the Organisation for Economic Co-operation and Development (OECD) in 1992. The manual pushed the measurement of innovation as a process, fostering the collection of comparable innovation indicators since its first edition.

Definition

An **innovation** is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations.

A common feature of an innovation is that it must have been implemented. A new or improved product is implemented when it is introduced on the market. New processes, marketing methods or organizational methods are implemented when they are brought into actual use in the firm's operations.

The way innovations spread from their first implementation to different consumers, countries, regions, sectors, markets and firms is known as diffusion. Without diffusion, an innovation has no economic impact (Oslo Manual[1] §37, 146, 150).

The UNESCO Institute for Statistics (UIS) is striving to increase the availability of timely, accurate and policy-relevant statistics in the field of science, technology and innovation (STI) through the development of a database of cross-nationally comparable innovation statistics. To this end, the UIS launched a pilot data collection of innovation statistics in 2011 in order to prepare for the global data collection which will be launched in 2013.

The pilot data collection was based on the definitions of the third edition of the Oslo Manual, covering four types of innovation in the business sector. Data were collected for manufacturing, services and total economic activities covered by each national innovation survey. However, this report focuses exclusively on cross-nationally comparable data for the manufacturing industry. It should be noted that there are certain

[1] OECD and Eurostat. (2005). *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*. (3rd ed.). Paris: OECD.

limitations in comparisons between countries due to differences in the methodological procedures of the national innovation surveys.

The pilot data collection sought to gather aggregate data from the most recent national innovation surveys in 19 selected countries. Countries were asked to complete the pilot questionnaire using grossed up[2] results of their national innovation surveys. The following 12 countries participated in the pilot data collection: Brazil, China, Colombia, Egypt, Ghana, Indonesia, Israel, Malaysia, the Philippines, the Russian Federation, South Africa and Uruguay.

Eurostat has led the way in sustaining the production of internationally comparable data on innovation in enterprises through its Community Innovation Surveys (CIS). Based on the CIS, Eurostat produces innovation statistics for member states and candidate countries of the European Union, Iceland and Norway, which are frequently used for comparison in national innovation survey reports. Therefore, in order to enhance interpretation of the UIS pilot results, whenever possible, this paper compares the data collected with Eurostat's CIS[3] results from 2006 and 2008.

[2] Sample survey data represent units in the sample only. Therefore, the sample estimates need to be inflated to represent the whole population of interest. Estimation is the means by which this inflation occurs, also referred to as "grossing up" (Dodge, Y. (Ed) (2003). The Oxford dictionary of statistical terms. Oxford: Oxford University Press).

[3] Eurostat is the statistical office of the European Union. The CIS is designed to monitor innovation activity in Europe and is the main source of statistics on innovation activity of business firms in the region. For more information, see: http://epp.eurostat.ec.europa.eu/portal/page/portal/science_technology_innovation/data/database.

2. Product and process innovation

Effective policies on innovation must take into account the implementation of product and process innovations by business firms. Product innovations represent the final commercialization of innovation activities on the market and are therefore of great interest to policymakers. Process innovations involve improvements in internal processes, through either the adoption of new technologies or in-house development. In-house process innovations are related to the concept of "user innovations", which has recently been attracting extensive interest (Bloch and Lopez-Bassols[4], 2009).

Definition

Product innovation is the implementation of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness, or other functional characteristics (Oslo Manual §156). Firms that implemented at least one product innovation are product innovators.

Process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software (Oslo Manual §163). Firms that implemented at least one process innovation are process innovators.

In contrast to previous editions of the Oslo Manual, the third edition excludes the term technological from the definition of innovation. This is to avoid a narrow interpretation, in particular by firms from the services sector, whereby "technological" implies the use of "high-technology plants and equipment", which would exclude many of the product and process innovations of this specific sector (Oslo Manual §34, 35).

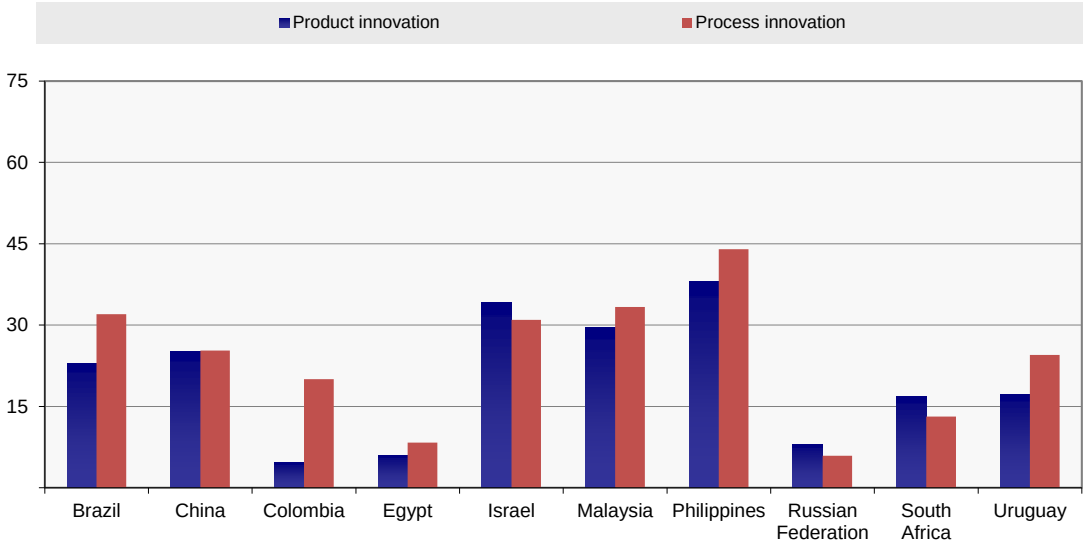
Figure 1 shows the percentage of manufacturing firms that implement product innovation, as well as the percentage of manufacturing firms that implement process innovation.

The Philippines has the highest percentage of manufacturing firms that implement product innovation (38.0%), followed by Israel (34.2%) and Malaysia (29.5%). The Philippines also has the highest share of manufacturing firms that implement process innovation (44.0%), followed by Malaysia (33.3%) and Brazil (32.0%). In contrast, the lowest shares for both product and process innovation are reported by Colombia (4.6% and 20.0% respectively) and Egypt (6.0% and 8.3% respectively).

In China, approximately the same percentage of manufacturing firms implement product (25.1%) and process innovation (25.3%). In Israel, the Russian Federation and South Africa, a higher share of manufacturing firms implement product innovation (34.2%, 8.0% and 16.8% respectively) than process innovation (30.9%, 5.9% and 13.1% respectively).

[4] Bloch, C. and V. Lopez-Bassols (2009). "Innovation indicators". In OECD (Ed.), *Innovation in Firms: A Microeconomic Perspective,* (pp. 21-68). Paris: OECD.

Figure 1. Manufacturing firms that implement product and process innovation as a percentage of all manufacturing firms



Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), and Malaysia (4 years).
For China: Product innovation covers only new or significantly improved goods. Logistics, delivery or distribution methods are not explicitly mentioned in process innovation.
For Colombia: Sample survey data (no grossed up results).
For the Philippines: IT services are also included. Results are not representative of the target population.

Source: 2011 UIS pilot data collection of innovation statistics.

While Figure 1 presents data for product innovation and process innovation separately, **Figure 2** shows the percentage of manufacturing firms that implement either product or process innovation.

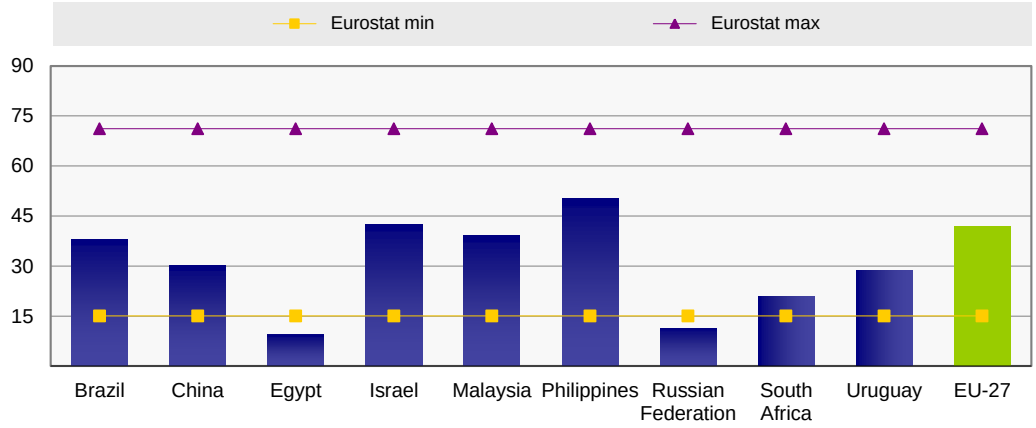
Box 1. Indicator on product or process innovation

The indicator on product or process innovation measures the share of firms that implement either product or process innovation in a country as a percentage of all firms. These firms are known as product or process innovators. This indicator usually does not cover firms with abandoned or ongoing innovation activities. In the pilot questionnaire, the share of product or process innovators was restricted to manufacturing firms. Annex I contains detailed data for manufacturing industries at the division level.

The Philippines has the highest share of manufacturing firms that implement either product or process innovation, at 50.2%. Manufacturing firms in Israel (42.4%) have approximately the same percentage of product or process innovators as the average of the 27 Member States of the European Union (EU-27) (42.0%). To some extent, the same can be observed for Malaysia (39.0%) and Brazil (38%).

In the European Union, the highest country share of manufacturing firms that implement product or process innovation (Eurostat max) corresponds to 71.2%. In contrast, the lowest share is 15.0% for Eurostat countries (Eurostat min). All pilot countries – with the exception of the Russian Federation (11.3%) and Egypt (9.3%) – have a share of manufacturing firms that implemented product or process innovation which falls between the Eurostat minimum and maximum shares.

Figure 2. Manufacturing firms that implement product or process innovation as a percentage of all manufacturing firms



Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), and Malaysia (4 years).
For China: Product innovation covers only new or significantly improved goods. Logistics, delivery or distribution methods are not explicitly mentioned in process innovation.
For the Philippines: IT services are also included. Results are not representative of the target population.
For EU-27/Eurostat: Data cover firms with abandoned or ongoing activities.

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2006 database (Eurostat, 2012).

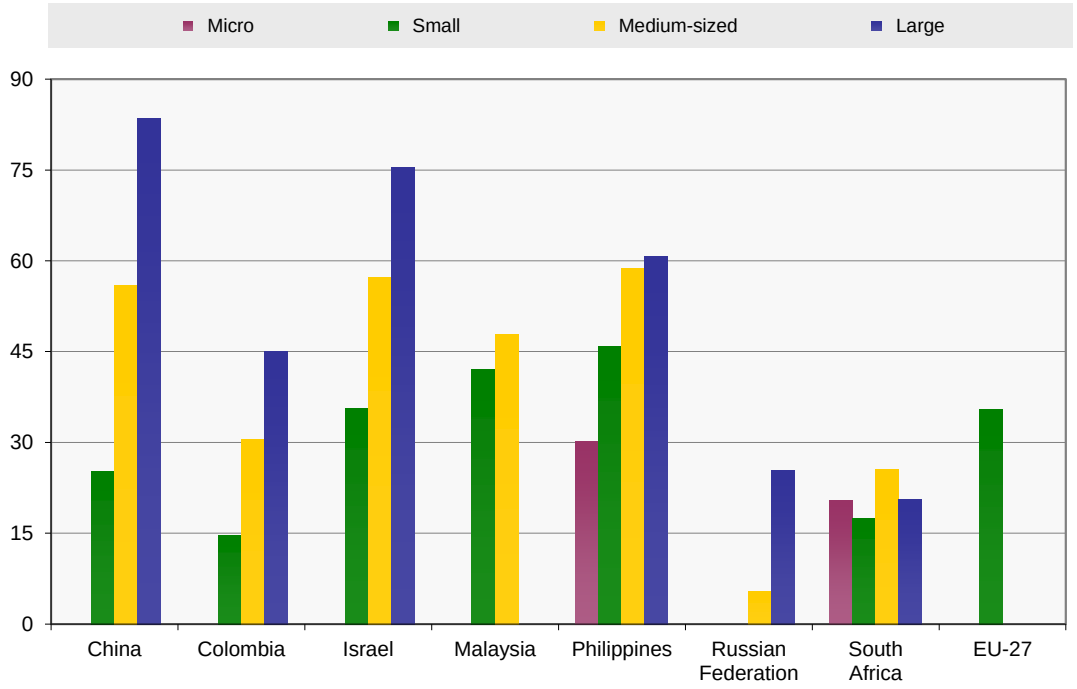
Figure 3 presents the percentage of manufacturing firms that implement either product or process innovation according to their size: micro, small, medium-sized or large. The results support the connection between the size of a firm and its level of innovation. Overall, the larger the size class, the higher the share of firms that implement product or process innovation.

In China, 83.5% of large manufacturing firms implement product or process innovation, followed by Israel (75.5%) and the Philippines (60.8%). In contrast, this was the case for less than one-half of large manufacturing firms in South Africa (20.5%), the Russian Federation (25.4%) and Colombia (45.0%).

Turning to medium-sized manufacturing firms, 57.4% of these firms implement product or process innovation in Israel and 55.9% in China. In contrast, this is the case for just 5.4% of medium-sized manufacturing firms in the Russian Federation.

The share of small manufacturing firms which implement either product or process innovation falls off sharply in countries such as Colombia (14.6%), South Africa (17.4%) and China (25.2%). However, a very different situation emerges in the Philippines and Malaysia, where 45.8% and 42.1%, respectively, of small manufacturing firms implement product or process innovation.

Figure 3. Manufacturing firms that implement product or process innovation by size class as a percentage of manufacturing firms in each size class



Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), and Malaysia (4 years).
For China: Product innovation covers only new or significantly improved goods. Logistics, delivery or distribution methods are not explicitly mentioned in process innovation. Data broken down by size class cover manufacturing, mining and quarrying, as well as electricity, gas and water supply.
For Colombia: Sample survey data (no grossed up results).
For the Philippines: IT services are also included. Results are not representative of the target population.
For EU-27/Eurostat: Data cover firms with abandoned or ongoing activities.
Size classes are detailed in Annex II.

Source: *2011 UIS pilot data collection of innovation statistics and CIS 2006 database (Eurostat, 2012).*

South Africa has approximately the same share of micro (20.4%) and large (20.5%) manufacturing firms which implement product or process innovation. Small firms follow closely behind at 17.4%.

Overall, large manufacturing firms tend to present higher shares of product or process innovators, with the exception of South Africa. In this country, medium-sized manufacturing firms have the highest share of product or process innovators. Moreover, nearly the same percentage of micro and large manufacturing firms implement product or process innovation. This unusual trend could be a topic for further investigation.
In general, the data show that product and process innovation is present in all countries, regardless of their level of development. This underlines the pervasive nature of innovation, especially in contrast to R&D activities which are generally concentrated in developed countries.

3. Innovation activities

It is important to differentiate between the concept of innovation and innovation activities. An innovation requires a market connection, which is not the case for innovation activities. For example, R&D or patents without a market connection are considered to be innovation activities but not an innovation (AU-NEPAD[5], 2010). Innovation activities include: intramural R&D; extramural R&D; acquisition of machinery, equipment and software; acquisition of other external knowledge; training; market introduction of innovations; and other preparations.

Definition

Innovation activities are all scientific, technological, organizational, financial and commercial steps which actually lead, or are intended to lead, to the implementation of innovations. Some innovation activities are innovative, others are not novel activities but are necessary for the implementation of innovations. Innovation activities also include R&D that is not directly related to the development of a specific innovation (Oslo Manual §149).

Innovation-active firms are those which had implemented, abandoned or ongoing product or process innovation activities during the observation period of a survey. In other words, innovation-active firms are not only the firms that implemented a product or a process innovation but also includes those that had abandoned or ongoing innovation activities to develop new or significantly improved products or processes (Oslo Manual §215).

Table 1 presents the percentage of innovation-active manufacturing firms[6] engaged in different types of innovation activities.

In eight countries, manufacturing firms are most likely to be involved in the acquisition of machinery, equipment and software. In particular, more than 70% of firms are engaged in this specific innovation activity in: Colombia (85.8%), Israel (85.1%), Ghana (80.7%), Egypt (74.3%) and South Africa (71.2%). By comparison, the Eurostat maximum is close to 100% for this activity. Although the greatest share of firms in Uruguay are engaged in the acquisition of machinery, equipment and software, it represents only 20.3%, which is lower than the Eurostat minimum (25.2%)

Training is also considered to be a major innovation activity. This is the most widely reported type of activity undertaken by firms in Ghana (86.0%) and China (71.5%), and is also very important in South Africa (69.6%). In contrast, the percentages fall considerably in the Russian Federation (18.3%) and Uruguay (15.1%). All responding countries present higher shares of firms engaged in this activity than the Eurostat minimum of 8.9%.

[5] AU-NEPAD (African Union-New Partnership for Africa's Development). (2010). African Innovation Outlook 2010. Pretoria: AU-NEPAD.

[6] In this section the term firms refers to innovation-active manufacturing firms.

Table 1. Firms engaged in innovation activities as a percentage of innovation-active manufacturing firms

	Innovation activity						
	Intramural R&D	Extramural R&D	Acquisition of machinery, equipment and software	Acquisition of other external knowledge	Training	Market introduction of innovations	Other preparations
Brazil	4.7	1.9	34.1	4.8	26.5	14.7	16.7
China	63.3	22.1	66.0	28.1	71.5	60.6	36.9
Colombia	26.8	8.9	85.8	7.2	19.8	26.6	n.a.
Egypt	41.3	5.5	74.3	11.0	56.9	19.3	35.8
Ghana	42.1	14.0	80.7	15.8	86.0	71.9	45.6
Indonesia	48.3	5.2	39.3	21.6	37.0	85.4	77.5
Israel	48.9	32.2	85.1	12.9	52.6	59.1	n.a.
Malaysia	42.5	15.8	64.9	29.8	50.2	32.0	n.a.
Philippines	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Russian Federation	18.9	20.0	64.0	12.7	18.3	9.6	n.a.
South Africa	54.1	22.4	71.2	24.8	69.6	42.6	47.7
Uruguay	11.1	1.2	20.3	4.4	15.1	n.a.	n.a.
EU-27	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Eurostat min	8.2	5.8	25.2	2.0	8.9	14.3	9.4
Eurostat max	81.3	54.8	98.8	53.1	96.4	48.4	88.1

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), Indonesia (2 years), and Malaysia (4 years).
For Colombia: Sample survey data (no grossed up results). Data only cover product and process innovators. Acquisition of software is not included. Acquisition of other external knowledge is categorised under technology transfer.
For Ghana: Data only cover product and process innovators.
For Indonesia: The target population was medium-sized and large firms that implemented any type of innovation. No specification of firms covered.
For Malaysia: Data also cover organizational and marketing innovators.
For the Philippines: IT services are also included. Results are not representative of the target population.
For the Russian Federation: Acquisition of software is not included.
For Uruguay: Data cover organizational and marketing innovators and exclude firms with abandoned or ongoing activities. Acquisition of machinery, equipment and software refers to acquisition of capital goods. Acquisition of other external knowledge is categorized under technology transfer and consultancy.

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2008 database (Eurostat, 2012).

Significant percentages of firms are also engaged in intramural R&D and the market introduction of innovations. In China, 63.3% of firms engaged in intramural R&D, which is the case for 54.1% of firms in South Africa. In Indonesia, 85.4% of firms engaged in market introduction of innovations, followed by Ghana (71.9%), China (60.6%) and Israel (59.1%). All these countries present a share of firms engaged in market introduction of innovations higher the Eurostat maximum (48.4%).

In contrast, the two activities in which firms are the least likely to engage are: the acquisition of other external knowledge and extramural R&D. Extramural R&D, in particular, has the lowest shares of engagement in seven countries. Israel (32.2%) has the highest percentage of firms engaged in this activity, followed by South Africa

(22.4%), China (22.1%) and the Russian Federation (20.0%). Interestingly, the Russian Federation is the only country to have more firms engaged in extramural R&D than intramural R&D (18.9%).

Box 2. Innovation activities in BRICS countries

India is the only BRICS country that was not included in the 2011 UIS Pilot Data Collection of Innovation Statistics, since the results of the Indian Innovation Survey were not yet available when the pilot was launched. While China and South Africa alternate in taking the lead with the highest share of firms engaged in innovation activities, Brazil and the Russian Federation interchange with the lowest percentages.

In three of the four BRICS countries covered in the pilot, most firms engaged in the acquisition of machinery, equipment and software: South Africa (71.2%), the Russian Federation (64.0%) and Brazil (34.1%). In the fourth country, China, most firms engaged in training (71.5%).

In brief, the results support the ideas that innovation is broader than R&D and that technology transfer in the form of acquisition of machinery, equipment and software is important. Indeed, the latter is the lead innovation activity, followed by training. In contrast, only two countries reported more than one-half of their firms being engaged in intramural R&D. Furthermore, the results show that none of the responding countries have more than 50% of their firms engaged in extramural R&D.

4. Sources of information

From a policymaking perspective, it is important to clearly identify the linkages that firms[7] rely on to foster innovation. Linkages are considered to be sources of knowledge and technology, ranging from passive sources of information to suppliers of embodied and disembodied knowledge and technology to cooperative partnerships. Each linkage connects the firm to other agents in the innovation system: government laboratories, universities, policy departments, regulators, competitors, suppliers and customers (Oslo Manual §252-254).

There are three types of external linkages or flows of knowledge and technologies to firms: i) open information sources that do not involve purchases of knowledge and technology or interaction with the source; ii) purchases or acquisition of knowledge and technology; and iii) innovation cooperation (Oslo Manual §264). This section focuses on sources of information.

Definition

The innovative activities of a firm partly depend on the variety and structure of its links to sources of information, knowledge, technologies, practices, and human and financial resources (Oslo Manual §252). **Sources of information** are the sources that provide information for new innovation projects or contribute to the completion of existing innovation projects.

Table 2 presents the sources of information which firms rated as being highly important. Internal sources are considered to be highly important by a majority of firms in the following countries: Egypt (84.4%), Malaysia (72.0%), the Philippines (70.0%), Israel (66.3%), South Africa (44.0%), Ghana (43.9%) and Uruguay (39.4).

The second most valued source of information for firms are clients or customers. The following countries had the greatest share of firms rating this source of information as highly important: Indonesia (81.0%), China (59.7%), Brazil (46.0%) and the Russian Federation (34.9%).

In contrast, institutional sources are the least likely to be rated as highly important. In almost all countries – with the exception of China – less than 20% of firms considered universities or other higher education institutions and government or public research institutes as highly important sources of information.

Finally, in 5 of the 12 responding countries – namely Brazil, Ghana, the Russian Federation, South Africa and Uruguay – no source is considered to be highly important by more than 50% of their firms.

Box 3. Sources of information in Malaysia

Of the responding countries, Malaysia has the highest share of firms (17.1%) that consider universities or other higher education institutions to be highly important sources of information. Nonetheless, this percentage is much lower than the 72% of firms in the country that rated internal sources as a highly important source of information.

[7] In this section the term firms refers to innovation-active manufacturing firms.

