EUROPEAN INNOVATION SURVEY (CIS 2022)

Executive summary

The 2020 European Innovation Survey (CIS) was launched a little over a year into the COVID pandemic, in 2021. The next CIS was launched in March 2023, just over a year into the war in Ukraine. Both events caused a disruption in the way businesses operated, arguably COVID more so than the war in Ukraine. Both make comparisons with previous years difficult, considering the events' uniqueness in recent history.

COVID ultimately did *not* seem to have impacted innovation rates negatively, as businesses had to adapt and innovate to continue operations. Considering the initial disruptions the war in Ukraine caused to the supply chain, the same reasoning about its possible impact on innovation rates could be expected. This, however, was only partially true.

In 2020 the rate of innovation active enterprises increased moderately compared to 2018 (from 68% to 71%). Product innovation dipped in 2018 but increased to 36% in 2020 (up 6% compared to 2018). Process innovation continued to increase from 58% in 2018 to 64% in 2020.
In 2022 there was a slight decrease in innovation active enterprises (-1%), stemming primarily from large firms. Product innovation increased slightly, whereas process innovation decreased. This mixed bag of results cannot conclusively be blamed on world events at the time.

The CIS 2022 is the first innovation survey in which the statistical unit 'enterprise' was used, the legal unit having been the statistical unit thus far. Additionally, sampling and weight calculations were done for the first time by Statistics Belgium, using a different methodology. This may have resulted in some random shifts and increased weights.

A closer look at the most recent innovation survey data at legal unit level reveals the new methodology and use of a different statistical unit has not influenced results globally, it confirms the enterprise level results at national level.

1. Introduction

This document describes the main CIS2022 results, the first post-COVID CIS. This comes after the first implementation of a new definition for business process innovation (revised Oslo Manual) in CIS 2018, whereas CIS2022 introduces the enterprise as statistical unit. Comparing these latest results to previous innovation surveys is difficult seeing all the different factors which may or may not have influenced innovation data: the new Oslo Manual's definition of business process innovation, the influence COVID had on innovation activities, the war in Ukraine and soaring inflation, the use of different sampling and weighting methods stemming from using a different statistical unit.
Complicating matters even further, CIS2024 will be the first innovation survey using the revised Nace classification. Its influence on innovation statistics is still unclear. Having had so many changes in consecutive years makes measuring the influence of each individual change on innovation data very difficult, if not impossible.

2. Methodology

The Belgian Science Policy Office (Belspo) coordinates the Belgian CIS to ensure maximum comparability *between* regions as well as internationally, in close cooperation with regional authorities: Innoviris for the Brussels Capital Region and DG06 (SPW) for the Walloon region, and ECOOM (KU Leuven) for the Flemish region.

The CIS is a stratified survey. Each region sampled firms by size (small: 10-49 employees, medium: 50-249 employees, and large: 250+ employees) and aggregated sector. Not all sectors are covered, as prescribed by Eurostat (only Nace codes B-M73 are included, Nace Rev.2).

The reference population was provided by the National Social Security Office's business register (RSZ-ONSS) extracted on December 31, 2022. The frame population has 14 314 firms of which 7313 firms were sampled. The overall weighted response rate was 55% and extrapolations were made to represent the entirety of the population.

3. Definitions and classifications

The Oslo Manual (OECD, 2018, p. 20) defines innovation as:
"*An **innovation** is a new or improved product or process (or combination thereof) that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process).*"

The definition for Business process innovation:
*"A **business process innovation** is a new or improved business process for one or more business functions that differs significantly from the firm's previous business processes and that **has been brought into use** by the firm*. (...) The taxonomy of business functions proposed in this manual maps reasonably well onto the previous edition's categories of process, marketing, and organizational innovations."