Table 2. Highly important sources of information for firms as a percentage of innovation-active manufacturing firms

	Sources of information									
	Internal	Market				Institutional		Other		
	Within your enterprise or enterprise group	Suppliers of equipment, materials, components, or software	Clients or customers	Competitors or other enterprises in your sector	Consultants, commercial labs, or private R&D institutes	Universities or other higher education institutions	Government or public research institutes	Conferences, trade fairs, exhibitions	Scientific journals and trade / technical publications	Professional and industry associations
Brazil	10.0	38.3	46.0	22.7	10.8	6.3	4.9	n.a.	n.a.	n.a.
China	49.4	21.6	59.7	29.6	17.1	8.9	24.7	26.7	12.0	14.8
Colombia	92.2	40.7	51.0	34.1	30.0	16.7	10.8	49.0	43.0	21.6
Egypt	84.4	32.5	20.0	20.0	2.9	1.9	1.0	24.8	16.2	6.7
Ghana	43.9	29.8	35.1	17.5	5.3	n.a.	3.5	14.0	7.0	14.0
Indonesia	45.5	45.0	81.0	51.0	9.0	7.0	6.0	25.0	15.0	14.0
Israel	66.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	23.9	13.4	4.5
Malaysia	72.0	39.0	39.6	33.9	39.6	17.1	17.3	25.1	22.9	23.2
Philippines	70.0	49.5	67.0	37.9	21.2	10.1	7.1	21.7	16.7	15.7
Russian Federation	32.9	14.1	34.9	11.3	1.7	1.9	n.a.	7.4	12.0	4.1
South Africa	44.0	17.9	41.8	11.5	6.9	3.0	2.2	12.9	16.7	8.4
Uruguay	39.4	21.7	36.1	17.1	13.1	7.0	n.a.	16.5	14.1	n.a.
EU-27	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Eurostat min	22.3	11.2	13.9	6.2	0.8	0.9	0.3	5.1	3.3	1.4
Eurostat max	85.3	71.1	41.8	36.8	25.7	8.8	7.8	59.7	27.0	21.2

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), Indonesia (2 years), and Malaysia (4 years).
For Colombia: Sample survey data (no grossed up results). Data only cover product and process innovators. Question based on dichotomous (yes/no) responses.
For Ghana: Data only cover product and process innovators.
For Indonesia: The target population was medium-sized and large firms that implemented any type of innovation. No specification of firms covered.
For Malaysia: Data also cover organizational and marketing innovators.
For the Philippines: IT services are also included. Results are not representative of the target population.
For the Russian Federation: Data also cover organizational and marketing innovators. Internal sources do not cover enterprise group.
For Uruguay: Data cover organizational and marketing innovators and exclude firms with abandoned or ongoing activities.

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2008 database (Eurostat, 2012).

5. Cooperation

Innovation cooperation is distinct from open information sources and acquisition of knowledge and technology in that all parties take an active part in the work. There is also great potential for synergies in cooperation as partners learn from each other. It allows firms to access knowledge and technology that they would be unable to utilise on their own (Oslo Manual §271-272).

Innovation cooperation can take place along supply chains and involve customers and suppliers in the joint development of new products, processes or other innovations. Exchange of technological and business information naturally accompanies the trade of goods and services. Information on customer needs and their experience with a supplier's product plays a key role in innovation. Innovation cooperation can also involve horizontal collaboration, with firms working jointly with other firms or public research institutions (Oslo Manual §273-274).

Definition

Cooperation is the active participation in joint innovation projects with other organizations. These may either be other firms or non-commercial institutions. The partners need not derive immediate commercial benefit from the venture. Pure contracting out of work, where there is no active collaboration, is not regarded as cooperation (Oslo Manual §271).

Figure 4 presents a general overview of the percentage of firms[8] engaged in joint innovation projects. In Colombia, 47.8% of firms have innovation projects with partners, followed by the Russian Federation (37.3%), Israel (33.4%) and South Africa (33.0%). In contrast, only 7.5% of firms cooperated with partners in Egypt and 9.7% of firms in Brazil, both lower than the Eurostat minimum (12.9%).

Table 3 presents more detailed data on the type of partners involved in cooperation agreements associated with innovation activities. The most frequent cooperation partners are suppliers of equipment, materials, components or software in the following responding countries: Indonesia (66.3%), Colombia (31.8%), the Russian Federation (16.9%) and Brazil (5.0%).

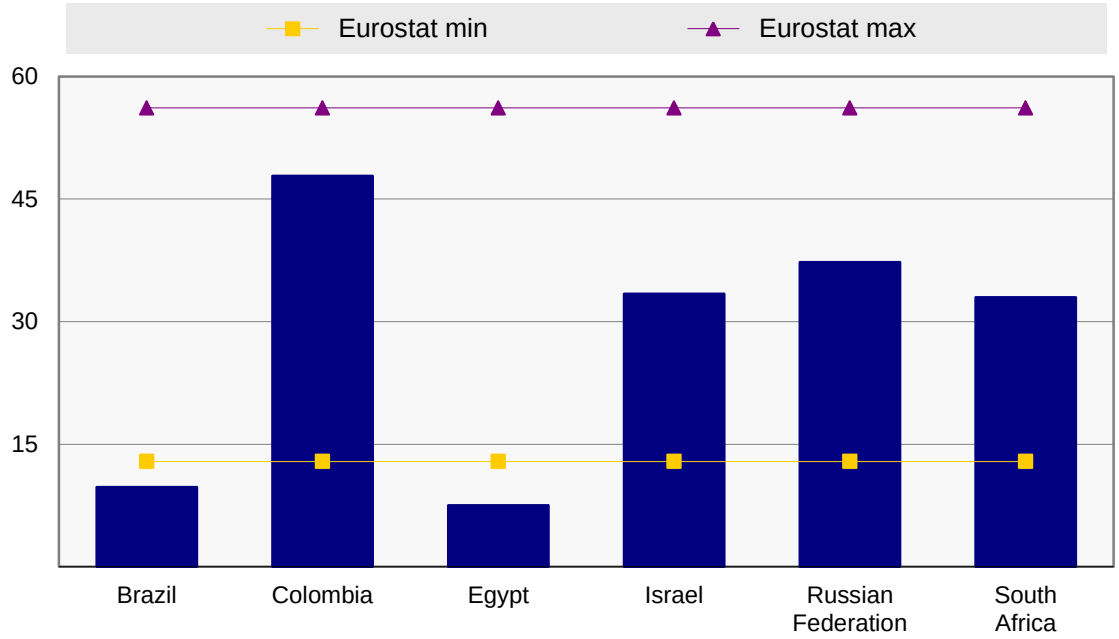
Clients or customers are leading partners in: the Philippines (94.1%), South Africa (31.7%), Ghana (31.6%), and Israel (21.3%).

In general, most firms did not cooperate on a large scale with universities or other higher education institutions, as well as government or public research institutes. This suggests the need to strengthen relations between the private, educational and public sectors.

A wide variation is observed in the percentage of firms cooperating with consultant, commercial laboratories or private R&D institutes, ranging from 1.9% in Brazil to 84.0% in Malaysia.

[8] In this section the term firms refers to innovation-active manufacturing firms.

Figure 4. Firms with cooperation partners as a percentage of innovation-active manufacturing firms



Notes: Based on a three-year observation period, except for the Russian Federation (1 year) and Colombia (2 years).
For Colombia: Sample survey data (no grossed up results). Data only cover product and process innovators.
For the Russian Federation: Data also cover organizational and marketing innovators.

Source: *2011 UIS pilot data collection of innovation statistics and CIS 2008 database (Eurostat, 2012).*

Box 4. Cooperation in Brazil

Of the responding countries, Brazil has the lowest share of firms actively participating in joint innovation projects, at just below 10%. As shown in Table 3, this trend is observed across all possible partner organizations, with Brazil having the lowest percentage of firms in all categories.

Table 3. Cooperation partners of firms as a percentage of innovation-active manufacturing firms

	Cooperation partner							
	Any type of co-operation partner	Other enterprises within your enterprise group	Suppliers of equipment, materials, components, or software	Clients or customers	Competitors or other enterprises in your sector	Consultants, commercial labs, or private R&D institutes	Universities or other higher education institutions	Government or public research institutes
Brazil	*9.7*	1.1	5.0	3.5	1.0	1.9	1.9	n.a.
China	*n.a.*	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Colombia	*47.8*	18.3	31.8	24.9	5.8	20.7	14.9	n.a.
Egypt	*7.5*	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ghana	*n.a.*	28.1	21.1	31.6	17.5	22.8	12.3	8.8
Indonesia	*n.a.*	37.8	66.3	n.a.	18.4	24.5	19.4	11.2
Israel	*33.4*	8.3	19.6	21.3	14.4	17.3	12.6	8.2
Malaysia	*n.a.*	65.5	55.1	56.1	30.0	84.0	45.0	37.0
Philippines	*n.a.*	91.2	92.6	94.1	67.6	64.7	47.1	50.0
Russian Federation	*37.3*	12.6	16.9	10.9	3.9	5.1	9.1	15.6
South Africa	*33.0*	14.2	30.3	31.7	18.6	21.1	16.2	16.2
Uruguay	*n.a.*	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
EU-27	*n.a.*	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Eurostat min	*12.9*	2.4	7.1	4.2	2.7	4.4	4.3	1.1
Eurostat max	56.2	23.0	41.5	36.0	30.8	33.9	30.8	26.3

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), Indonesia (2 years), and Malaysia (4 years).
For Colombia: Sample survey data (no grossed up results). Data only cover product and process innovators.
For Ghana: Data only cover product and process innovators.
For Indonesia: The target population was medium-sized and large firms that implemented any type of innovation. No specification of firms covered.
For Malaysia: Data also cover organizational and marketing innovators.
For the Philippines: IT services are also included. Results are not representative of the target population.
For the Russian Federation: Data also cover organizational and marketing innovators.

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2008 database (Eurostat, 2012).

6. Factors hampering innovation activities

Policymakers and business leaders need accurate information on factors that support innovation, as well as the barriers which can hamper it. These impediments may take many forms but can be categorised as a lack of: available financing; demand for new products; skilled personnel; suitable partners for joint innovation projects; and knowledge relating to technologies or markets needed to develop an innovation (Oslo Manual §411).

For this report, these hampering factors have been divided into the following categories: cost and economic; knowledge; and market factors. Other factors are found in Annex I, which also contains detailed data for non-innovative firms.

Definitions

Innovation activity may be hampered by a number of factors. There may be reasons for not starting innovation activities at all; there may be factors that slow innovation activity or affect them negatively. These **hampering factors** include: economic factors, such as high costs or lack of demand; knowledge factors, such as lack of skilled personnel; market factors, such as uncertainty in the demand for innovative products; and other factors, such as regulations (Oslo Manual §410).

Table 4 presents the percentage of firms[9] which rated different types of cost and economic factors as highly important barriers to innovation activities or projects.

A lack of funds within the enterprise or enterprise group is considered to be a highly important impediment to innovation by most firms in seven of the responding countries. This is particularly the case in Ghana with 47.4% of firms rating this hampering factor as highly important, followed by Indonesia (46.0%) and Colombia (42.1%).

The high cost of innovation is the impeding factor rated as highly important by the highest percentages of firms in: Indonesia (46.0%), Malaysia (41.3%), Brazil (21.6%) and the Philippines (20.9%).

Table 5 presents the percentage of firms which rated different types of knowledge factors as highly important barriers to innovation activities or projects.

In 7 out of 12 responding countries, a lack of qualified personnel is considered to be a highly important factor hampering innovation by the majority of firms. This is the case, for instance, for almost one-third of firms in Uruguay (32.4%) and Malaysia (28.7%).

In Colombia, 42.3% of firms considered a lack of information on technology to be a highly important hampering factor. Meanwhile, 37.0% of firms in Egypt are hindered by a lack of information on markets. Finally, difficulty in finding cooperation partners for innovation is rated as a highly important impediment by the highest shares of firms in Indonesia (36.0%) and Ghana (17.5%).

[9] In this section the term firms refers to innovation-active manufacturing firms.

Table 4. Highly important cost and economic hampering factors for firms as a percentage of innovation-active manufacturing firms

	Cost and economic factors			
	Lack of funds within your enterprise or group	Lack of finance from sources outside your enterprise	Innovation costs too high	Excessive perceived economic risks
Brazil	n.a.	17.5	21.6	17.7
China	n.a.	n.a.	n.a.	n.a.
Colombia	42.1	33.8	n.a.	n.a.
Egypt	28.6	28.6	21.8	n.a.
Ghana	47.4	28.2	38.6	n.a.
Indonesia	46.0	44.0	46.0	44.0
Israel	26.5	11.1	21.4	n.a.
Malaysia	29.3	40.3	41.3	33.8
Philippines	19.1	10.2	20.9	n.a.
Russian Federation	39.8	n.a.	27.8	16.3
South Africa	38.0	23.5	33.5	n.a.
Uruguay	n.a.	24.8	n.a.	15.0
EU-27	n.a.	n.a.	n.a.	n.a.
Eurostat min	11.0	4.4	9.6	n.a.
Eurostat max	42.1	36.6	44.0	n.a.

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), Indonesia (2 years), and Malaysia (4 years).
For Colombia: Sample survey data (no grossed up results). Data only cover product and process innovators.
For Ghana: Data only cover product and process innovators.
For Indonesia: The target population was medium-sized and large firms that implemented any type of innovation. No specification of firms covered.
For Malaysia: Data also cover organizational and marketing innovators.
For the Philippines: IT services are also included. Results are not representative of the target population.
For the Russian Federation: Data also cover organizational and marketing innovators.
For Uruguay: Data cover organizational and marketing innovators and exclude firms with abandoned or ongoing activities.

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2006 database (Eurostat, 2012).

Table 5. Highly important knowledge hampering factors for firms as a percentage of innovation-active manufacturing firms

	Knowledge factors			
	Lack of qualified personnel	Lack of information on technology	Lack of information on markets	Difficulty in finding cooperation partners for innovation
Brazil	16.2	5.9	4.4	7.1
China	28.0	n.a.	n.a.	n.a.
Colombia	41.5	42.3	41.3	31.2
Egypt	29.4	36.1	37.0	27.7
Ghana	14.1	7.0	8.8	17.5
Indonesia	29.0	29.0	23.0	36.0
Israel	16.0	5.5	4.5	6.3
Malaysia	28.7	25.6	22.9	22.6
Philippines	11.7	8.2	10.0	5.6
Russian Federation	5.3	1.8	2.9	1.6
South Africa	23.0	11.9	11.7	13.1
Uruguay	32.4	7.3	11.3	16.4
EU-27	n.a.	n.a.	n.a.	n.a.
Eurostat min	8.1	2.0	1.6	2.5
Eurostat max	26.6	35.0	36.4	23.4

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), Indonesia (2 years), and Malaysia (4 years).
For China: Lack of qualified personnel refers to a lack of technical personnel or 'brain drain' of technical talents.
For Colombia: Sample survey data (no grossed up results). Data only cover product and process innovators.
For Ghana: Data only cover product and process innovators.
For Indonesia: The target population was medium-sized and large firms that implemented any type of innovation. No specification of firms covered.
For Malaysia: Data also cover organizational and marketing innovators.
For the Philippines: IT services are also included. Results are not representative of the target population.
For the Russian Federation: Data also cover organizational and marketing innovators.
For Uruguay: Data cover organizational and marketing innovators and exclude firms with abandoned or ongoing activities.

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2006 database (Eurostat, 2012).

Table 6 presents the percentage of firms which rated different types of market factors as highly important barriers to innovation activities or projects.

Market domination by established enterprises is considered as a highly important barrier to innovation by the majority of firms in: Indonesia (37.0%), Malaysia (30.7%), Ghana (19.3%), South Africa (17.5%), the Philippines (14.7%) and Israel (10.7%). In Colombia and Egypt, uncertain demand for innovative goods or services is rated as a highly important hampering factor by 44.5% and 29.4% of firms respectively.

Table 6. Highly important market hampering factors for firms as a percentage of innovation-active manufacturing firms

	Market factors		
	Market dominated by established enterprises	Uncertain demand for innovative goods or services	Innovation is easy to imitate
Brazil	n.a.	n.a.	n.a.
China	n.a.	n.a.	12.3
Colombia	n.a.	44.5	34.7
Egypt	26.1	29.4	n.a.
Ghana	19.3	12.3	n.a.
Indonesia	37.0	31.0	n.a.
Israel	10.7	6.2	n.a.
Malaysia	30.7	21.5	n.a.
Philippines	14.7	9.9	n.a.
Russia Federation	n.a.	9.1	n.a.
South Africa	17.5	15.5	n.a.
Uruguay	n.a.	n.a.	n.a.
EU-27	n.a.	n.a.	n.a.
Eurostat min	5.3	4.5	n.a.
Eurostat max	26.0	24.3	n.a.

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), Indonesia (2 years), and Malaysia (4 years).
For China: Innovation is easy to imitate refers to counterfeiting or import competition.
For Colombia: Sample survey data (no grossed up results). Data only cover product and process innovators.
For Ghana: Data only cover product and process innovators.
For Indonesia: The target population was medium-sized and large firms that implemented any type of innovation. No specification of firms covered.
For Malaysia: Data also cover organizational and marketing innovators.
For the Philippines: IT services are also included. Results are not representative of the target population.
For the Russian Federation: Data also cover organizational and marketing innovators.
For Uruguay: Data cover organizational and marketing innovators and exclude firms with abandoned or ongoing activities.

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2006 database (Eurostat, 2012).

7. Organizational innovation

The definition of innovation has evolved to include organizational and marketing innovation *(see third edition of the Oslo Manual)*. This change was intended to allow for more extensive analysis of the interactions between different types of innovations, in particular the importance of implementing organizational changes in order to benefit from other types of innovations (Oslo Manual §12).

It is important to note that organizational innovations are not only a supporting factor for product and process innovations; they can also have an important impact on firm performance. Organizational innovations can improve the quality and efficiency of work, enhance the exchange of information, and improve a firm's ability to learn and utilise new knowledge and technologies incorporated in machinery and other equipment. This is particularly important for developing countries (Oslo Manual §11 and Annex A §500).

Definition

Organizational innovation is the implementation of a new organizational method in the firm's business practices, workplace organization or external relations (Oslo Manual §177). Firms that implemented at least one organizational innovation are organizational innovators.

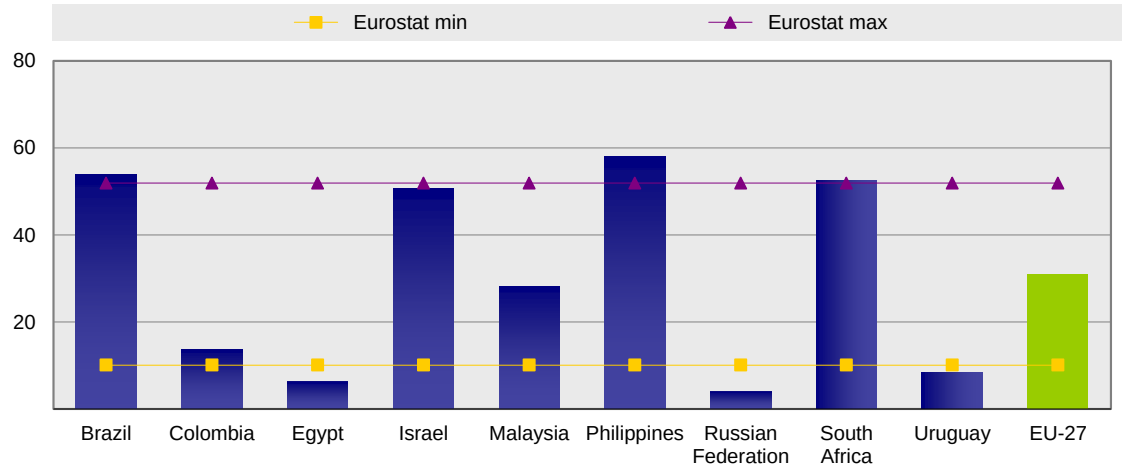
Figure 5 shows the percentage of manufacturing firms that implement organizational innovation.

In the Philippines, 58.0% of firms implement organizational innovation. This is followed by Brazil (54.0%) and South Africa (52.6%). These three countries exceed the Eurostat maximum (51.9%), which can be an indication of the relevance of organizational innovation for developing and emerging countries. A high share of firms in Israel (50.6%) also implement organizational innovation. In contrast, low percentages are reported in the Russian Federation (4.0%), Egypt (6.2%) and Uruguay (8.4%) – three countries which have lower rates than the Eurostat minimum (10.1%).

Box 5. Annex to the Oslo Manual

The Annex to the Oslo Manual on Innovation Surveys in Developing Countries stresses the importance of organizational innovation for firms in developing countries, which often lack formal organizational structures (OM Annex A, §500). The preparation of the material for this annex was coordinated by the UIS.

Figure 5. Manufacturing firms that implement organizational innovation as a percentage of all manufacturing firms



Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), and Malaysia (4 years).
For Brazil: Environmental management techniques are included and methods to organize external relations can be new or significantly changed.
For Colombia: Sample survey data (no grossed up results).
For the Philippines: IT services are also included. Results are not representative of the target population.
For Egypt, Malaysia, the Philippines and South Africa: Organizational innovation includes new or significant changes.

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2008 database (Eurostat, 2012).

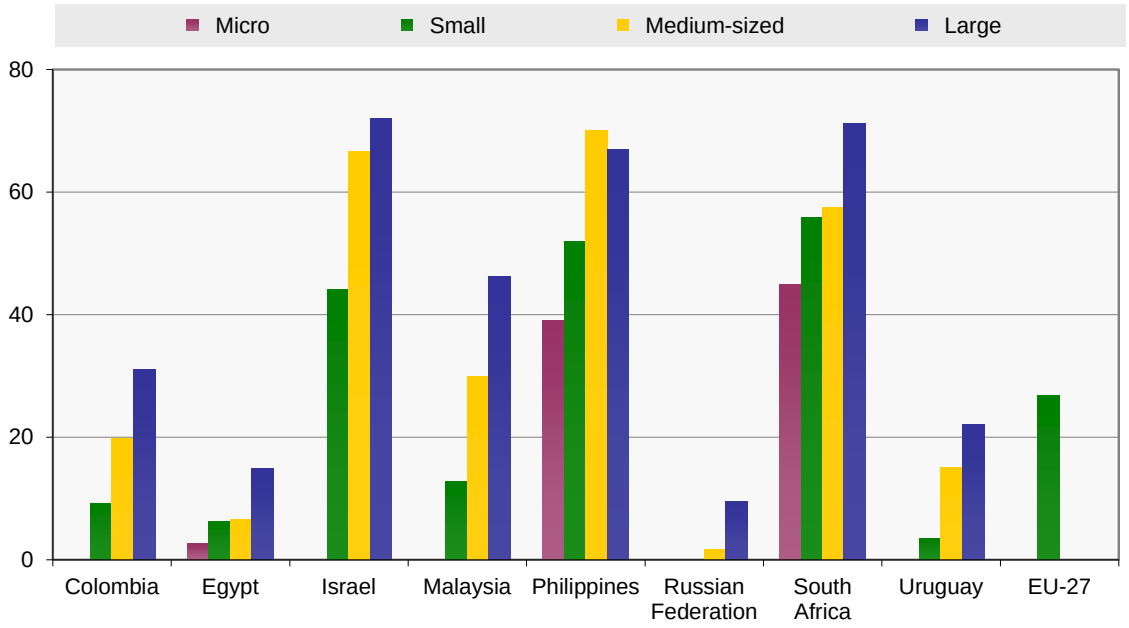
Figure 6 shows the percentage of manufacturing firms that implement organizational innovation according to their size: micro, small, medium-sized or large.

Overall, the large size class has the highest share of firms that implement organizational innovation, as can be seen in Israel (72.0%) and South Africa (71.1%).

The only exception is the Philippines. Although a significant percentage of large manufacturing firms (67.0%) implement this type of innovation, medium-sized manufacturing firms have the highest share of organizational innovators (70.0%). In all other countries, the medium-sized class has the second highest shares of manufacturing firms that implement organizational innovation.

The lowest percentages of manufacturing firms that implement organizational innovation are observed in the small and micro size classes. Furthermore, two countries – Egypt and the Russian Federation – have the smallest percentage of manufacturing firms overall implementing this kind of innovation, at below 20% in all size classes.