The definition for Product innovation:
*"A **product innovation** is the introduction 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."*

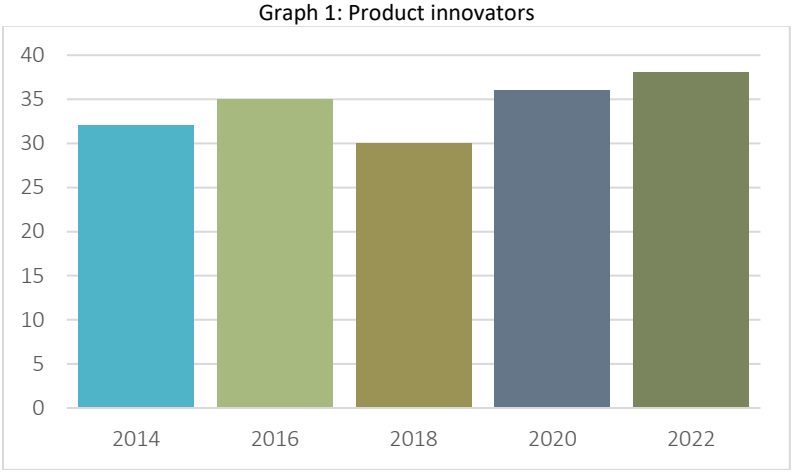
Europe's statistical authority (Eurostat) enforced the use of the enterprise as statistical unit for the innovation survey, starting with CIS2022. Its definition:
"An enterprise is an organizational unit producing goods or services which has a certain degree of autonomy in decision-making. An enterprise can carry out more than one economic activity and it can be situated at more than one location. An enterprise may consist out of one or more legal units."

4. Most salient differences between CIS 2022 and previous editions

4.1 Product and business process innovators

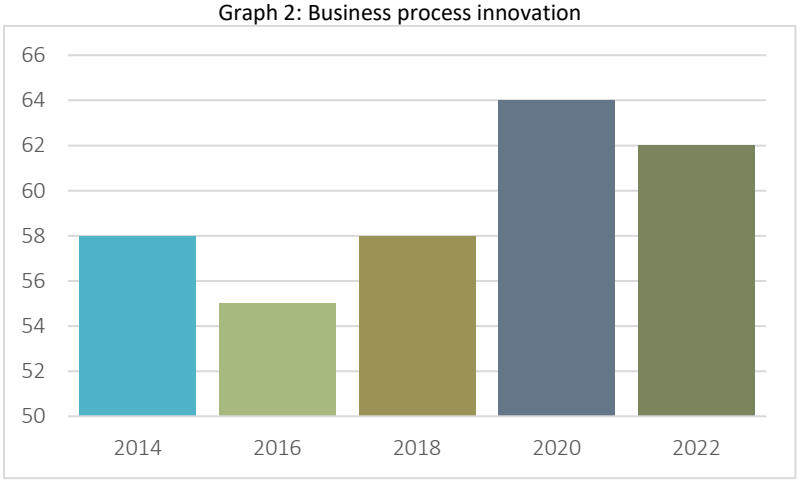
A dip in the rate of product innovators in 2018 bounced back to slightly over its 2016 level in 2020. This might be linked to the pandemic, as circumstances forced businesses to innovate. The product innovator rate has continued its upward movement, albeit relatively modestly. It does seem to confirm a trend, making the 2018 dip more significant. The product innovation question in 2018 did not specify we were asking for "goods and services" when asking for product innovations. We believe those with service innovations may not have realized they were supposed to consider them product innovations, hence a dip in reported product innovations.

Graph 1: Product innovators

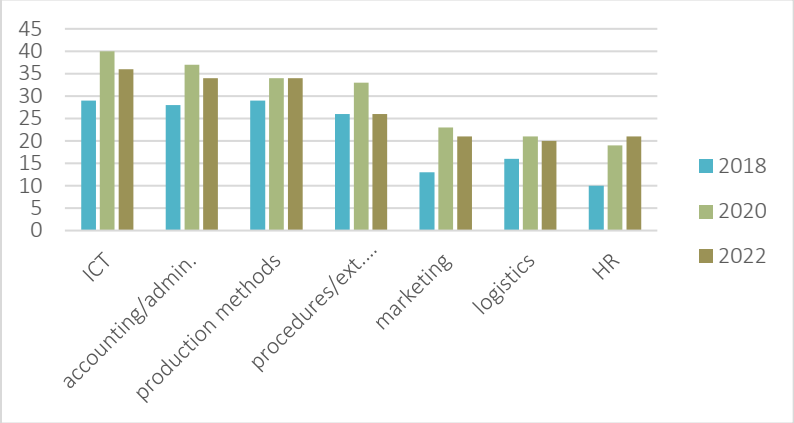


The rate of firms having introduced a process innovation has decreased slightly. The question is whether this is an artificial decrease, stemming from the statistical unit enterprise, or is this a logical result after all the adjustments and sped-up digitalization introduced by lockdowns and COVID restrictions: the pandemic rendered innovations less necessary in the period immediately following COVID. It is, however, still within the margin of error, so it might not mean anything at all. When looking at the different business process innovation types (graph 3), one notices a decrease specifically in business practices for organizing procedures or external relations, ICT, and administration/accounting. Which seems to support the conclusion more business process innovations were introduced *during* the pandemic, diminishing the need for these types of innovations *following* the end of the pandemic. Having had to invest heavily in these procedures due to COVID restrictions, coming out of the pandemic to face inflation and rising energy costs, businesses may not have had the bandwidth (or the need) to invest yet more in business process innovation.

Graph 2: Business process innovation



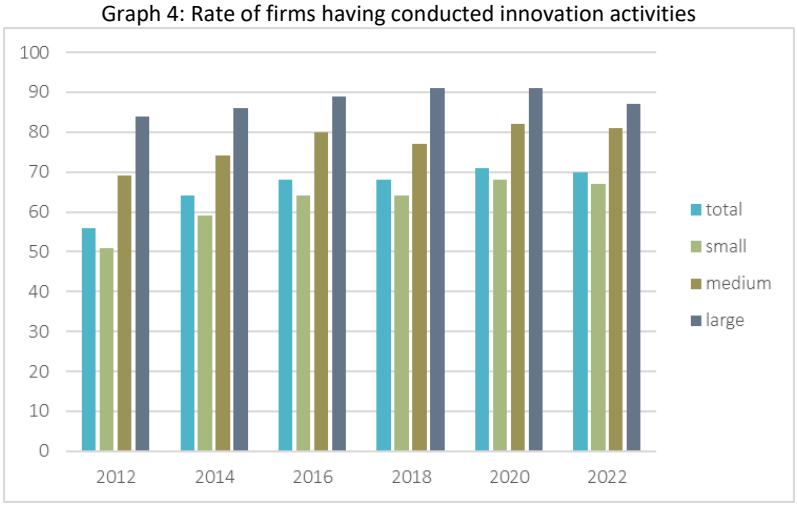
Graph 3: Business process innovation (types)



Innovation activities include Research and Development (R&D) activities, the presence of which is not *per se* necessary to have innovation, but it is often an important part of innovation projects.
Overall, the incidence of innovation activities in 2022 has slightly decreased. Notably large enterprises seem to have decreased their innovation activities the most, bringing large enterprises (still the most innovation-active size class) closer to medium-sized enterprises in terms of innovation activities. It seems counter-intuitive to think large enterprises would be scaling back on their innovation activities, as they ostensibly have more available resources to dedicate to innovation.
Looking more closely at R&D activities reported in CIS2022 and those of 2020, there is indeed a decrease in reported R&D (inhouse and/or outsourced R&D), except for small-sized enterprises. Using a different statistical unit (enterprise) may be the cause of this slight decrease. The number of large-sized enterprises has increased in 2022. Presumably some of the previously medium-sized enterprises have crossed over to the largest size class as legal units were grouped together to form the statistical unit "enterprise". This could explain why the largest size class seems less innovation active, as their innovation strategy is not determined by an administrative grouping-together of legal units. In other words, these entities would have been counted among the medium-sized enterprises (this group being less innovation active) but are now counted among the large-sized enterprises.

Alternatively, as inflation surged mid-2021, enterprises may have reduced their innovation activities to weather this added difficulty. Faced with steep energy prices, supply chain stresses, increasing natural gas prices, food prices, … enterprises could have decided to focus on other things rather than innovation. Yet, the number of innovation active firms has only decreased slightly (see Graph 4), making this explanation rather unlikely.