Figure 6. Manufacturing firms that implement organizational innovation by size class as a percentage of manufacturing firms in each size class



Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), and Malaysia (4 years).
For Colombia: Sample survey data (no grossed up results).
For the Philippines: IT services are also included. Results are not representative of the target population.
For Egypt, Malaysia, the Philippines and South Africa: Organizational innovation includes new or significant changes.
Size classes are detailed in Annex II.

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2008 database (Eurostat, 2012).

8. Marketing innovation

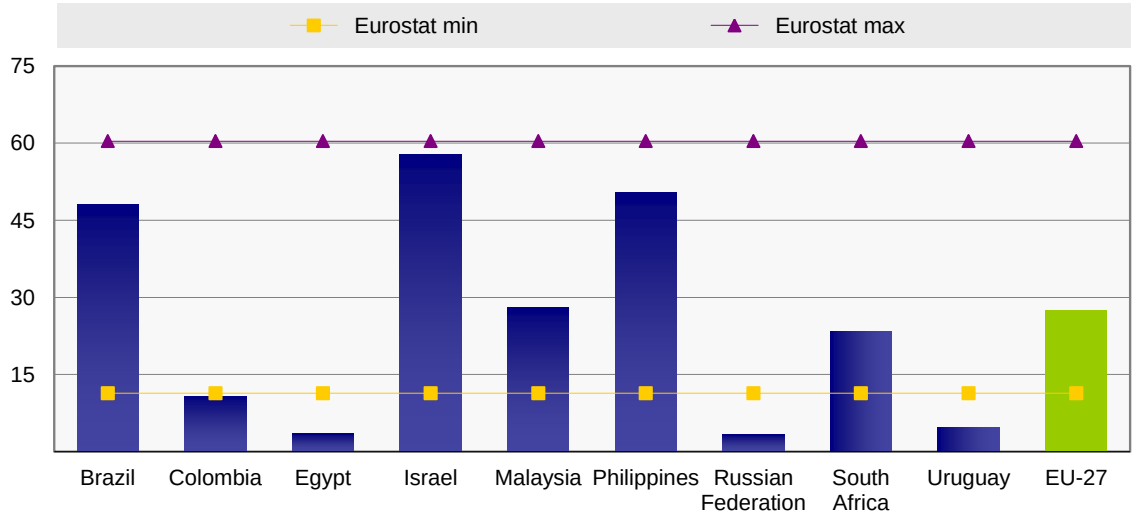
New marketing practices can play a central role in a firm's performance and the success of its new products. In addition, market research and contacts with customers can play a crucial role in product and process development through demand-led innovation. Considerable resources are often allocated to market research and the development of new marketing practices, such as targeting new markets or market segments and developing new ways of promoting products. (Oslo Manual §12-14). The third edition of the Oslo Manual formally introduced the concept of marketing innovation.

Definition

Marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion, or pricing (Oslo Manual §169). Firms that implemented at least one marketing innovation are marketing innovators.

Figure 7 shows the percentage of manufacturing firms that implement marketing innovation.

Figure 7. Manufacturing firms that implement marketing innovation as a percentage of all manufacturing firms



Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), and Malaysia (4 years).
For Colombia: Sample survey data (no grossed up results).
For the Philippines: IT services are also included. Results are not representative of the target population.
For Colombia, Egypt, Malaysia and South Africa: Significant changes other than in design or packaging are also included.

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2008 database (Eurostat, 2012).

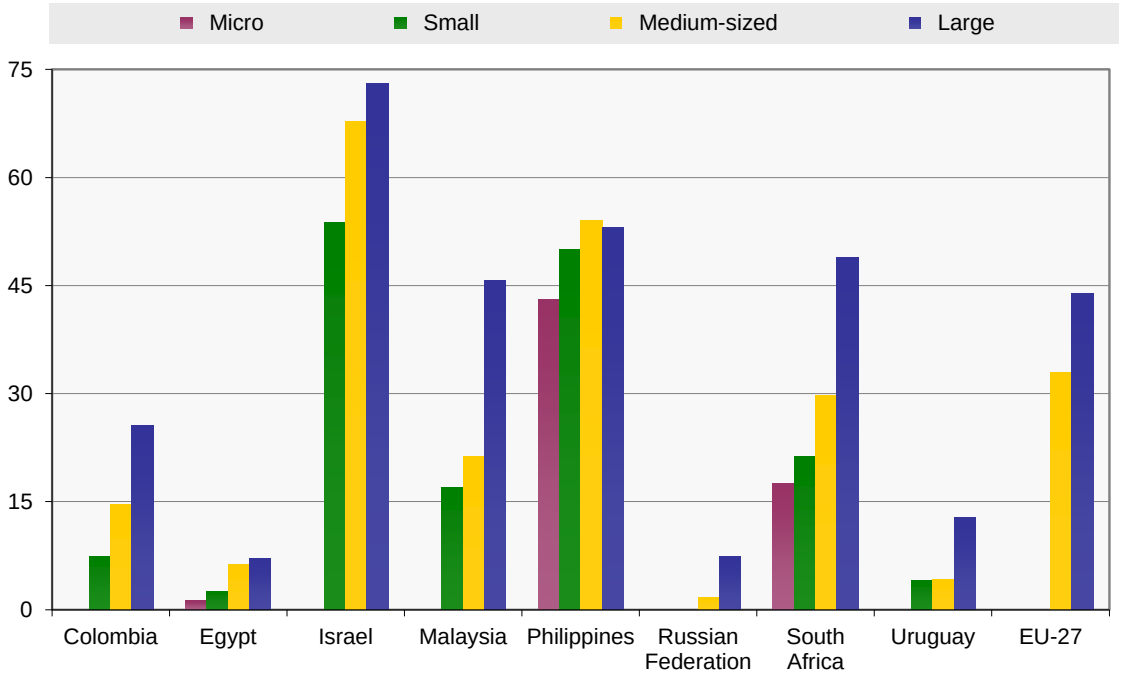
Of the responding countries, none exceed the Eurostat maximum (60.4%) in its share of manufacturing firms that implement marketing innovation. The highest share is found in Israel (57.9%), followed by the Philippines (50.4%) and Brazil (48.0%).

Malaysia (28.0%) has approximately the same percentage of manufacturing firms that implement marking innovation as the EU average (27.5%). In contrast, rates are considerably lower in Colombia (10.8%), Uruguay (4.8%), Egypt (3.6%) and the Russian Federation (3.4%).

Figure 8 shows the percentage of manufacturing firms that implement marketing innovation according to their size: micro, small, medium-sized or large.

While the EU has an average of 43.9% of large manufacturing firms which implement marketing innovation, large firms in four countries of the pilot data collection exceed this average: Israel (73.0%), the Philippines (53.0%), South Africa (48.9%), and Malaysia (45.7%).

Figure 8. Manufacturing firms that implement marketing innovation by size class as a percentage of manufacturing firms in each size class



Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), and Malaysia (4 years).
For Colombia: Sample survey data (no grossed up results).
For the Philippines: IT services are also included. Results are not representative of the target population.
For Colombia, Egypt, Malaysia and South Africa: Significant changes other than in design or packaging are also included.
Size classes are detailed in Annex II.

Source: *UIS 2011 pilot data collection of innovation statistics and CIS 2008 database (Eurostat, 2012).*

Again, larger firms tend to have higher shares of innovators. The exception is the Philippines, where medium-sized manufacturing firms present the highest percentage of firms that implemented marketing innovation (54.0%).

It is interesting to note that less than 15% of manufacturing firms, regardless of their size, implemented this type of innovation in Egypt, the Russian Federation and Uruguay. In Colombia, this is the case for small (7.4%) and medium-sized (14.6%) manufacturing firms.

Box 6. Marketing innovation in Israel

Of the responding countries, Israel has the highest share of manufacturing firms that implement marketing innovation in all size classes. At 73.0%, large manufacturing firms in Israel far surpass the implementation of this type of innovation in any other responding country. The same is reported for medium-sized firms (67.7%). The percentages of medium-sized and large manufacturing firms that implement marketing innovation in Israel are even higher than the Eurostat maximum for these size classes: 59.6% and 69.8% respectively.

9. Final remarks

The 2011 UIS Pilot Data Collection of Innovation Statistics covers national aggregate data from 12 countries across different regions and at different levels of development. This pilot exercise represents a crucial step in the development of a global data collection of innovation statistics, which will be undertaken by the Institute in 2013.

The production of cross-nationally comparable data on innovation is not an easy task, especially for developing countries. Questions, industrial coverage, size of firms, cut-off point and classification, sample selection and observation period are some of the characteristics that present dissimilarities and hence make comparisons hard. Therefore, caution is required when making comparisons and drafting conclusions and policy recommendations based solely on the results of this pilot. However, it is possible to identify some key findings.

First, all responding countries have manufacturing firms that implement innovation. This was observed for all types of innovation and in firms of different sizes. This complies with the assertion that innovation is widespread and pervasive and not restricted to wealthy countries or firms.

Second, larger firms have higher shares of innovators. The data show that higher percentages of large and medium-sized manufacturing firms implement innovations compared to small or micro manufacturing firms. This pattern applied to all types of innovation. In short, innovation is clearly linked to the size of the firm.

Third, in terms of innovation activity, most innovation-active manufacturing firms are engaged in the acquisition of machinery, equipment and software. The second most frequent type of innovation activity is training. In contrast, firms are least likely to be engaged in extramural R&D and the acquisition of other external knowledge. These findings support the importance of the acquisition of embodied technology (equipment) in the innovation process, especially in developing countries.

Evidence also shows that most innovation-active manufacturing firms have relatively little interaction with universities or public research institutes when looking for information sources or cooperation partners. Instead, most firms rely on internal sources for information. They also tend to establish cooperation partnerships with either suppliers or clients.

Finally, it is worth highlighting the obstacles faced by innovation-active manufacturing firms. Within cost and economic factors, a lack of funds within the enterprise or enterprise group is rated as a highly important barrier by the majority of firms in most countries. Moreover, in the majority of countries, the shortage of qualified personnel and market domination by established enterprises are rated as highly important knowledge and market hampering factors, respectively.

Annex I. Tables

Table A1. Manufacturing firms that implement product innovation, process innovation and product or process innovation as a percentage of all manufacturing firms

	Product innovators in manufacturing	Process innovators in manufacturing	Product or process innovators in manufacturing
Brazil	23.0	32.0	38.0
China	25.1	25.3	30.0
Colombia	4.6	20.0	n.a.
Egypt	6.0	8.3	9.3
Ghana	n.a.	n.a.	n.a.
Indonesia	n.a.	n.a.	n.a.
Israel	34.2	30.9	42.4
Malaysia	29.5	33.3	39.0
Philippines	38.0	44.0	50.2
Russian Federation	8.0	5.9	11.3
South Africa	16.8	13.1	20.9
Uruguay	17.2	24.5	28.6
EU-27	n.a.	n.a.	42.0
Eurostat min	n.a.	n.a.	15.0
Eurostat max	n.a.	n.a.	71.2

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), and Malaysia (4 years).
For China: Product innovation covers only new or significantly improved goods. Logistics, delivery or distribution methods are not explicitly mentioned in process innovation.
For Colombia: Sample survey data (no grossed up results).
For the Philippines: IT services are also included. Results are not representative of the target population.
For EU-27/Eurostat: Data cover firms with abandoned or ongoing activities.

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2006 database (Eurostat, 2012).

Table A2. Manufacturing firms that implement product innovation by size class as a percentage of manufacturing firms in each size class

	Size class			
	Micro	Small	Medium-sized	Large
Brazil	n.a.	n.a.	n.a.	n.a.
China	n.a.	20.3	47.1	72.4
Colombia	n.a.	2.0	7.3	16.2
Egypt	2.1	3.2	9.1	17.7
Ghana	n.a.	n.a.	n.a.	n.a.
Indonesia	n.a.	n.a.	n.a.	n.a.
Israel	n.a.	27.4	49.1	65.8
Malaysia	n.a.	18.8	26.1	45.4
Philippines	23.6	32.7	42.5	46.4
Russian Federation	n.a.	n.a.	3.4	18.8
South Africa	19.1	11.9	19.3	13.0
Uruguay	n.a.	12.1	23.0	33.7
EU-27	n.a.	n.a.	n.a.	n.a.
Eurostat min	n.a.	n.a.	n.a.	n.a.
Eurostat max	n.a.	n.a.	n.a.	n.a.

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), and Malaysia (4 years).
For China: Product innovation covers only new or significantly improved goods. Data broken down by size class cover manufacturing, mining and quarrying, and electricity, gas and water supply.
For Colombia: Sample survey data (no grossed up results).
For the Philippines: IT services are also included. Results are not representative of the target population.
Size classes are detailed in Annex II.

Source: 2011 UIS pilot data collection of innovation statistics.

Table A3. Manufacturing firms that implement process innovation by size class as a percentage of manufacturing firms in each size class

	Size class			
	Micro	Small	Medium-sized	Large
Brazil	n.a.	n.a.	n.a.	n.a.
China	n.a.	21.1	48.5	77.6
Colombia	n.a.	14.0	29.0	39.0
Egypt	1.8	6.3	11.0	25.5
Ghana	n.a.	n.a.	n.a.	n.a.
Indonesia	n.a.	n.a.	n.a.	n.a.
Israel	n.a.	23.8	47.2	61.2
Malaysia	n.a.	34.2	40.3	28.7
Philippines	23.6	38.3	50.0	56.4
Russian Federation	n.a.	n.a.	2.7	13.6
South Africa	12.7	9.7	16.6	17.8
Uruguay	n.a.	17.5	30.8	54.1
EU-27	n.a.	n.a.	n.a.	n.a.
Eurostat min	n.a.	n.a.	n.a.	n.a.
Eurostat max	n.a.	n.a.	n.a.	n.a.

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), and Malaysia (4 years).
For China: Logistics, delivery or distribution methods are not explicitly mentioned in process innovation. Data broken down by size class cover manufacturing, mining and quarrying, and electricity, gas and water supply.
For Colombia: Sample survey data (no grossed up results).
For the Philippines: IT services are also included. Results are not representative of the target population.
Size classes are detailed in Annex II.

Source: 2011 UIS pilot data collection of innovation statistics.

Table A4. Manufacturing firms that implement product or process innovation by size class as a percentage of manufacturing firms in each size class

	Size class			
	Micro	Small	Medium-sized	Large
Brazil	n.a.	n.a.	n.a.	n.a.
China	n.a.	25.2	55.9	83.5
Colombia	n.a.	14.6	30.6	45.0
Egypt	n.a.	n.a.	n.a.	n.a.
Ghana	n.a.	n.a.	n.a.	n.a.
Indonesia	n.a.	n.a.	n.a.	n.a.
Israel	n.a.	35.7	57.3	75.5
Malaysia	n.a.	42.1	47.9	n.a.
Philippines	30.2	45.8	58.8	60.8
Russian Federation	n.a.	n.a.	5.4	25.4
South Africa	20.4	17.4	25.6	20.5
Uruguay	n.a.	n.a.	n.a.	n.a.
EU-27	n.a.	35.5	n.a.	n.a.
Eurostat min	n.a.	10.3	25.4	41.0
Eurostat max	n.a.	65.1	76.4	91.4

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), and Malaysia (4 years).
For China: Product innovation covers only new or significantly improved goods. Logistics, delivery or distribution methods are not explicitly mentioned in process innovation. Data broken down by size class cover manufacturing, mining and quarrying, and electricity, gas and water supply.
For Colombia: Sample survey data (no grossed up results).
For the Philippines: IT services are also included. Results are not representative of the target population.
For EU-27/Eurostat: Data cover firms with abandoned or ongoing activities.
Size classes are detailed in Annex II.

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2006 database (Eurostat, 2012).

Table A5. Manufacturing firms that implement product innovation by economic activity (ISIC Rev. 3.1 division level) as a percentage of manufacturing firms in each economic activity

	Country														
	Brazil	China	Colombia	Egypt	Ghana	Indonesia	Israel	Malaysia	Philippines	Russian Federation	South Africa	Uruguay	EU-27	Eurostat min	Eurostat max
Manufacturing	**23.0**	**25.1**	**4.6**	**6.0**	**n.a.**	**n.a.**	**34.2**	**29.5**	**38.0**	**8.0**	**16.8**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
Food products and beverages	25.0	n.a.	2.8	n.a.	12.6	49.5	31.1	n.a.	33.5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Tobacco products	19.6	n.a.	16.7	n.a.	n.a.	41.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Textiles	25.1	n.a.	6.6	n.a.	4.6	61.6	20.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Wearing apparel and fur	19.3	n.a.	2.5	n.a.	1.1	69.5	13.5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Leather products and footwear	24.4	n.a.	3.1	n.a.	n.a.	82.8	40.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Wood and cork (not furniture)	13.1	n.a.	1.3	n.a.	12.6	71.7	40.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Pulp, paper & paper production	25.5	n.a.	5.4	n.a.	2.3	50.0	28.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Publishing, printing and reproduction of recorded media	20.7	n.a.	2.5	n.a.	2.3	73.3	33.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Coke, refined petroleum products and nuclear fuel	15.2	n.a.	3.0	n.a.	1.2	50.0	6.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Chemicals and chemical products	46.6	n.a.	8.0	n.a.	11.5	57.6	58.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Rubber and plastic products	25.9	n.a.	5.9	n.a.	5.7	60.0	36.2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Non-metallic mineral products	14.3	n.a.	4.8	n.a.	2.3	55.8	32.4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Basic metals	20.5	n.a.	4.2	n.a.	3.5	50.0	36.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Table A5. Manufacturing firms that implement product innovation by economic activity (ISIC Rev. 3.1 division level) as a percentage of manufacturing firms in each economic activity *(cont.)*

	Country														
	Brazil	China	Colombia	Egypt	Ghana	Indonesia	Israel	Malaysia	Philippines	Russian Federation	South Africa	Uruguay	EU-27	Eurostat min	Eurostat max
Fabricated metal products (exc. mach. and equipm.)	19.2	n.a.	3.5	n.a.	11.5	66.7	28.5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Machinery n.e.c.	28.4	n.a.	6.7	n.a.	n.a.	80.0	45.8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Office, accounting and computing machinery	34.3	n.a.	n.a.	n.a.	n.a.	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Electrical machinery	32.3	n.a.	12.6	n.a.	n.a.	37.5	35.8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Electronic equipment (radio, TV & comm.)	41.9	n.a.	10.5	n.a.	n.a.	42.9	56.2	n.a.	50.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Medical, precision and optical instruments, watches, clocks (instr.)	39.7	n.a.	12.5	n.a.	n.a.	100.0	63.4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Motor vehicles	29.7	n.a.	4.7	n.a.	n.a.	62.5	6.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Other transport equipment	12.0	n.a.	8.7	n.a.	n.a.	83.3	27.8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Furniture, other manufacturing n.e.c.	20.6	n.a.	4.5	n.a.	5.8	84.2	36.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Recycling	3.5	n.a.	n.a.	n.a.	n.a.	100.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), Indonesia (2 years), and Malaysia (4 years).
For China: Product innovation covers only new or significantly improved goods.
For Colombia: Sample survey data (no grossed up results).
For Indonesia: The target population was medium-sized and large firms that implemented any type of innovation.
For the Philippines: IT services are also included. Results are not representative of the target population.

Source: 2011 UIS pilot data collection of innovation statistics.

Table A6. Manufacturing firms that implement process innovation by economic activity (ISIC Rev. 3.1 division level) as a percentage of manufacturing firms in each economic activity

	Country														
	Brazil	China	Colombia	Egypt	Ghana	Indonesia	Israel	Malaysia	Philippines	Russian Federation	South Africa	Uruguay	EU-27	Eurostat min	Eurostat max
Manufacturing	**32.0**	**25.3**	**20.0**	**8.3**	**n.a.**	**n.a.**	**30.9**	**33.3**	**44.0**	**5.9**	**13.1**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
Food products and beverages	31.0	n.a.	23.5	n.a.	8.1	48.1	39.3	n.a.	37.2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Tobacco products	17.7	n.a.	33.3	n.a.	n.a.	46.5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Textiles	31.7	n.a.	17.3	n.a.	3.4	59.3	22.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Wearing apparel and fur	32.8	n.a.	14.6	n.a.	1.1	41.5	9.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Leather products and footwear	32.5	n.a.	11.8	n.a.	n.a.	41.4	27.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Wood and cork (not furniture)	19.7	n.a.	16.1	n.a.	12.6	60.9	33.5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Pulp, paper & paper production	34.0	n.a.	31.1	n.a.	1.2	50.0	28.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Publishing, printing and reproduction of recorded media	38.4	n.a.	14.2	n.a.	1.2	70.0	22.4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Coke, refined petroleum products and nuclear fuel	38.4	n.a.	18.2	n.a.	1.2	50.0	6.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Chemicals and chemical products	47.3	n.a.	22.3	n.a.	6.9	51.5	32.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Rubber and plastic products	29.1	n.a.	20.5	n.a.	5.7	64.4	23.5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Non-metallic mineral products	28.6	n.a.	20.2	n.a.	2.3	60.5	32.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Basic metals	32.6	n.a.	21.1	n.a.	2.3	100.0	30.4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Table A6. Manufacturing firms that implement process innovation by economic activity (ISIC Rev. 3.1 division level) as a percentage of manufacturing firms in each economic activity *(cont.)*

	Country														
	Brazil	China	Colombia	Egypt	Ghana	Indonesia	Israel	Malaysia	Philippines	Russian Federation	South Africa	Uruguay	EU-27	Eurostat min	Eurostat max
Fabricated metal products (exc. mach. and equipm.)	34.5	n.a.	18.1	n.a.	11.5	66.7	36.4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Machinery n.e.c.	34.2	n.a.	18.4	n.a.	n.a.	53.3	22.5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Office, accounting and computing machinery	45.0	n.a.	n.a.	n.a.	n.a.	100.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Electrical machinery	35.1	n.a.	27.7	n.a.	n.a.	87.5	34.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Electronic equipment (radio, TV & comm.)	34.1	n.a.	15.8	n.a.	n.a.	57.1	43.5	n.a.	55.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Medical, precision and optical instruments, watches, clocks (instr.)	37.2	n.a.	17.2	n.a.	n.a.	100.0	44.8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Motor vehicles	35.9	n.a.	18.3	n.a.	n.a.	87.5	4.7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Other transport equipment	27.6	n.a.	13.0	n.a.	n.a.	75.0	30.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Furniture, other manufacturing n.e.c.	28.0	n.a.	19.9	n.a.	5.8	46.3	31.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Recycling	7.5	n.a.	n.a.	n.a.	n.a.	50.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), Indonesia (2 years), and Malaysia (4 years).
For China: Logistics, delivery or distribution methods are not explicitly mentioned in process innovation.
For Colombia: Sample survey data (no grossed up results).
For Indonesia: The target population was medium-sized and large firms that implemented any type of innovation.
For the Philippines: IT services are also included. Results are not representative of the target population.

Source: *2011 UIS pilot data collection of innovation statistics.*

Table A7. Manufacturing firms that implement product or process innovation by economic activity (ISIC Rev. 3.1 division level) as a percentage of manufacturing firms in each economic activity

	Country														
	Brazil	China	Colombia	Egypt	Ghana	Indonesia	Israel	Malaysia	Philippines	Russian Federation	South Africa	Uruguay	EU-27	Eurostat min	Eurostat max
Manufacturing	**38.0**	**30.0**	**n.a.**	**9.3**	**n.a.**	**n.a.**	**42.4**	**39.0**	**50.2**	**11.3**	**20.9**	**n.a.**	**42.0**	**15.0**	**71.2**
Food products and beverages	38.0	n.a.	24.4	n.a.	n.a.	95.2	46.8	n.a.	44.0	n.a.	n.a.	n.a.	n.a.	19.5	64.0
Tobacco products	26.5	n.a.	50.0	n.a.	n.a.	76.7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	32.1	90.9
Textiles	37.6	n.a.	20.0	n.a.	n.a.	100.0	26.8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	12.8	78.4
Wearing apparel and fur	36.7	n.a.	15.3	n.a.	n.a.	100.0	16.4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3.8	54.6
Leather products and footwear	36.8	n.a.	13.5	n.a.	n.a.	100.0	44.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	5.6	71.4
Wood and cork (not furniture)	23.6	n.a.	16.8	n.a.	n.a.	100.0	44.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	12.7	100.0
Pulp, paper & paper production	35.2	n.a.	32.0	n.a.	n.a.	100.0	29.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	18.2	100.0
Publishing, printing and reproduction of recorded media	43.0	n.a.	15.5	n.a.	n.a.	100.0	34.8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	4.6	69.6
Coke, refined petroleum products and nuclear fuel	41.4	n.a.	21.2	n.a.	n.a.	100.0	6.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	17.2	76.9
Chemicals and chemical products	62.0	n.a.	24.9	n.a.	n.a.	100.0	58.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	36.6	86.8
Rubber and plastic products	36.3	n.a.	22.3	n.a.	n.a.	100.0	40.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	11.2	92.9
Non-metallic mineral products	33.4	n.a.	22.3	n.a.	n.a.	100.0	39.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	19.9	80.0
Basic metals	39.5	n.a.	23.2	n.a.	n.a.	100.0	48.2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	28.3	90.7

Table A7. Manufacturing firms that implement product or process innovation by economic activity (ISIC Rev. 3.1 division level) as a percentage of manufacturing firms in each economic activity *(cont.)*

	Country														
	Brazil	China	Colombia	Egypt	Ghana	Indonesia	Israel	Malaysia	Philippines	Russian Federation	South Africa	Uruguay	EU-27	Eurostat min	Eurostat max
Fabricated metal products (exc. mach. and equipm.)	39.2	n.a.	19.0	n.a.	n.a.	100.0	41.7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	18.3	63.5
Machinery n.e.c.	44.8	n.a.	21.2	n.a.	n.a.	100.0	45.8	n.a.	n.a.	n.a.	n.a.	n.a.	55.6	9.1	88.2
Office, accounting and computing machinery	53.8	n.a.	n.a.	n.a.	n.a.	100.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	24.2	100.0
Electrical machinery	44.7	n.a.	32.1	n.a.	n.a.	100.0	53.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	23.3	81.2
Electronic equipment (radio, TV & comm.)	51.6	n.a.	21.1	n.a.	n.a.	100.0	60.6	n.a.	62.0	n.a.	n.a.	n.a.	n.a.	21.1	100.0
Medical, precision and optical instruments, watches, clocks (instr.)	51.2	n.a.	23.4	n.a.	n.a.	100.0	67.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	21.2	91.5
Motor vehicles	44.3	n.a.	20.4	n.a.	n.a.	100.0	6.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	22.7	82.0
Other transport equipment	29.8	n.a.	17.4	n.a.	n.a.	100.0	30.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Furniture, other manufacturing n.e.c.	32.6	n.a.	20.8	n.a.	n.a.	100.0	51.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	19.2	65.3
Recycling	9.0	n.a.	n.a.	n.a.	n.a.	100.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.0	100.0

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), Indonesia (2 years), and Malaysia (4 years).
For China: Product innovation covers only new or significantly improved goods. Logistics, delivery or distribution methods are not explicitly mentioned in process innovation.
For Colombia: Sample survey data (no grossed up results).
For Indonesia: The target population was medium-sized and large firms that implemented any type of innovation.
For the Philippines: IT services are also included. Results are not representative of the target population.
For EU-27/Eurostat: Data cover firms with abandoned or ongoing activities.

Source: *2011 UIS pilot data collection of innovation statistics and CIS 2006 database (Eurostat, 2012).*

Table A8. Other highly important hampering factors for firms as a percentage of innovation-active manufacturing firms

	Other factors		
	Organisational rigidities within the enterprise	Insufficient flexibility of regulations or standards	Limitations of science and technology public policies
Brazil	6.4	6.8	4.6
China	n.a.	n.a.	10.9
Colombia	n.a.	35.2	n.a.
Egypt	n.a.	n.a.	n.a.
Ghana	n.a.	n.a.	n.a.
Indonesia	13.0	21.0	27.0
Israel	n.a.	n.a.	n.a.
Malaysia	n.a.	17.0	n.a.
Philippines	n.a.	n.a.	n.a.
Russian Federation	n.a.	n.a.	n.a.
South Africa	n.a.	n.a.	n.a.
Uruguay	10.3	n.a.	n.a.
EU-27	n.a.	n.a.	n.a.
Eurostat min	n.a.	n.a.	n.a.
Eurostat max	n.a.	n.a.	n.a.

Notes: Based on a three-year observation period, except for Colombia (2 years), Indonesia (2 years), and Malaysia (4 years).
For Colombia: Sample survey data (no grossed up results). Data only cover product and process innovators.
For Indonesia: The target population was medium-sized and large firms that implemented any type of innovation. No specification of firms covered.
For Malaysia: Data also cover organizational and marketing innovators.

Source: 2011 UIS pilot data collection of innovation statistics.

Table A9. Highly important cost and economic hampering factors for firms as a percentage of non-innovative manufacturing firms

	Cost and economic factors			
	Lack of funds within your enterprise or group	Lack of finance from sources outside your enterprise	Innovation costs too high	Excessive perceived economic risks
Brazil	n.a.	11.9	17.2	14.4
China	n.a.	n.a.	n.a.	n.a.
Colombia	25.6	22.2	n.a.	n.a.
Egypt	17.7	17.9	14.5	n.a.
Ghana	n.a.	n.a.	n.a.	n.a.
Indonesia	n.a.	n.a.	n.a.	n.a.
Israel	n.a.	n.a.	n.a.	n.a.
Malaysia	n.a.	n.a.	n.a.	n.a.
Philippines	23.9	14.5	26.0	n.a.
Russian Federation	32.9	n.a.	24.1	15.5
South Africa	31.0	20.2	24.6	n.a.
Uruguay	n.a.	24.7	n.a.	10.1
EU-27	n.a.	n.a.	n.a.	n.a.
Eurostat min	9.7	4.0	3.0	n.a.
Eurostat max	32.2	23.9	37.2	n.a.

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), and Colombia (2 years).
For Colombia: Sample survey data (no grossed up results). Data cover firms with abandoned or ongoing activities.
For the Philippines: IT services are also included. Results are not representative of the target population.
For the Russian Federation: Data cover firms without any type of innovation and without abandoned or ongoing activities.

Source: *2011 UIS pilot data collection of innovation statistics and CIS 2006 database (Eurostat, 2012).*

Table A10. Highly important knowledge hampering factors for firms as a percentage of non-innovative manufacturing firms

	Knowledge factors			
	Lack of qualified personnel	Lack of information on technology	Lack of information on markets	Difficulty in finding cooperation partners for innovation
Brazil	6.3	2.7	2.0	5.1
China	n.a.	n.a.	n.a.	n.a.
Colombia	28.5	28.5	28.4	21.9
Egypt	18.5	25.4	33.1	20.4
Ghana	n.a.	n.a.	n.a.	n.a.
Indonesia	n.a.	n.a.	n.a.	n.a.
Israel	n.a.	n.a.	n.a.	n.a.
Malaysia	n.a.	n.a.	n.a.	n.a.
Philippines	9.5	13.3	8.2	8.6
Russian Federation	8.0	4.2	4.1	3.3
South Africa	16.7	8.8	3.9	8.8
Uruguay	31.2	13.9	20.7	26.5
EU-27	n.a.	n.a.	n.a.	n.a.
Eurostat min	4.3	1.6	1.4	1.7
Eurostat max	22.5	20.2	20.5	19.2

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), and Colombia (2 years).
For Colombia: Sample survey data (no grossed up results). Data cover firms with abandoned or ongoing activities.
For the Philippines: IT services are also included. Results are not representative of the target population.
For the Russian Federation: Data cover firms without any type of innovation and without abandoned or ongoing activities.

Source: *2011 UIS pilot data collection of innovation statistics and CIS 2006 database (Eurostat, 2012).*

Table A11. Highly important market hampering factors for firms as a percentage of non-innovative manufacturing firms

	Market factors		
	Market dominated by established enterprises	Uncertain demand for innovative goods or services	Innovation is easy to imitate
Brazil	n.a.	n.a.	n.a.
China	n.a.	n.a.	n.a.
Colombia	n.a.	26.2	22.0
Egypt	17.7	21.2	n.a.
Ghana	n.a.	n.a.	n.a.
Indonesia	n.a.	n.a.	n.a.
Israel	n.a.	n.a.	n.a.
Malaysia	n.a.	n.a.	n.a.
Philippines	16.0	12.1	n.a.
Russian Federation	n.a.	n.a.	n.a.
South Africa	28.3	19.1	n.a.
Uruguay	n.a.	n.a.	n.a.
EU-27	n.a.	n.a.	n.a.
Eurostat min	3.7	5.3	n.a.
Eurostat max	25.3	22.8	n.a.

Notes: Based on a three-year observation period, except for the Philippines (1.5 years) and Colombia (2 years).
For Colombia: Sample survey data (no grossed up results). Data cover firms with abandoned or ongoing activities.
For the Philippines: IT services are also included. Results are not representative of the target population.

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2006 database (Eurostat, 2012).

Table A12. Other highly important hampering factors for firms as a percentage of non-innovative manufacturing firms

	Other factors		
	Organisational rigidities within the enterprise	Insufficient flexibility of regulations or standards	Limitations of science and technology public policies
Brazil	2.0	4.2	3.1
China	n.a.	n.a.	n.a.
Colombia	n.a.	24.8	n.a.
Egypt	n.a.	n.a.	n.a.
Ghana	n.a.	n.a.	n.a.
Indonesia	n.a.	n.a.	n.a.
Israel	n.a.	n.a.	n.a.
Malaysia	n.a.	n.a.	n.a.
Philippines	n.a.	n.a.	n.a.
Russian Federation	n.a.	n.a.	n.a.
South Africa	n.a.	n.a.	n.a.
Uruguay	7.8	n.a.	n.a.
EU-27	n.a.	n.a.	n.a.
Eurostat min	n.a.	n.a.	n.a.
Eurostat max	n.a.	n.a.	n.a.

Notes: Based on a three-year observation period, except for Colombia (2 years).
For Colombia: Sample survey data (no grossed up results). Data cover firms with abandoned or ongoing activities.

Source: 2011 UIS pilot data collection of innovation statistics.

Table A13. Manufacturing firms that implement organizational innovation as a percentage of all manufacturing firms

	Organisational innovators in manufacturing
Brazil	54.0
China	n.a.
Colombia	13.6
Egypt	6.2
Ghana	n.a.
Indonesia	n.a.
Israel	50.6
Malaysia	28.1
Philippines	58.0
Russian Federation	4.0
South Africa	52.6
Uruguay	8.4
EU-27	30.8
Eurostat min	10.1
Eurostat max	51.9

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), and Malaysia (4 years).
For Colombia: Sample survey data (no grossed up results).
For the Philippines: IT services are also included. Results are not representative of the target population.
For Egypt, Malaysia, the Philippines and South Africa: Organizational innovation includes new or significant changes.
For Brazil: Environmental management techniques are included and methods to organize external relations can be new or significantly changed.

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2008 database (Eurostat, 2012).

Table A14. Manufacturing firms that implement organizational innovation by size class as a percentage of manufacturing firms in each size class

	Size class			
	Micro	Small	Medium-sized	Large
Brazil	n.a.	n.a.	n.a.	n.a.
China	n.a.	n.a.	n.a.	n.a.
Colombia	n.a.	9.1	19.8	31.0
Egypt	2.6	6.3	6.6	14.9
Ghana	n.a.	n.a.	n.a.	n.a.
Indonesia	n.a.	n.a.	n.a.	n.a.
Israel	n.a.	44.0	66.6	72.0
Malaysia	n.a.	12.8	29.9	46.2
Philippines	39.0	52.0	70.0	67.0
Russian Federation	n.a.	n.a.	1.7	9.5
South Africa	44.9	55.9	57.4	71.1
Uruguay	n.a.	3.4	15.0	22.0
EU-27	n.a.	26.8	n.a.	n.a.
Eurostat min	n.a.	9.1	10.2	33.3
Eurostat max	n.a.	47.1	66.7	74.1

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), and Malaysia (4 years).
For Colombia: Sample survey data (no grossed up results).
For the Philippines: IT services are also included. Results are not representative of the target population.
For Egypt, Malaysia, the Philippines and South Africa: Organizational innovation includes new or significant changes.
Size classes are detailed in Annex II.

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2008 database (Eurostat, 2012).

Table A15. Manufacturing firms that implement marketing innovation as a percentage of all manufacturing firms

	Marketing innovators in manufacturing
Brazil	48.0
China	n.a.
Colombia	10.8
Egypt	3.6
Ghana	n.a.
Indonesia	n.a.
Israel	57.9
Malaysia	28.0
Philippines	50.4
Russian Federation	3.4
South Africa	23.3
Uruguay	4.8
EU-27	27.5
Eurostat min	11.4
Eurostat max	60.4

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), and Malaysia (4 years).
For Colombia: Sample survey data (no grossed up results).
For the Philippines: IT services are also included. Results are not representative of the target population.
For Colombia, Egypt, Malaysia and South Africa: Significant changes other than in design or packaging are also included.

Source: *2011 UIS pilot data collection of innovation statistics and CIS 2008 database (Eurostat, 2012).*

Table A16. Manufacturing firms that implement marketing innovation by size class as a percentage of manufacturing firms in each size class

	Size class			
	Micro	Small	Medium-sized	Large
Brazil	n.a.	n.a.	n.a.	n.a.
China	n.a.	n.a.	n.a.	n.a.
Colombia	n.a.	7.4	14.6	25.5
Egypt	1.3	2.6	6.2	7.1
Ghana	n.a.	n.a.	n.a.	n.a.
Indonesia	n.a.	n.a.	n.a.	n.a.
Israel	n.a.	53.7	67.7	73.0
Malaysia	n.a.	17.0	21.3	45.7
Philippines	43.0	50.0	54.0	53.0
Russian Federation	n.a.	n.a.	1.8	7.3
South Africa	17.6	21.2	29.8	48.9
Uruguay	n.a.	4.0	4.2	12.9
EU-27	n.a.	n.a.	33.0	43.9
Eurostat min	n.a.	9.0	15.6	19.7
Eurostat max	n.a.	59.9	59.6	69.8

Notes: Based on a three-year observation period, except for the Russian Federation (1 year), the Philippines (1.5 years), Colombia (2 years), and Malaysia (4 years).
For Colombia: Sample survey data (no grossed up results).
For the Philippines: IT services are also included. Results are not representative of the target population.
For Colombia, Egypt, Malaysia and South Africa: Significant changes other than in design or packaging are also included.
Size classes are detailed in Annex II.

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2008 database (Eurostat, 2012).

Table A17. Manufacturing firms that implement any type of innovation as a percentage of all manufacturing firms

	Innovators in manufacturing
Brazil	75.0
China	n.a.
Colombia	27.0
Egypt	12.8
Ghana	n.a.
Indonesia	n.a.
Israel	74.2
Malaysia	n.a.
Philippines	n.a.
Russian Federation	13.0
South Africa	60.3
Uruguay	31.5
EU-27	54.5
Eurostat min	28.4
Eurostat max	86.3

Notes: Based on a three-year observation period, except for the Russian Federation (1 year) and Colombia (2 years).
For Colombia: Sample survey data (no grossed up results).

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2008 database (Eurostat, 2012).

Table A18. Manufacturing firms that implement any type of innovation by size class as a percentage of manufacturing firms in each size class

	Size class			
	Micro	Small	Medium-sized	Large
Brazil	n.a.	n.a.	n.a.	n.a.
China	n.a.	n.a.	n.a.	n.a.
Colombia	n.a.	19.2	38.5	55.0
Egypt	n.a.	n.a.	n.a.	n.a.
Ghana	n.a.	n.a.	n.a.	n.a.
Indonesia	n.a.	n.a.	n.a.	n.a.
Israel	n.a.	70.5	82.9	89.2
Malaysia	n.a.	n.a.	n.a.	n.a.
Philippines	n.a.	n.a.	n.a.	n.a.
Russian Federation	n.a.	n.a.	6.7	28.0
South Africa	n.a.	n.a.	n.a.	n.a.
Uruguay	n.a.	n.a.	n.a.	n.a.
EU-27	n.a.	49.7	n.a.	n.a.
Eurostat min	n.a.	22.6	38.2	59.9
Eurostat max	n.a.	84.2	89.9	97.2

Notes: Based on a three-year observation period, except for the Russian Federation (1 year) and Colombia (2 years).
For Colombia: Sample survey data (no grossed up results).
Size classes are detailed in Annex II.

Source: 2011 UIS pilot data collection of innovation statistics and CIS 2008 database (Eurostat, 2012).

Annex II. Basic methodology

Table A19. Basic methodology of the national innovation surveys

	Brazil	China
Survey name and year	Pesquisa de Inovação Tecnológica 2008	Industrial Enterprises Innovation Survey 2007
Observation period	2006-2008	2004-2006
Statistical unit	Enterprise	Enterprise
Survey method	Mixed (census for manufacturing enterprises with 500 or more employees; sample for others)	Mixed (census for large and medium-sized enterprises; sample for small enterprises)
Cut-off point criteria	Number of employees	Mixed (Number of employees/Turnover/Total assets)
Micro	n.a.	n.a.
Small	At least 10 employees (minimum cut-off point)	< 300 emp / 5-29 million Yuan / < 40 million Yuan
Medium-sized	n.a.	n.a.
Large	n.a.	n.a.
Coverage (Manufacturing, Division level)	ISIC Rev. 3.1, D 15-37	ISIC Rev. 3.1, D 15-37
Target population / sample size / respondents (Manuf)	100,612 / 16,792 / 14,009	277,475 / n.a. / n.a.
Survey procedure	In-person interview; phone interviews	Questionnaires received by enterprises in a meeting and after sent to the National Statistical Office
Treatment of ITEM non-response	Re-contacting the enterprises	Re-contacting the enterprises
Treatment of UNIT non-response	Re-contacting the enterprises	Re-contacting the enterprises
Nature of survey	Compulsory	Compulsory
Joint survey	Yes (R&D survey)	No
Possibility of linking data to other national surveys	Yes (Business survey; Annual industrial survey; Annual services survey)	Yes (R&D survey)
Guidelines	Oslo Manual	Oslo Manual
Survey base	CIS	CIS
Known deviations from the Oslo Manual	No deviations known	Cut-off point criteria
Special modules covering additional topics	Human resources qualification and occupation (R&D survey); Use of biotechnology and nanotechnology	Factors for promoting innovation success; Incentives to encourage employees to innovate; Importance of government policies; Effects of government policies; Strategies (Manager/CEO survey)
Use of data by policy-makers	Yes	Yes
Availability of data for researchers	Yes	No
Next innovation survey	2012 (covering 2009-2011)	2013

Table A19. Basic methodology of the national innovation surveys *(cont.)*

	Colombia	Egypt
Survey name and year	Cuarta Encuesta de Desarrollo e Innovación Tecnológica en la Industria Colombiana 2009	Egyptian National Innovation Indicators Survey 2011
Observation period	2007-2008	2008-2010
Statistical unit	Enterprise	Enterprise
Survey method	Census	Sample
Cut-off point criteria	Number of employees	Number of employees
Micro	n.a.	1-10 employees
Small	1-50 employees	11-50 employees
Medium-sized	51-200 employees	51-250 employees
Large	More than 200 employees	More than 250 employees
Coverage (Manufacturing, Division level)	ISIC Rev. 3.1, D 15-37	ISIC Rev. 4, C 10-18/20-23/25/27/28/30-33
Target population / sample size / respondents (Manuf)	n.a. / n.a. / 7,683	n.a. / 1,111 / n.a.
Survey procedure	Electronic form	In-person interview
Treatment of ITEM non-response	Re-contacting the enterprises	Re-contacting the enterprises
Treatment of UNIT non-response	Re-contacting the enterprises	Re-contacting the enterprises and replacement
Nature of survey	Compulsory	Voluntary
Joint survey	No	Yes (R&D survey)
Possibility of linking data to other national surveys	Yes (Business survey)	Yes (R&D survey)
Guidelines	Oslo and Bogota Manuals	Oslo Manual
Survey base	CIS	South African Innovation Survey
Known deviations from the Oslo Manual	Cut-off point criteria	Cut-off point criteria
Special modules covering additional topics	Human resources qualification and occupation	None
Use of data by policy-makers	Yes	Yes
Availability of data for researchers	Yes	Yes
Next innovation survey	Currently being carried out	n.a.

Table A19. Basic methodology of the national innovation surveys *(cont.)*

	Ghana	Indonesia
Survey name and year	The Ghana Innovation Survey 2009	The Survey of Innovation in the Manufacturing Industry 2011
Observation period	2005-2007	2009-2010
Statistical unit	Enterprise	Establishment
Survey method	Sample	Sample
Cut-off point criteria	Number of employees	Number of employees
Micro	n.a.	n.a.
Small	5-19 employees	n.a.
Medium-sized	20-99 employees	20-99 employees
Large	100 or more employees	100 or more employees
Coverage (Manufacturing, Division level)	ISIC Rev. 3.1, D 15/17/18/20-28/36	ISIC Rev. 3.1, D 15-37
Target population / sample size / respondents (Manuf)	n.a. / n.a. / 86	27,854 / 1,500 / 1,385
Survey procedure	In-person interview	In-person interview
Treatment of ITEM non-response	Re-contacting the enterprises	Re-contacting the enterprises
Treatment of UNIT non-response	Re-contacting the enterprises	Re-contacting the enterprises
Nature of survey	Voluntary	Voluntary
Joint survey	Yes (R&D survey)	No
Possibility of linking data to other national surveys	Yes (Business survey)	Yes (R&D survey)
Guidelines	Oslo Manual	Oslo Manual
Survey base	n.a.	Not based on other innovation survey
Known deviations from the Oslo Manual	Cut-off point criteria	Observation period; statistical unit; cut-off point criteria
Special modules covering additional topics	Specific innovations	Innovation drivers
Use of data by policy-makers	Not aware	Not aware
Availability of data for researchers	Yes	No
Next innovation survey	2011 (still ongoing)	2013

Table A19. Basic methodology of the national innovation surveys *(cont.)*

	Israel	Malaysia
Survey name and year	Israel's Business Innovation Survey 2010/2011	Fifth National Survey of Innovation 2009
Observation period	2006-2008	2005-2008
Statistical unit	Enterprise	Establishment
Survey method	Sample	Sample
Cut-off point criteria	Number of employees	Mixed (Number of employees/Turnover)
Micro	n.a.	n.a.
Small	10-49 employees	5-50 emp / 250,000-10 million Ringgit Malaysia
Medium-sized	50-249 employees	51-150 emp / 10-25 million RM
Large	250 or more employees	More than 150 emp / More than 25 million RM
Coverage (Manufacturing, Division level)	ISIC Rev. 3.1, D 15-37	ISIC Rev. 3.1, D 15/17-37
Target population / sample size / respondents (Manuf)	4,921 / 1,012 / 921	n.a. / 4,000 / 1,017
Survey procedure	Mail; phone interview	Mail; in-person interview; phone interview; workshop, seminar and group briefing
Treatment of ITEM non-response	Imputation*	Re-contacting the enterprises
Treatment of UNIT non-response	Imputation*	Re-contacting the enterprises
Nature of survey	Compulsory	Voluntary
Joint survey	Yes (R&D survey; ICT usage survey; Manpower structure survey)	No
Possibility of linking data to other national surveys	Yes (Business survey)	Yes (R&D survey)
Guidelines	Oslo Manual	Oslo Manual
Survey base	CIS 2008	CIS 4
Known deviations from the Oslo Manual	No deviations known	Observation period; statistical unit; cut-off point criteria; modules answered by firms with any type of inovation
Special modules covering additional topics	None other than the combined surveys	Government support for innovation; Role of government in innovation
Use of data by policy-makers	n.a.	Yes
Availability of data for researchers	No	Yes
Next innovation survey	n.a.	2012

*'Close neighbor': probit regression to impute data from a similar unit to a non-response unit. Data on expenditures, employees etc. were gathered from administrative data and imputed using industries average for data breakdowns.