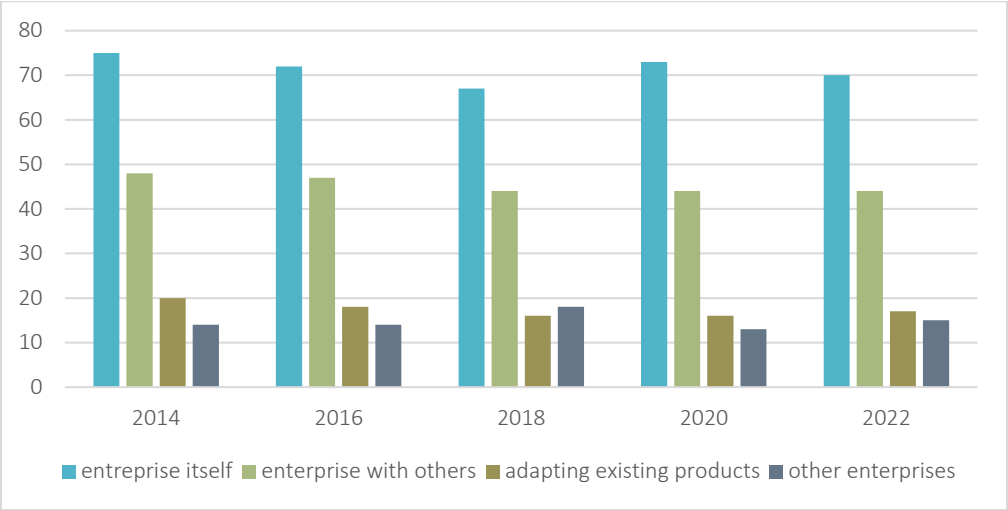
Graph 4: Rate of firms having conducted innovation activities



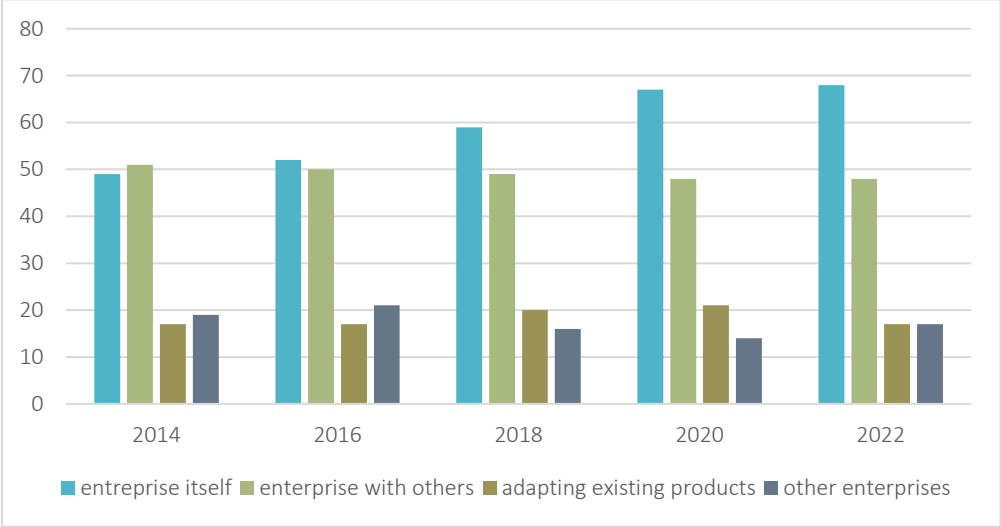
4.2 How do firms innovate?

The number of enterprises reporting they primarily developed their product innovations themselves seems to oscillate around 70%. Cooperation levels for product innovation remained stable, as well as adaptations of product innovations others made. But there is a slight increase in product innovators who outsourced their product innovations' development, albeit within the margin of error.