Table A19. Basic methodology of the national innovation surveys *(cont.)*

	Philippines	Russian Federation
Survey name and year	Survey of Innovation Activities by Establishments 2010	Russian innovation survey 2011
Observation period	Jan 2009-Jun 2010	2010
Statistical unit	Establishment	Enterprise
Survey method	Sample	Census
Cut-off point criteria	Number of employees	Mixed (Number of employees/Turnover)
Micro	1-9 employees	n.a.
Small	10-99 employees	n.a.
Medium-sized	100-199 employees	101-250 emp / 401-1.000 million Roubles
Large	200 or more employees	250 emp and more / 1.000 million RUB and more
Coverage (Manufacturing, Division level)	ISIC Rev. 3.1, D 15/32	NACE 1.1, D 15-37
Target population / sample size / respondents (Manuf)	1,824 / 500 / 474	n.a. / n.a. / n.a.
Survey procedure	n.a.	Mail
Treatment of ITEM non-response	No treatment	Re-contacting the enterprises
Treatment of UNIT non-response	No treatment	Re-contacting the enterprises
Nature of survey	Voluntary	Compulsory
Joint survey	No	No
Possibility of linking data to other national surveys	No	Yes (Russian innovation survey of small enterprises)
Guidelines	Oslo Manual	Oslo Manual
Survey base	CIS 4 (with refinements on questionnaire to consider Philippine setting)	CIS 2008
Known deviations from the Oslo Manual	Statistical unit; cut-off point criteria; coverage; treatment of non-response	Cut-off point criteria
Special modules covering additional topics	Knowledge management; Response to government innovation-related policies	None
Use of data by policy-makers	Yes	Yes
Availability of data for researchers	Yes	No
Next innovation survey	Not aware	2012

Table A19. Basic methodology of the national innovation surveys *(cont.)*

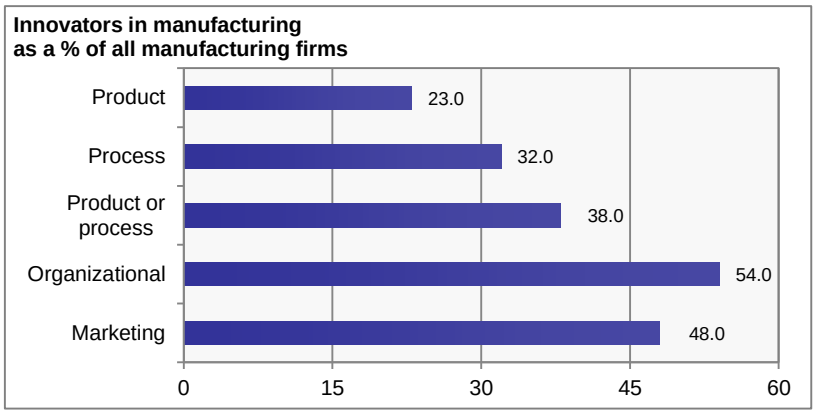
	South Africa	Uruguay
Survey name and year	South African National Innovation Survey 2008	IV Encuesta de Actividades de Innovación en Industria 2010
Observation period	2005-2007	2007-2009
Statistical unit	Enterprise	Enterprise
Survey method	Sample	Mixed
Cut-off point criteria	Turnover	Mixed
Micro	Less than 5 million South African Rand	n.a.
Small	5-13 million South African Rand	5-19 emp / 7,565.3-37,824.5 thousand Ur Pesos
Medium-sized	13-51 million South African Rand	20-99 emp / 37,826.4-283,678.3 thousand Ur Pesos
Large	More than 51 million South African Rand	More than 99 emp / > 283,680.2 thousand Ur Pesos
Coverage (Manufacturing, Division level)	ISIC Rev. 3.1, D 15-37	ISIC Rev. 4, C 10-33
Target population / sample size / respondents (Manuf)	12,094 / 1,237 / 301	3,928 / 1,023 / 941
Survey procedure	Email; mail; phone interview	In-person and phone interview
Treatment of ITEM non-response	Imputation*	Re-contacting the enterprises
Treatment of UNIT non-response	Non-response survey	Re-contacting the enterprises
Nature of survey	Voluntary	Compulsory
Joint survey	No	No
Possibility of linking data to other national surveys	Yes (R&D survey)	Yes, Business survey
Guidelines	Oslo Manual	Yes, Bogota Manual
Survey base	CIS 2006	Not based on other innovation survey
Known deviations from the Oslo Manual	Cut-off point criteria	Cut-off point criteria
Special modules covering additional topics	Specific innovations	Human resources qualification and occupation; Organisation of work process (expanded module); Quality-related activities (expanded module)
Use of data by policy-makers	Yes	Yes (partially)
Availability of data for researchers	Yes	Yes
Next innovation survey	2012	2013

*Applied to quantitative variables only (turnover, expenditure on innovation and number of employees). The imputed value was taken as the arithmetic mean based on all responses in the sector and size class in which the missing value occurs.

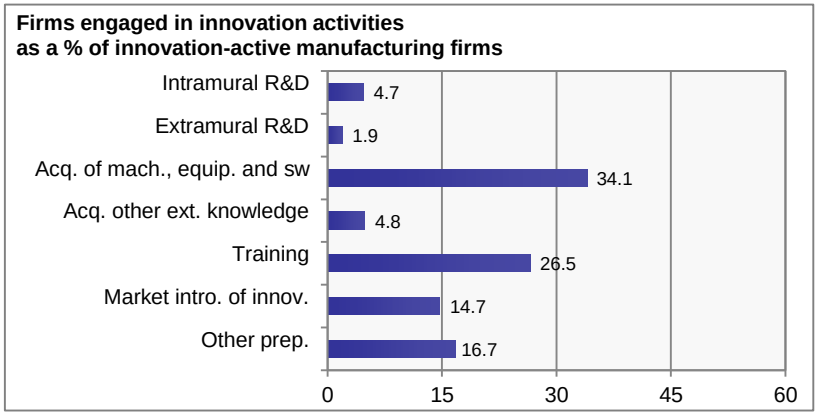
Source: UIS 2011 pilot data collection of innovation statistics.

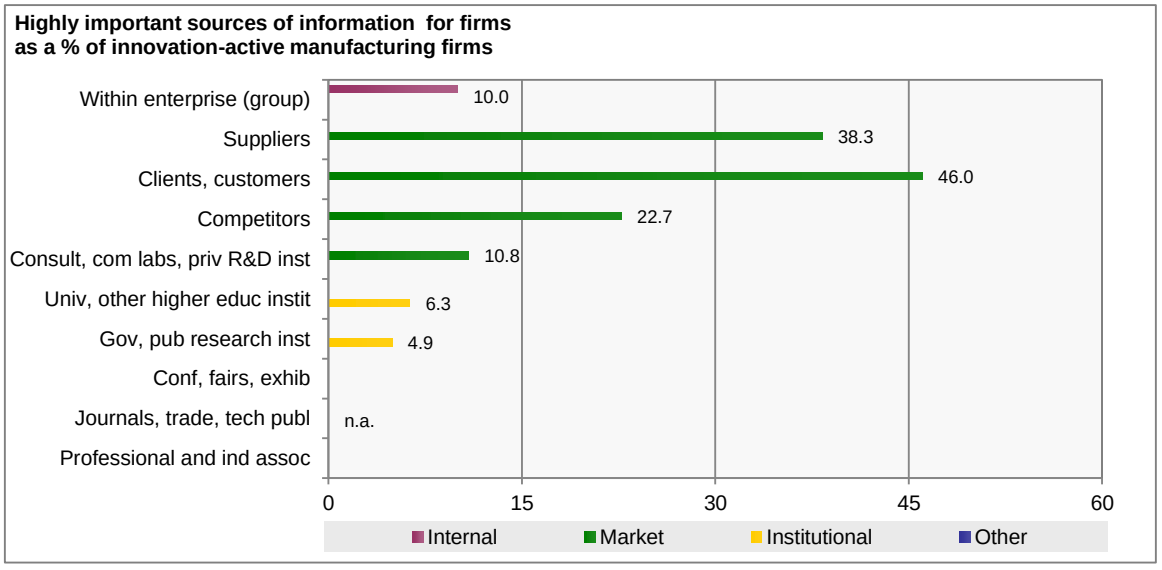
Annex III. Country profiles

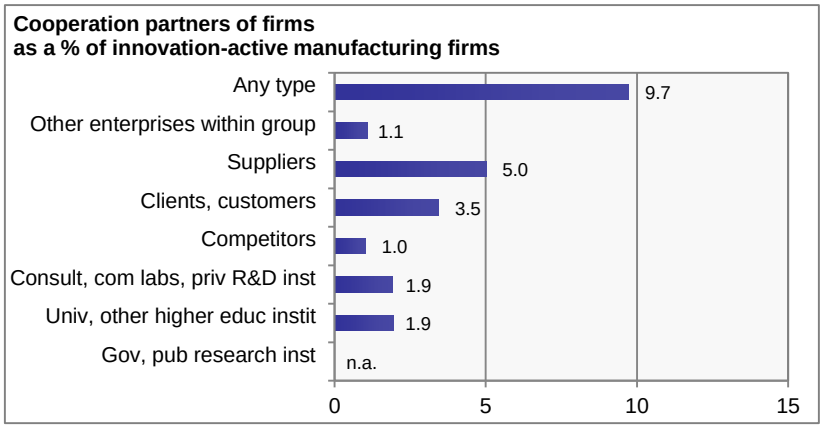
BRAZIL AT A GLANCE

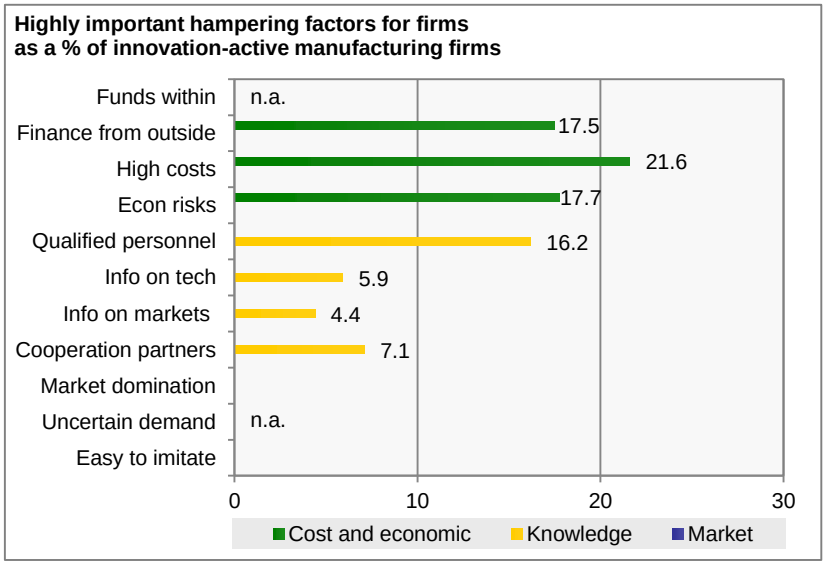


Notes: Organizational innovation includes environmental management techniques and methods to organize external relations can be new or significantly changed.



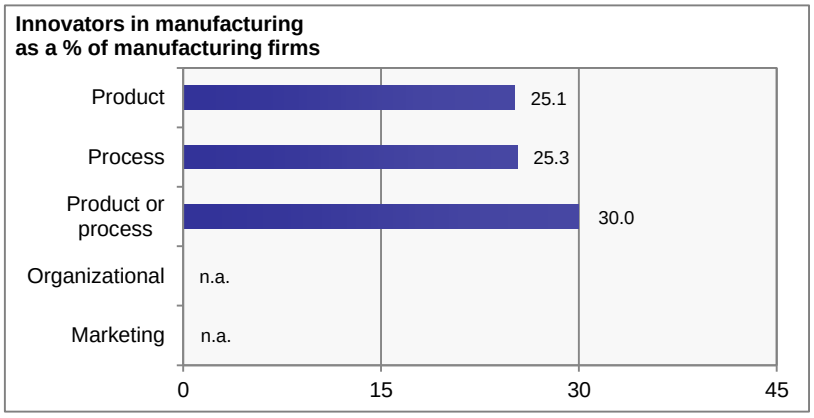




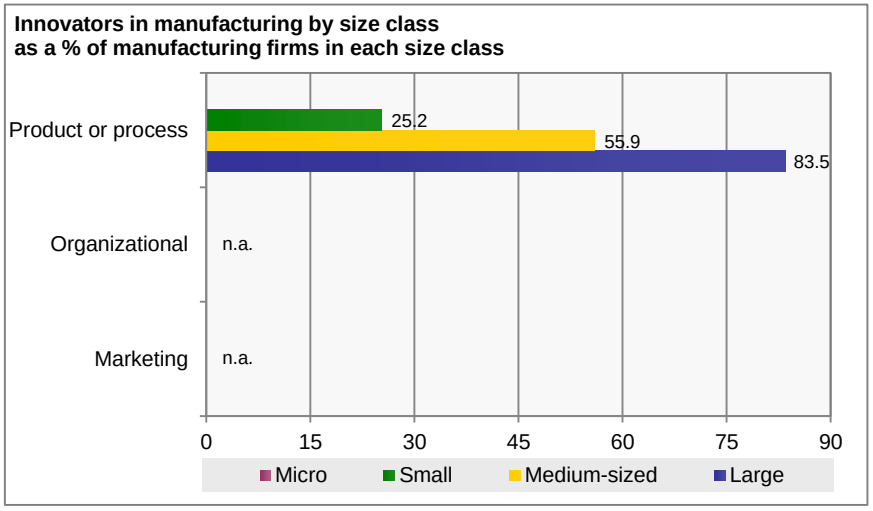


General notes: Based on a three-year observation period. For more specifications please consult the full report.

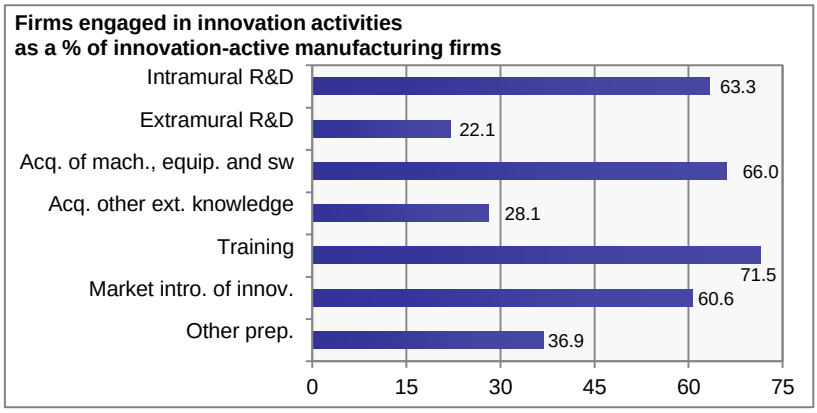
CHINA AT A GLANCE

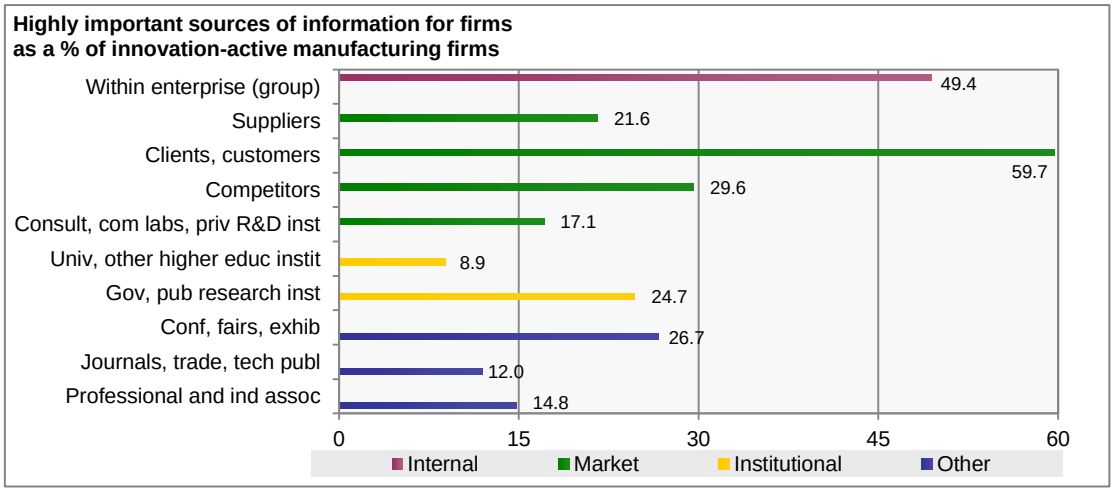


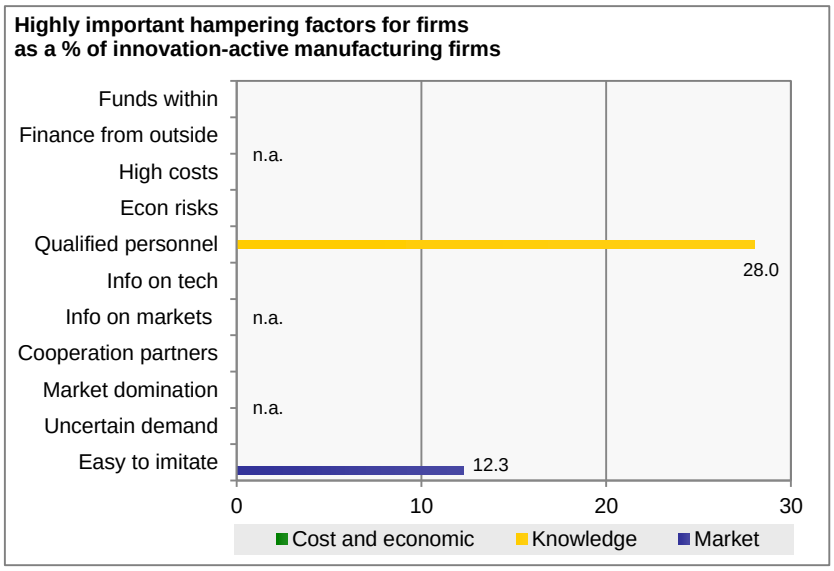
Notes: Product innovation covers only new or significantly improved goods. Logistics, delivery or distribution methods are not explicitly mentioned in process innovation.



Notes: Product innovation covers only new or significantly improved goods. Logistics, delivery or distribution methods are not explicitly mentioned in process innovation. Data broken down by size class cover manufacturing, mining and quarrying, as well as electricity, gas and water supply.



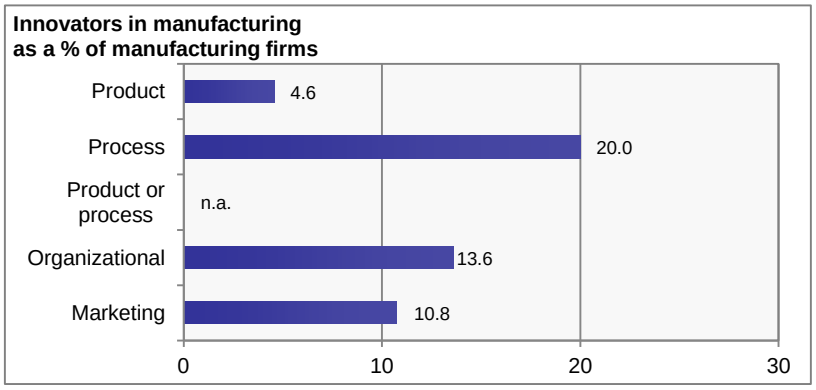




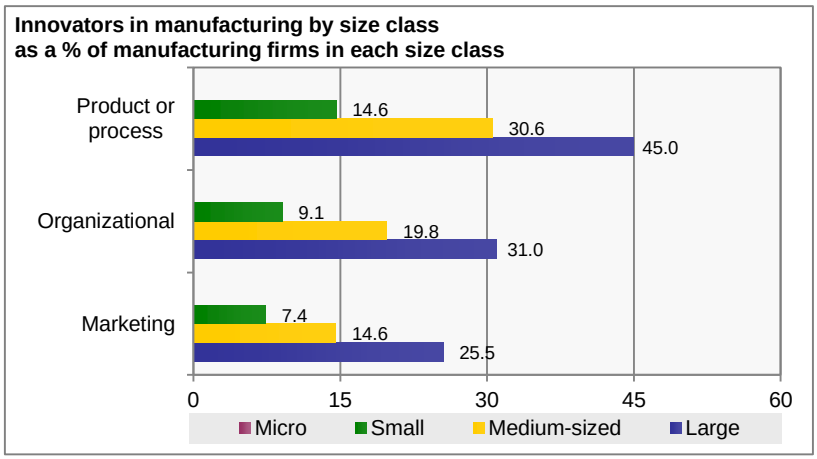
Notes: Lack of qualified personnel refers to lack of technical personnel or 'brain drain' of technical talents. Innovation is easy to imitate refers to counterfeiting or import competition.

General notes: Based on a three-year observation period. For more specifications please consult the full report.

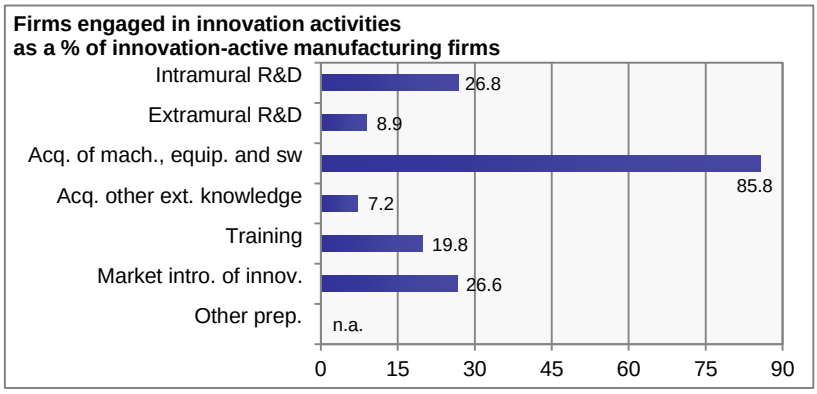
COLOMBIA AT A GLANCE



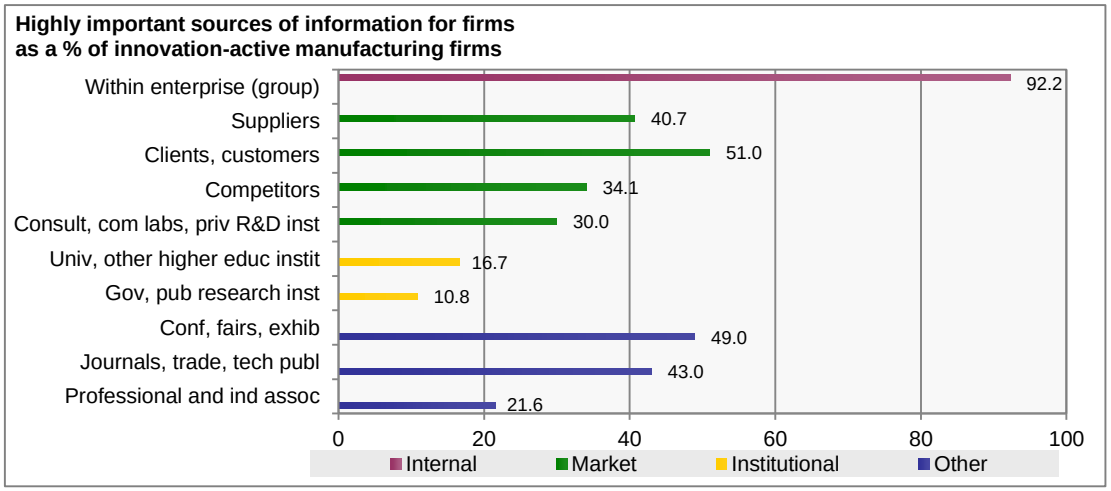
Notes: Marketing innovation includes significant changes other than in design or packaging.



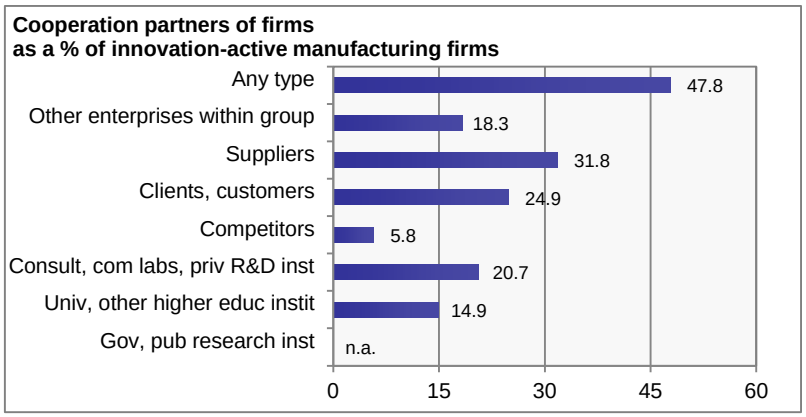
Notes: Marketing innovation includes significant changes other than in design or packaging.



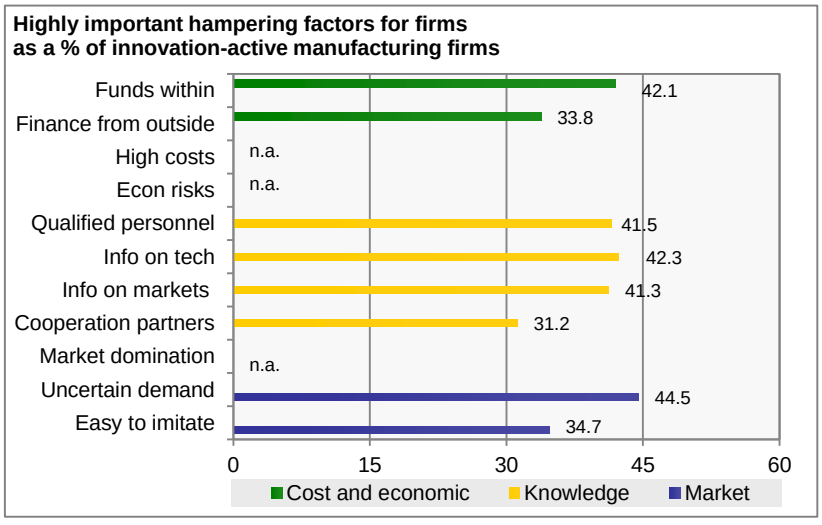
Notes: Data only cover product and process innovators. Acquisition of software is not included. Acquisition of other external knowledge is categorized under technology transfer.



Notes: Data only cover product and process innovators. Question based on dichotomous (yes/no) responses.



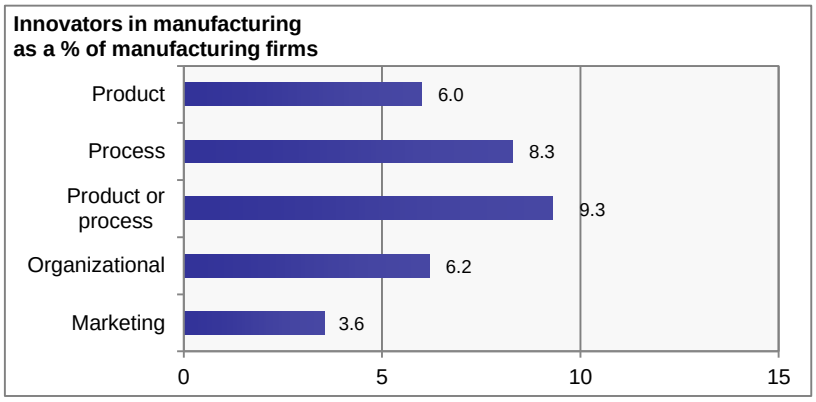
Notes: Data only cover product and process innovators.



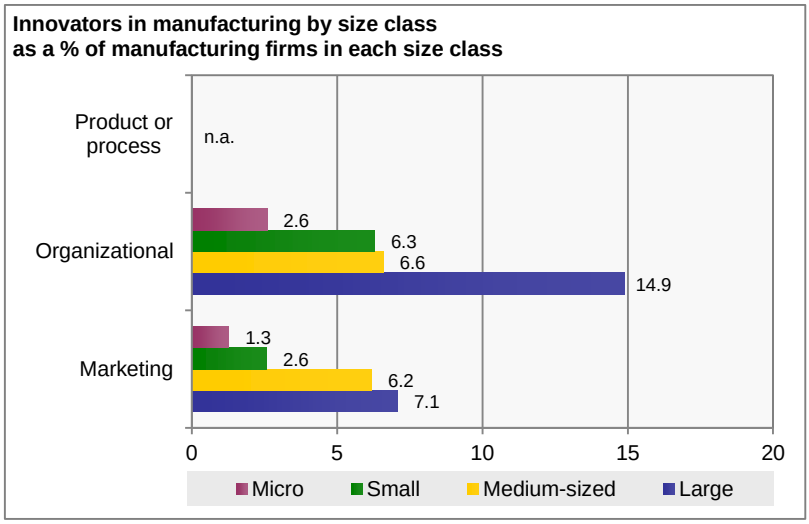
Notes: Data only cover product and process innovators.

General notes: Based on a two-year observation period. Sample survey data (no grossed up results). For more specifications please consult the full report.

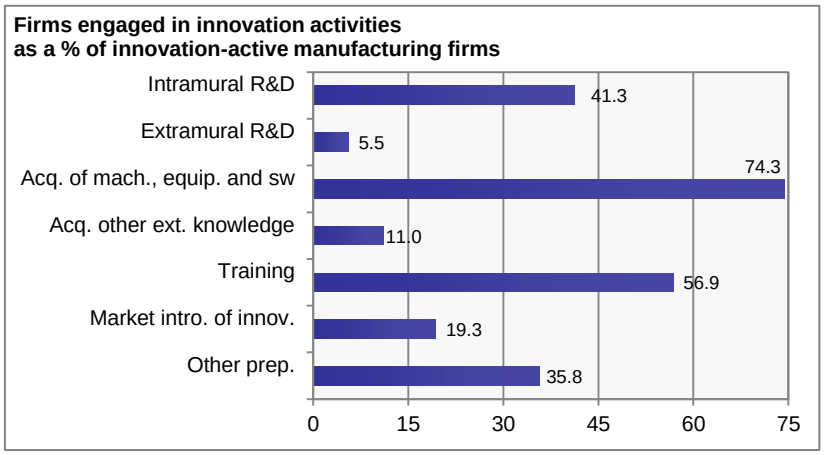
EGYPT AT A GLANCE

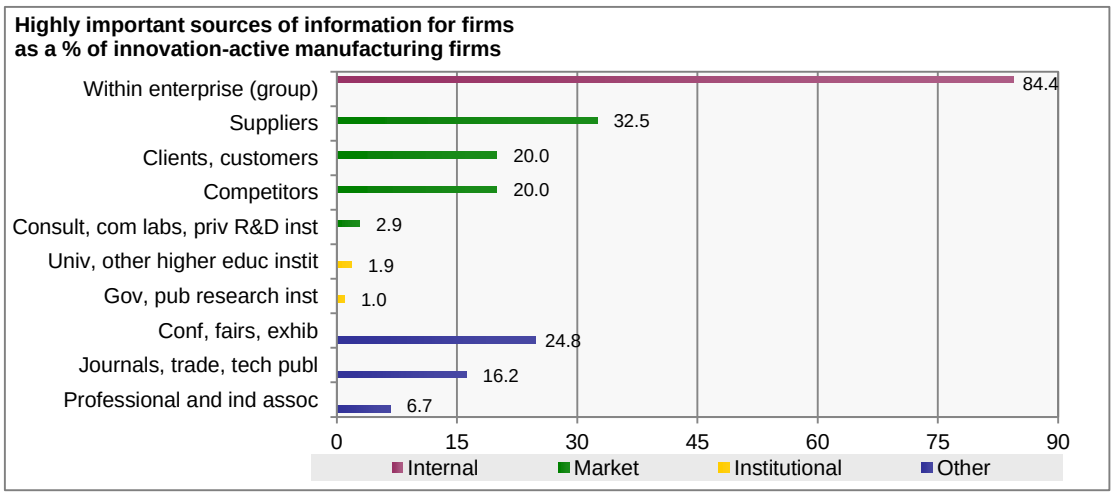


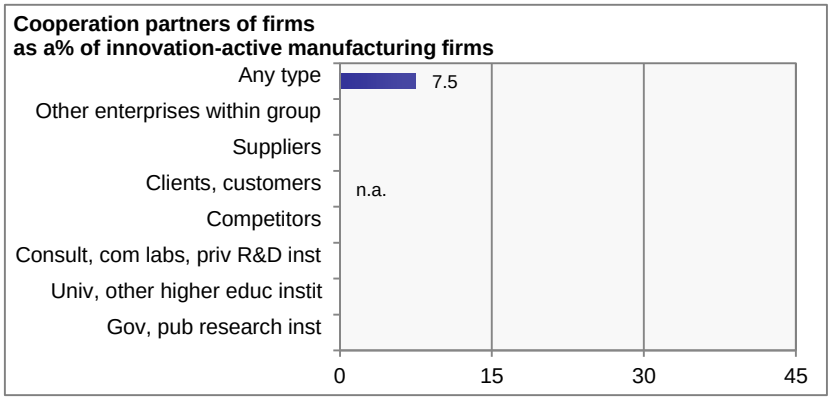
Notes: Organizational innovation includes new or significant changes. Marketing innovation includes significant changes other than in design or packaging.

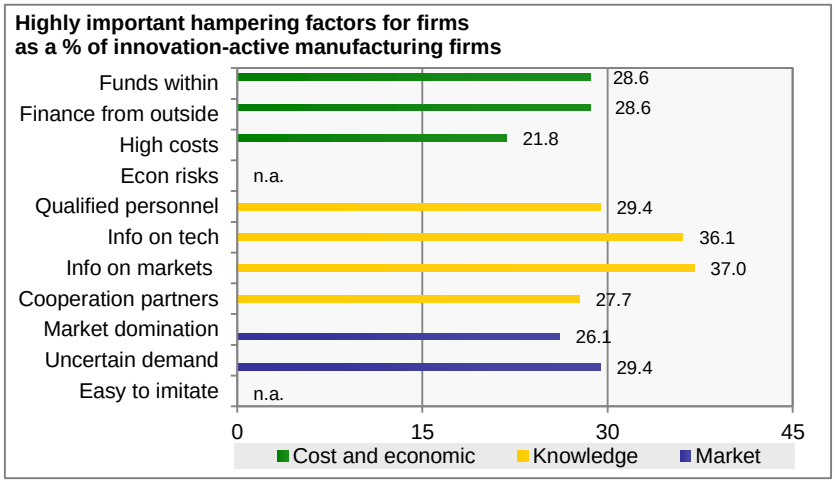


Notes: Organizational innovation includes new or significant changes. Marketing innovation includes significant changes other than in design or packaging.



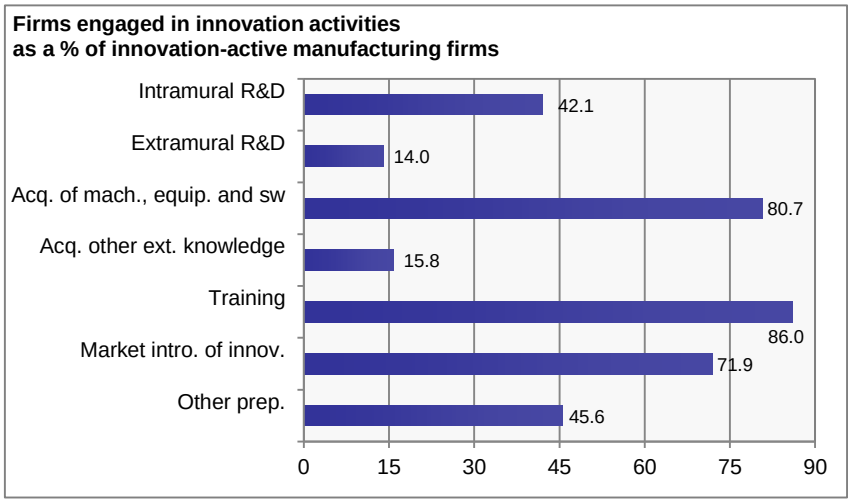




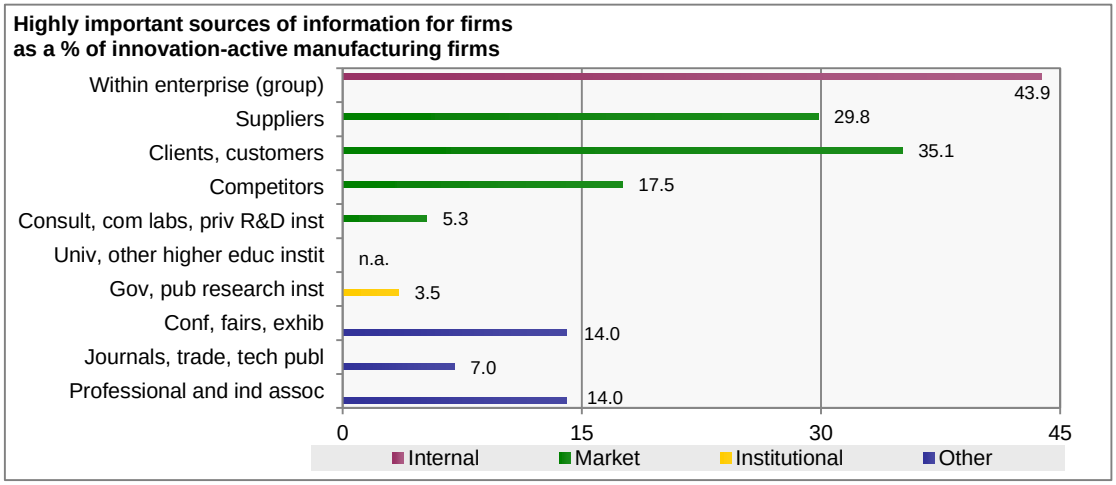


General notes: Based on a three-year observation period. For more specifications please consult the full report.

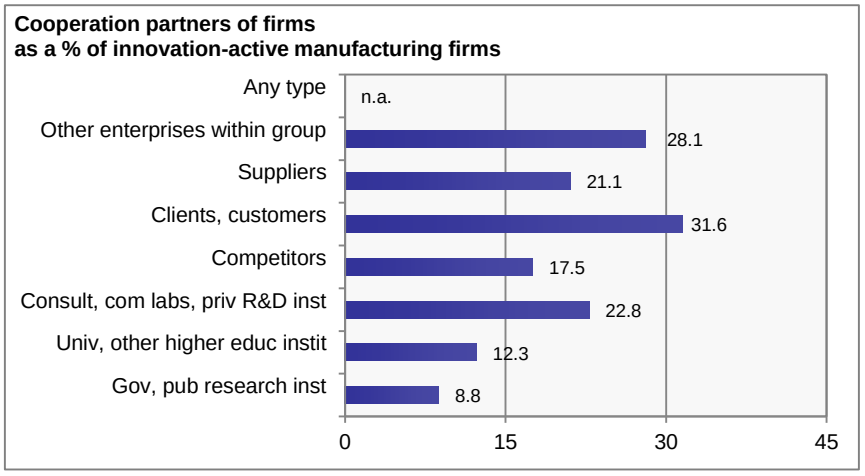
GHANA AT A GLANCE



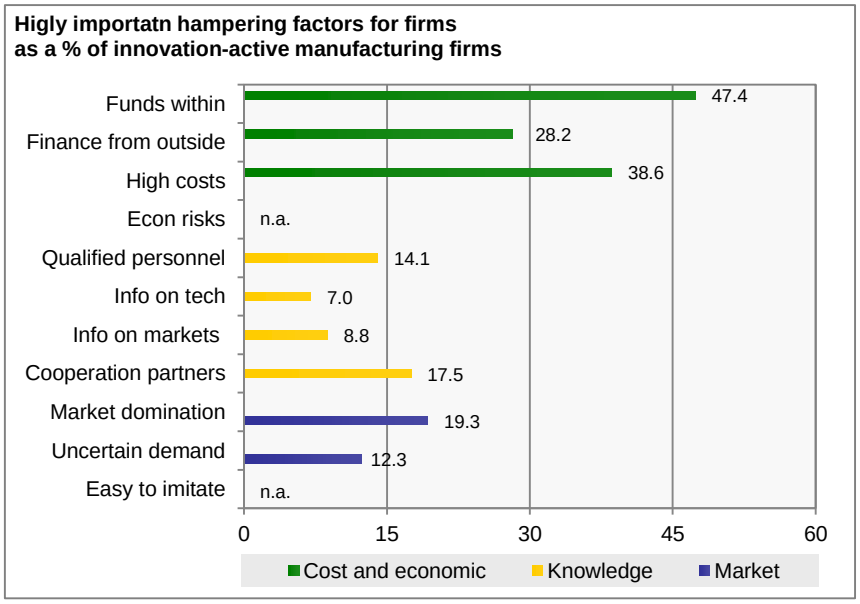
Notes: Data only cover product and process innovators.



Notes: Data only cover product and process innovators.



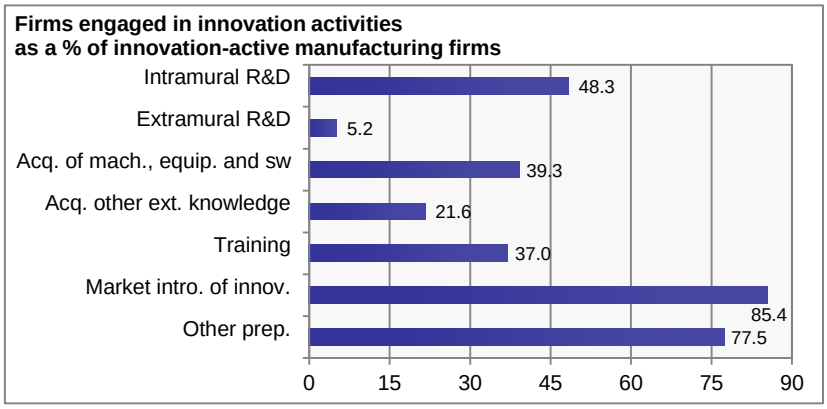
Notes: Data only cover product and process innovators.



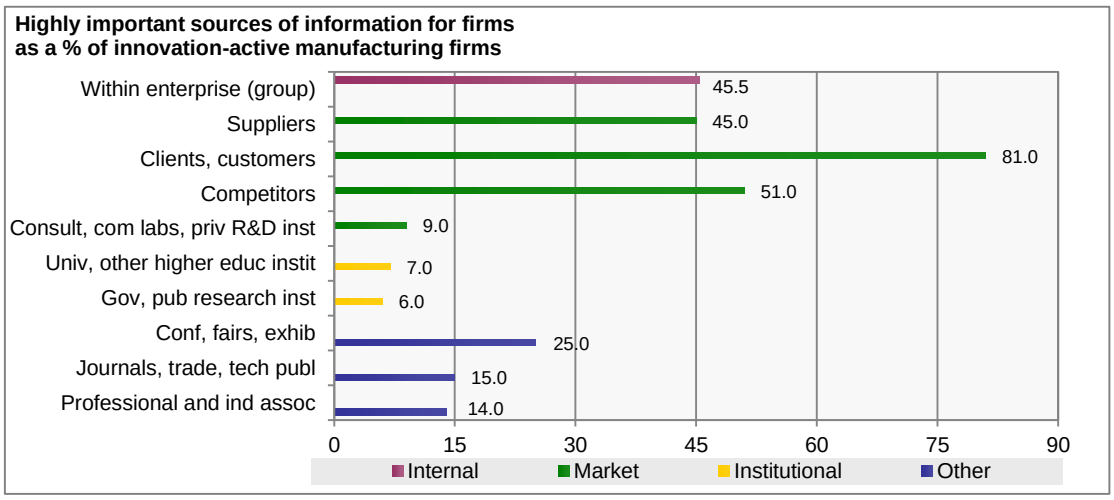
Notes: Data only cover product and process innovators.

General notes: Based on a three-year observation period. For more specifications please consult the full report.

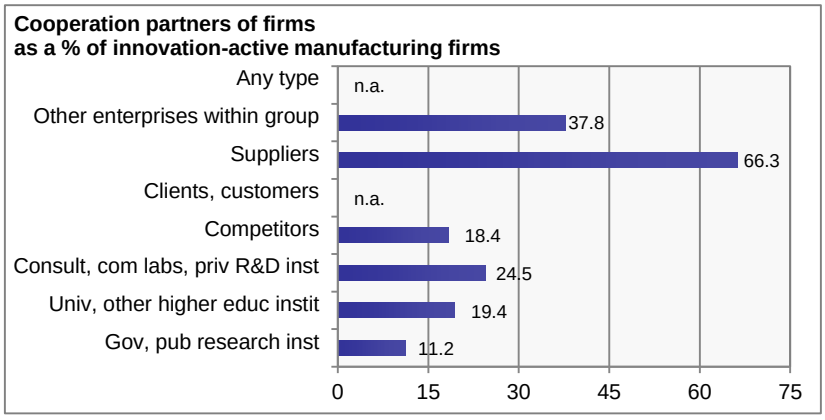
INDONESIA AT A GLANCE



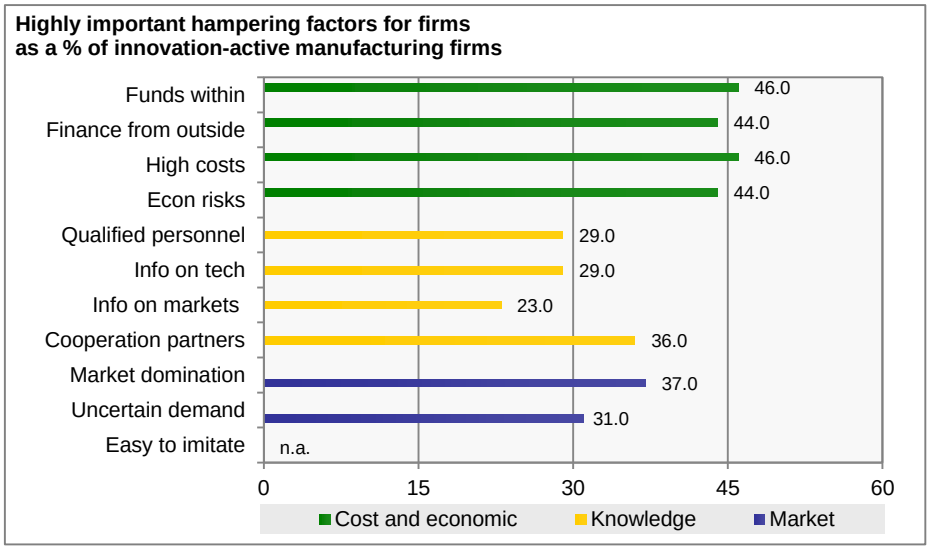
Notes: No specification of firms covered.



Notes: No specification of firms covered.

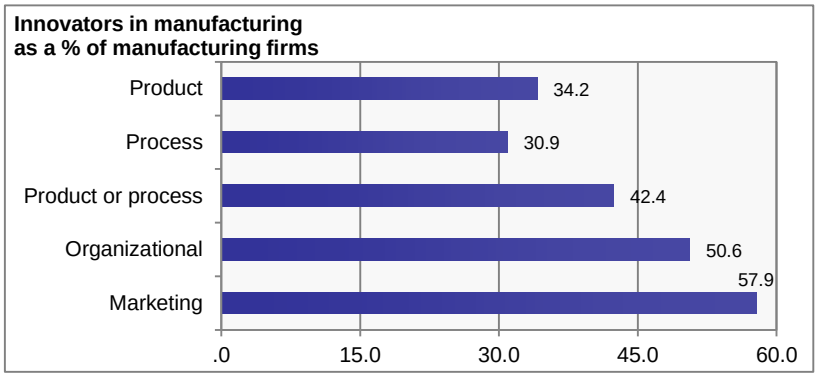


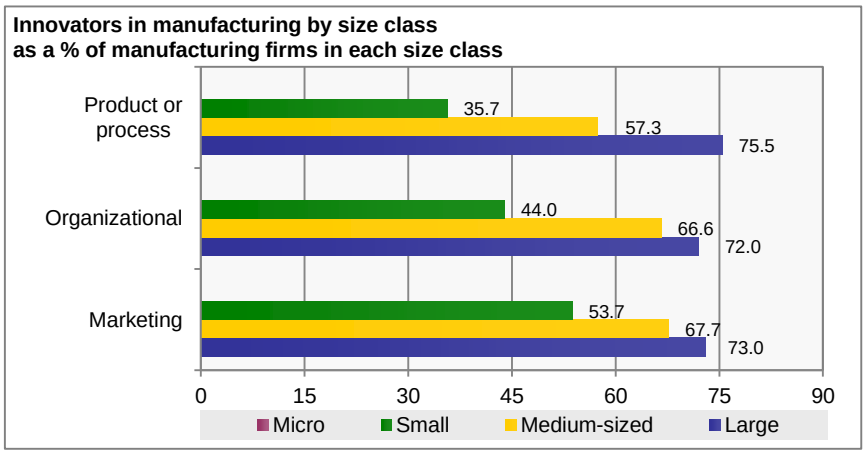
Notes: No specification of firms covered.

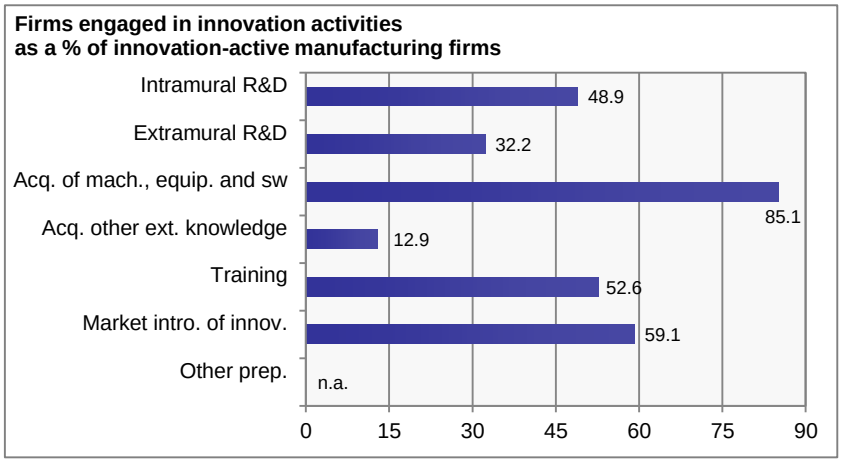


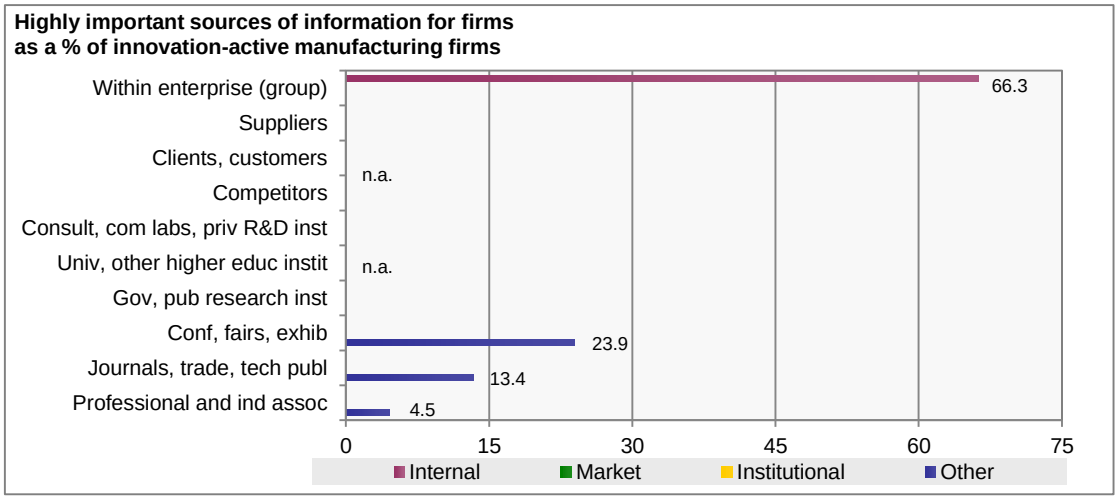
General notes: Based on a two-year observation period. For more specifications please consult the full report.

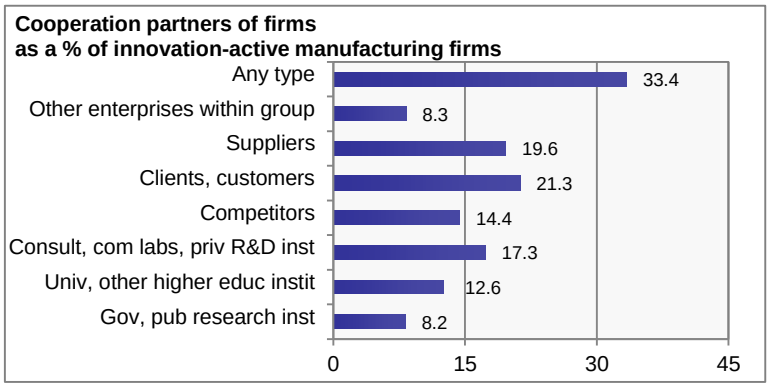
ISRAEL AT A GLANCE

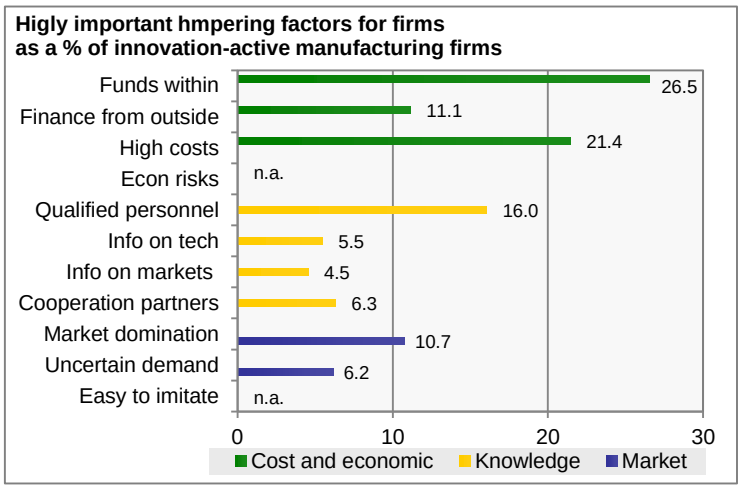






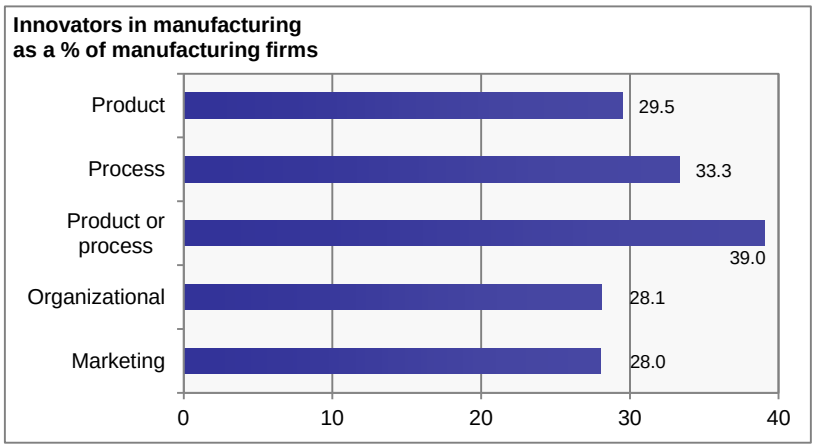




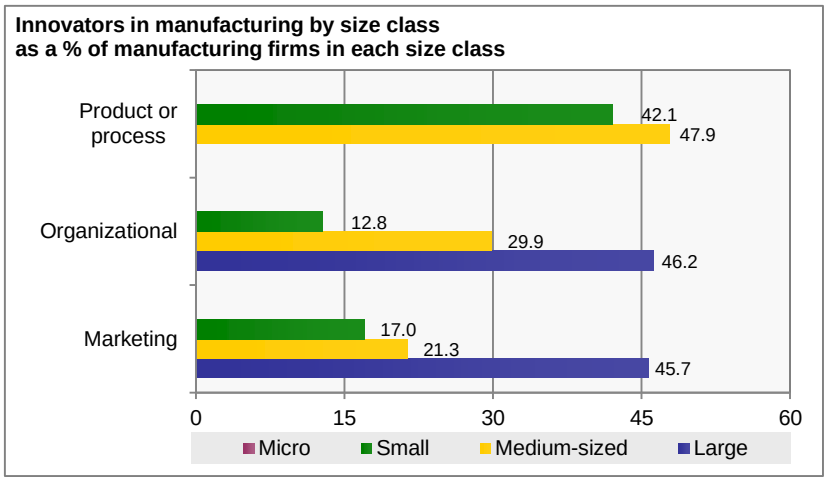


General notes: Based on a three-year observation period. For more specifications please consult the full report.

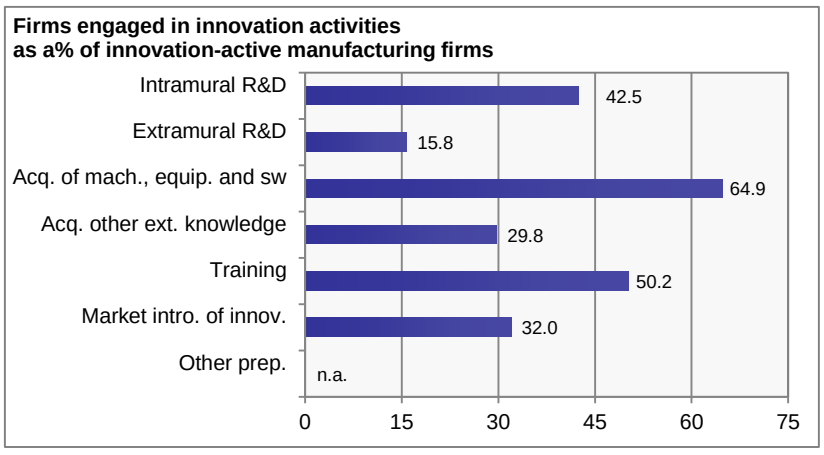
MALAYSIA AT A GLANCE



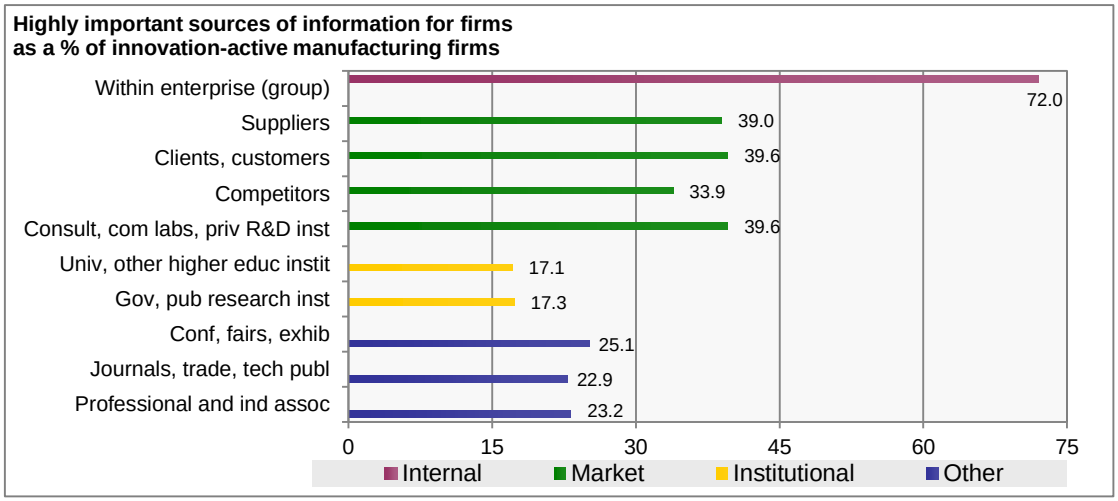
Notes: Organizational innovation includes new or significant changes. Marketing innovation includes significant changes other than in design or packaging.



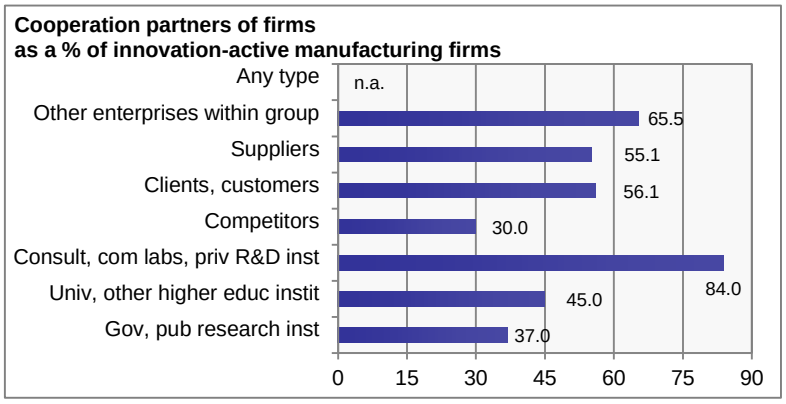
Notes: Organizational innovation includes new or significant changes. Marketing innovation includes significant changes other than in design or packaging.



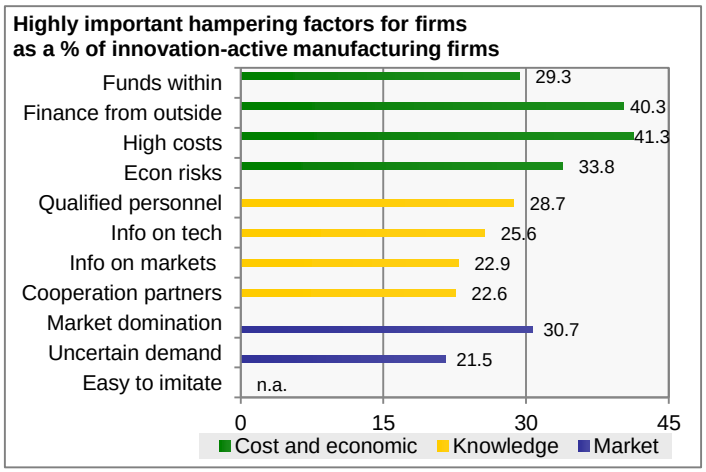
Notes: Data also cover organizational and marketing innovators.



Notes: Data also cover organizational and marketing innovators.



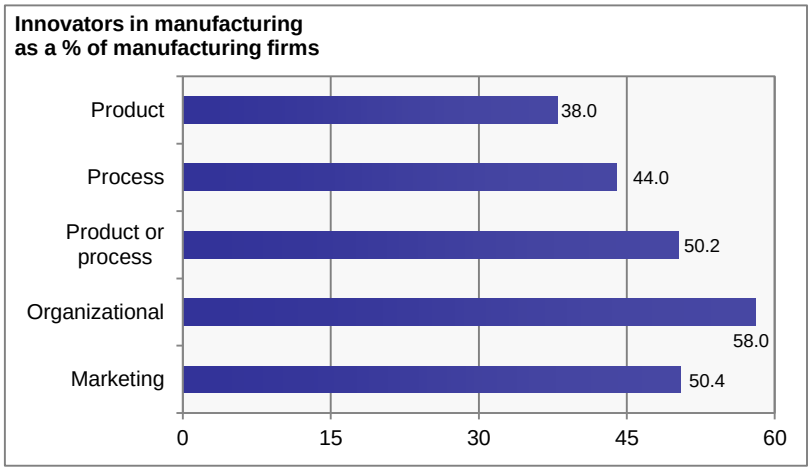
Notes: Data also cover organizational and marketing innovators.



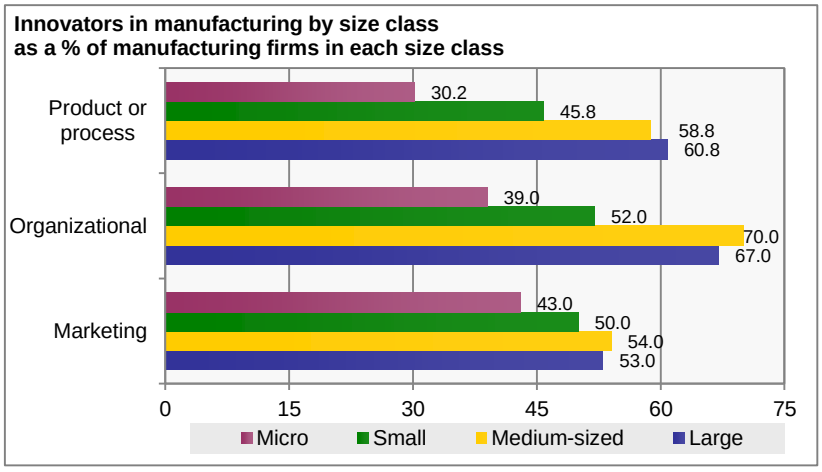
Notes: Data also cover organizational and marketing innovators.

General notes: Based on a four-year observation period. For more specifications please consult the full report.

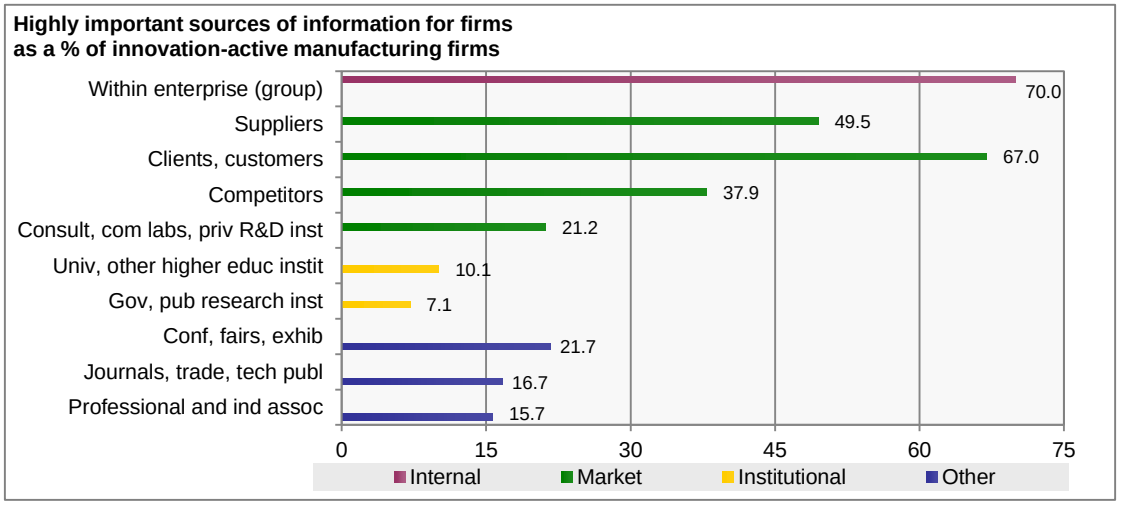
PHILIPPINES AT A GLANCE

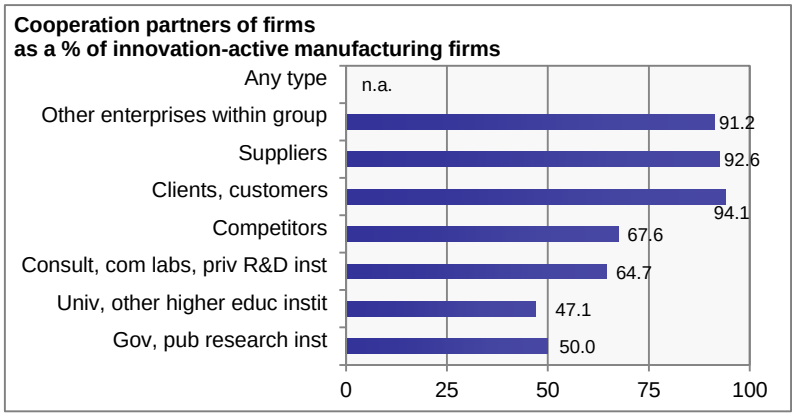


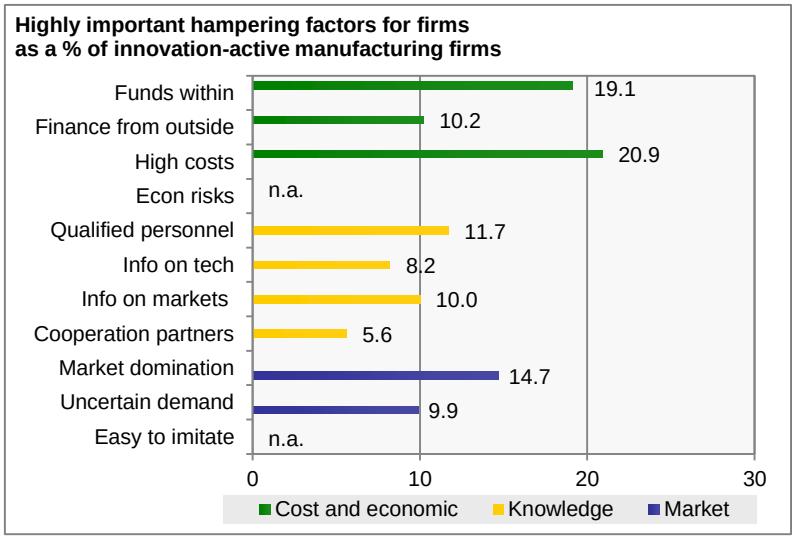
Notes: Organizational innovation includes new or significant changes.



Notes: Organizational innovation includes new or significant changes.

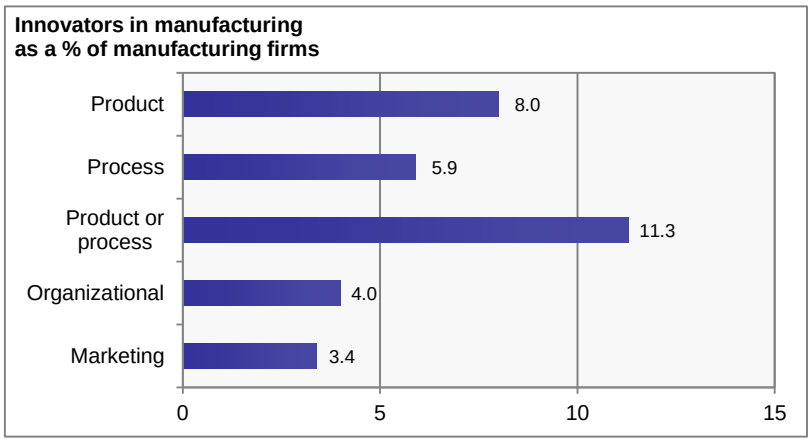


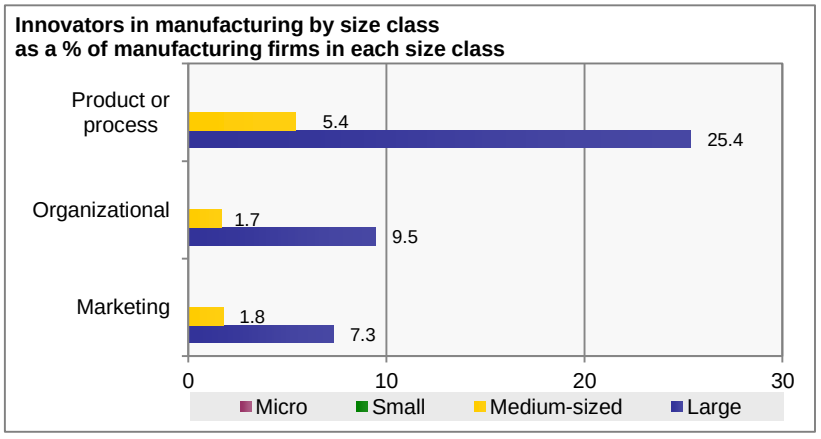


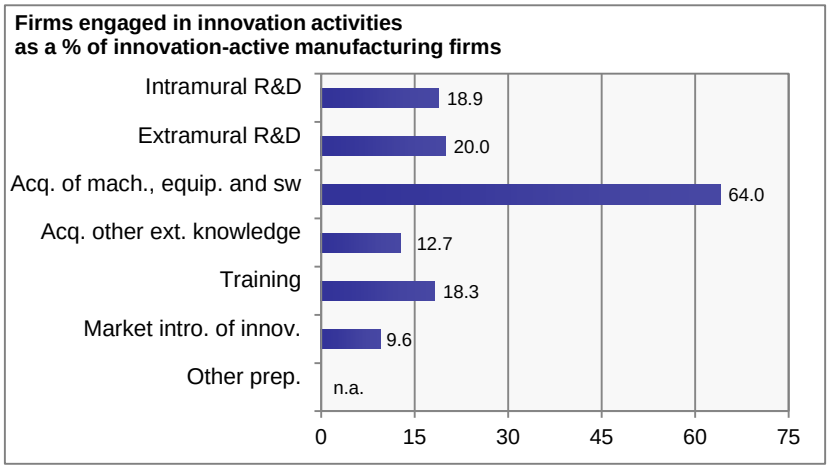


General notes: Based on a one-and-a-half-year observation period. IT services are also included. Results are not representative of the target population. For more specifications please consult the full report.

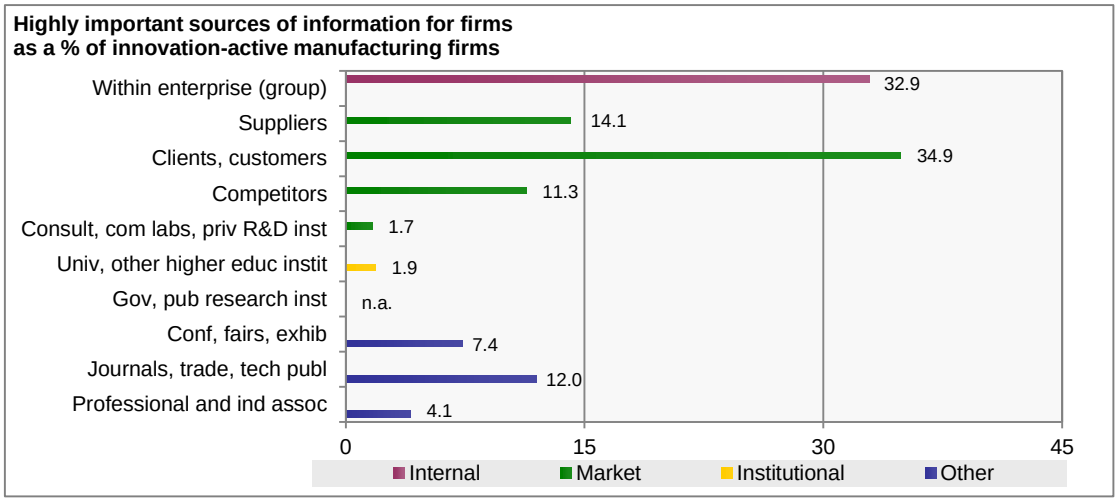
RUSSIAN FEDERATION AT A GLANCE



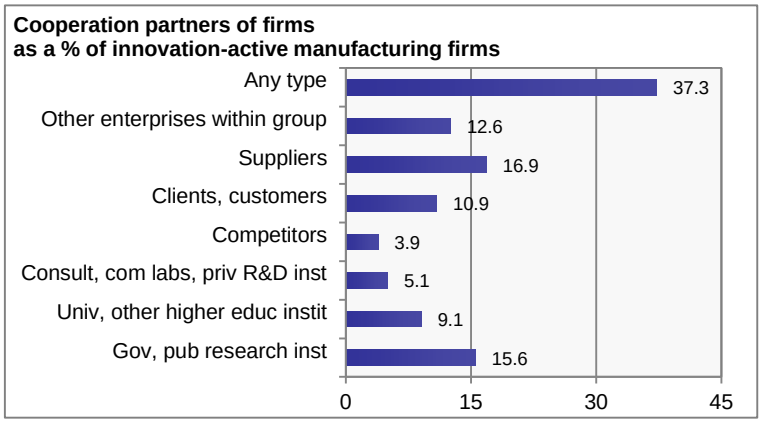




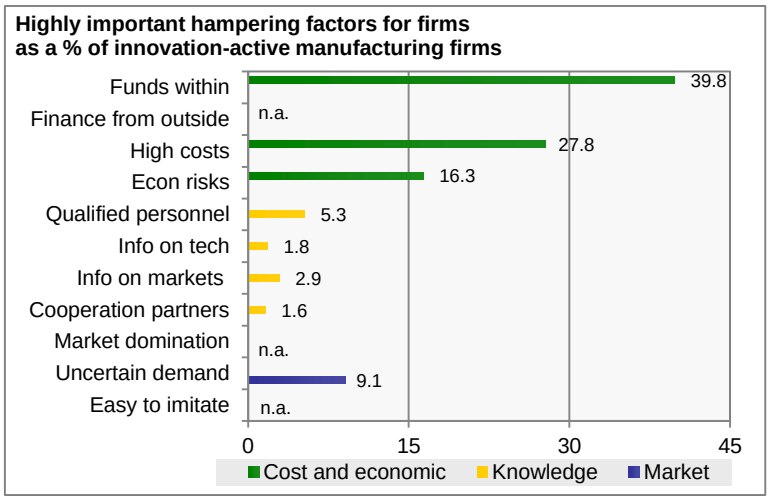
Notes: Acquisition of software is not included.



Notes: Data also cover organizational and marketing innovators. Internal sources do not cover enterprise group.



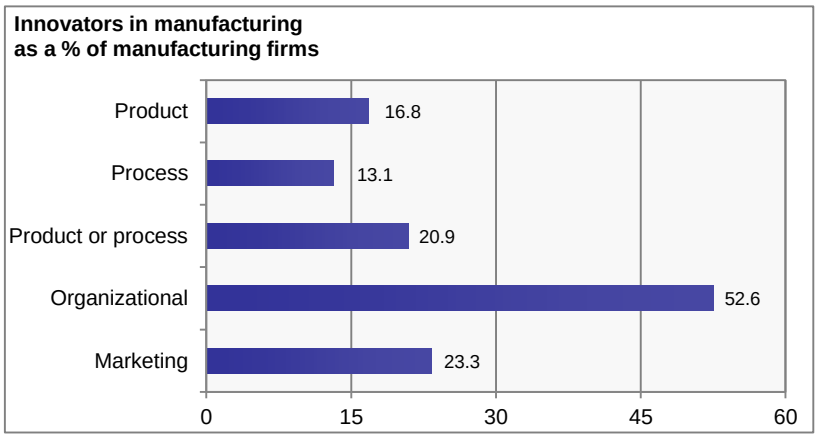
Notes: Data also cover organizational and marketing innovators.



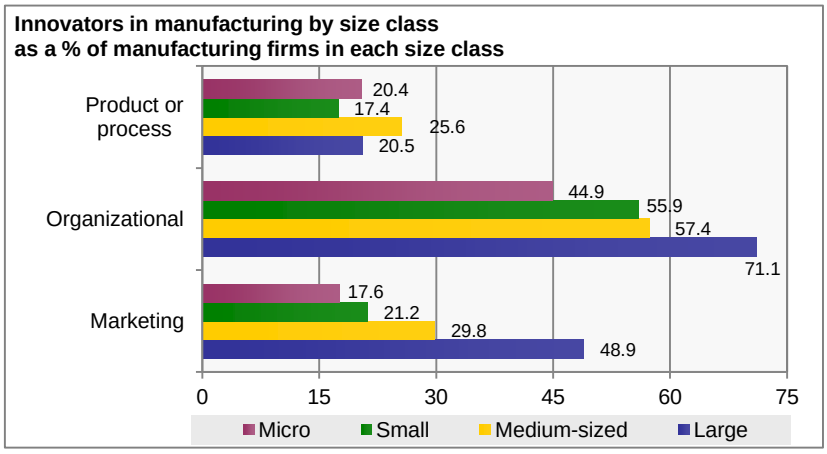
Notes: Data also cover organizational and marketing innovators.

General notes: Based on a one-year observation period. For more specifications please consult the full report.

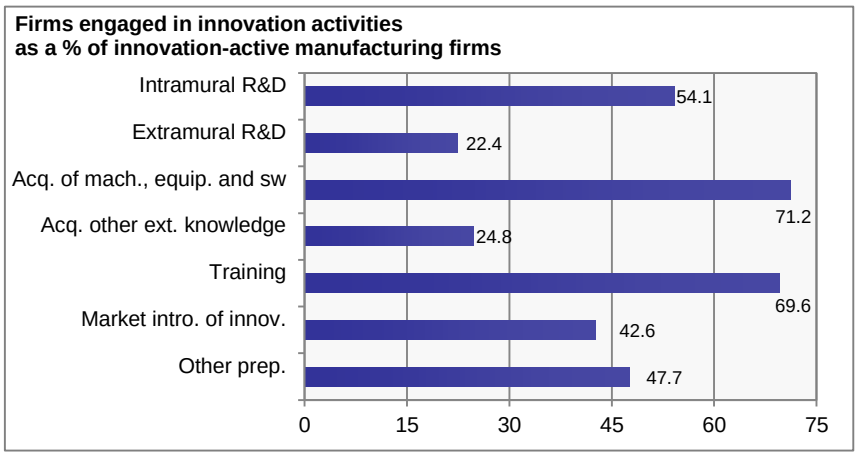
SOUTH AFRICA AT A GLANCE

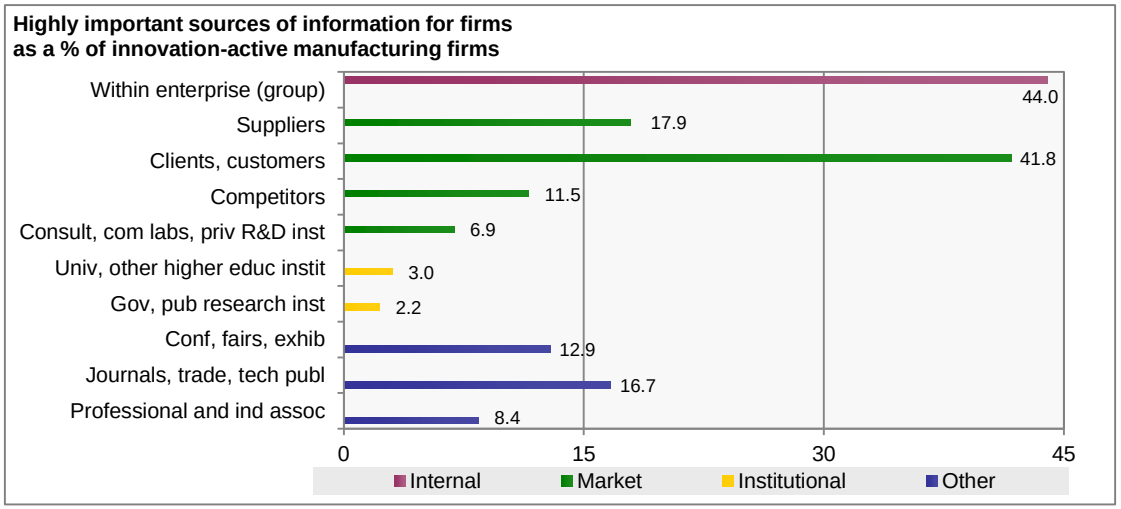


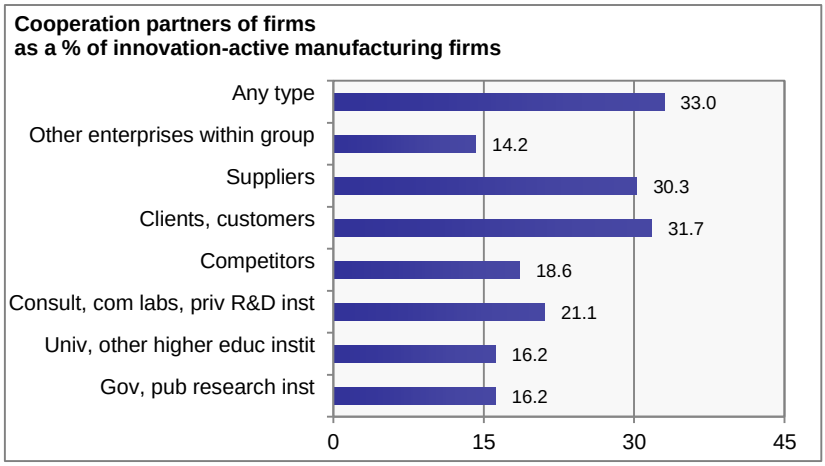
Notes: Organizational innovation includes new or significant changes. Marketing innovation includes significant changes other than in design or packaging.

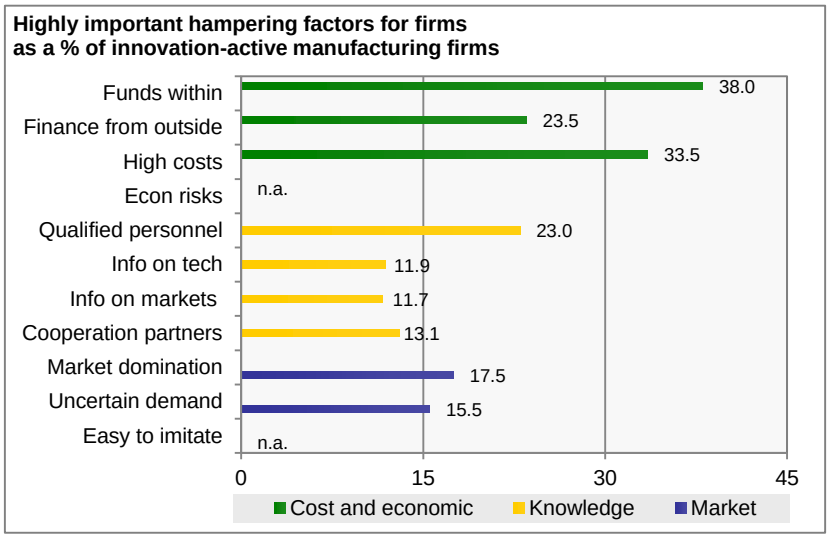


Notes: Organizational innovation includes new or significant changes. Marketing innovation includes significant changes other than in design or packaging.



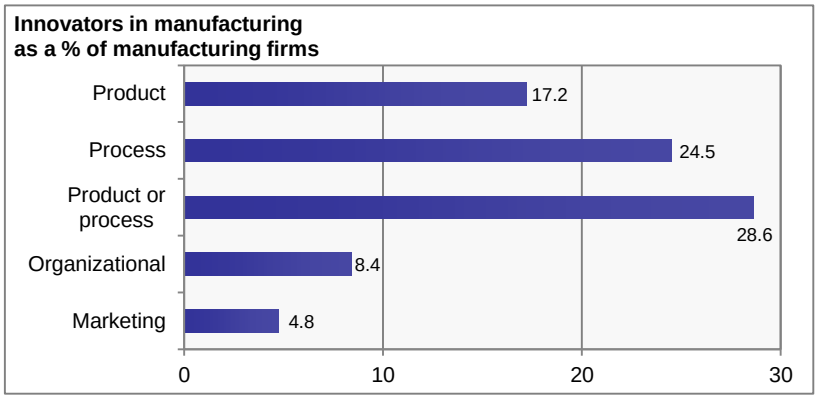


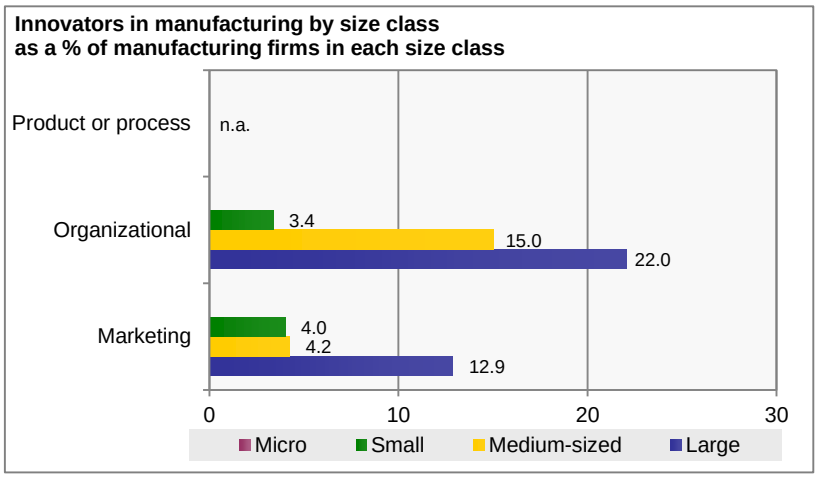


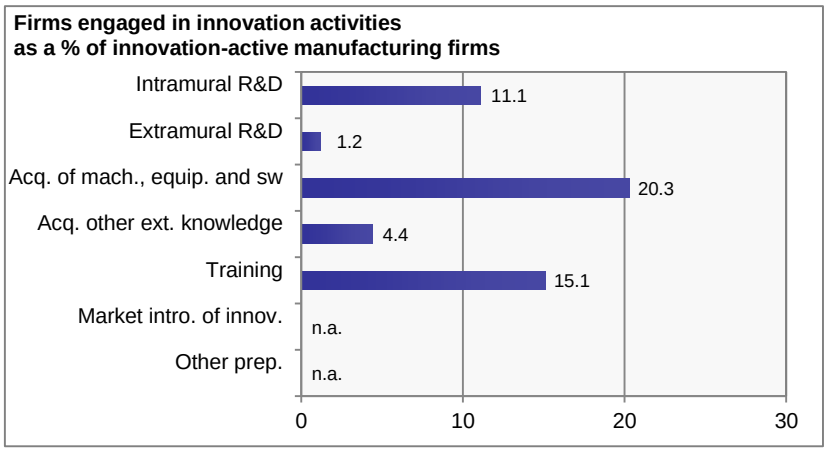


General notes: Based on a three-year observation period. For more specifications please consult the full report.

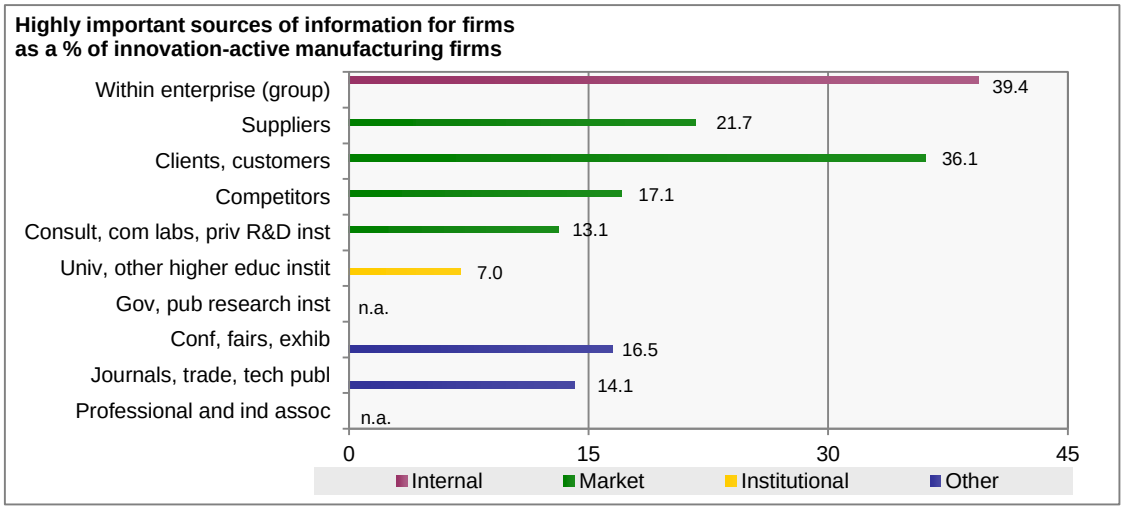
URUGUAY AT A GLANCE



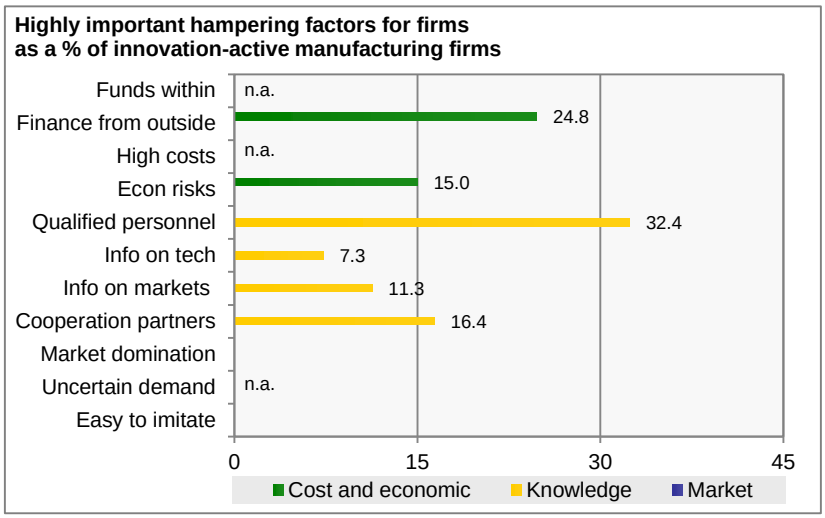




Notes: Data cover organizational and marketing innovators and exclude firms with abandoned or ongoing activities. Acquisition of machinery, equipment and software refers to acquisition of capital goods. Acquisition of other external knowledge is categorized under technology transfer and consultancy.



Notes: Data cover organizational and marketing innovators and exclude firms with abandoned or ongoing activities.



Notes: Data cover organizational and marketing innovators and exclude firms with abandoned or ongoing activities.

General notes: Based on a three-year observation period. For more specifications please consult the full report.