Graph 3: Who developed product innovations



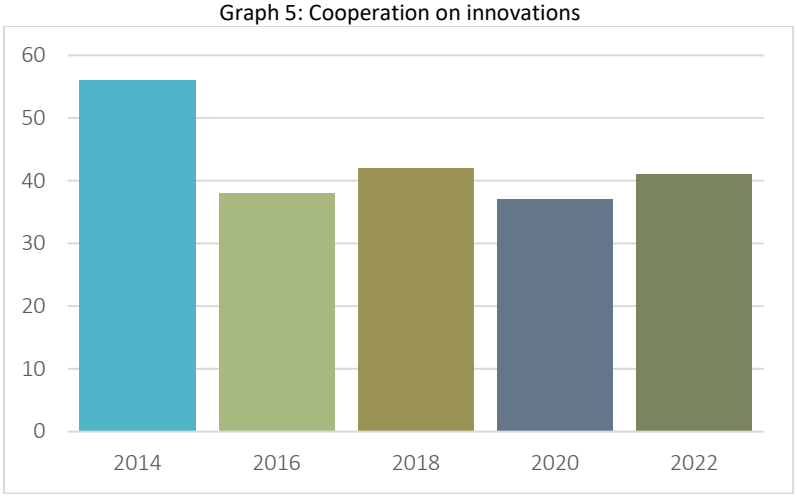
Graph 4: Who developed business process innovations



Business process innovations seemed to have been developed mostly by enterprises themselves and they were less likely to have been adaptations of existing innovations. As with product innovations, enterprises were more likely to outsource developing business process innovations than they were in the 2 previous CIS rounds, although this remains within the margin of error.

Cooperation on innovation activities (this includes R&D) has returned to (almost) pre-COVID levels, see graph 5. This could mean COVID made cooperation difficult, presumably because of social distancing, working from home, and other isolating measures at the time.

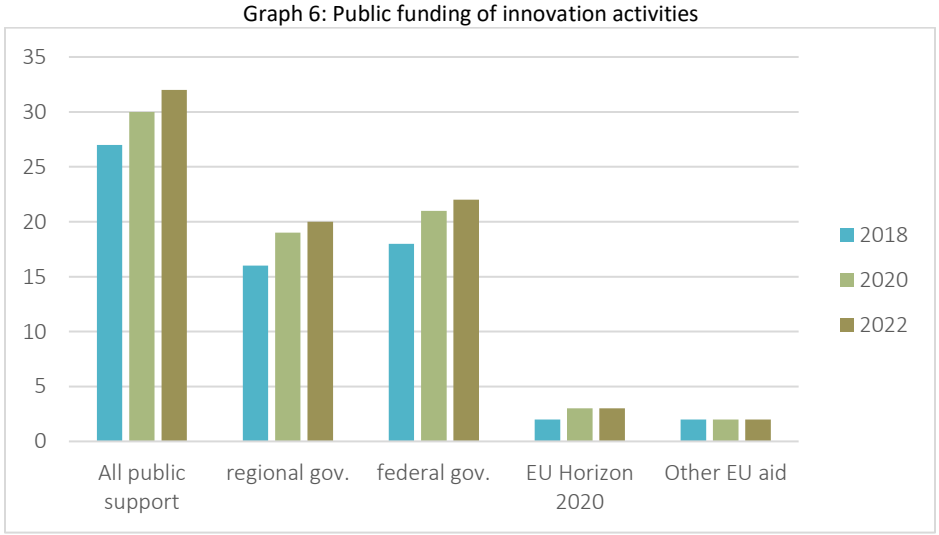
Graph 5: Cooperation on innovations



4.3 Public funding of innovation activities

Graph 6 shows (for the past 3 CIS rounds) an increase in public support for innovation activities. EU subsidies remain stable over time, so the increase in public support comes from regional and national governments. These figures represent public support for innovation or R&D specifically, so no other measures (such as the temporary aid given to businesses during COVID) are included in these results.
Eligibility for partial exemption from payroll tax for R&D staff was increased in January 2018 to include certain bachelor's degrees. Before 2018, this was limited to certain master's degrees (or PhD's). In January 2020, the payroll tax cut for said bachelor's degrees was increased. Both changes may have incentivized more businesses to apply for this type of government aid. The replacement of the patent income deduction by the innovation income deduction in July 2016 may have pushed federal government figures even more. Regional governments have increased their funding of innovation activities, but still lag federal government's funding.

Graph 6: Public funding of innovation activities



5. Conclusions

CIS2022 has given us mixed results. On the one hand, some trends seem to have been confirmed, such as the continued increase in reported product innovation and increased public funding for innovation activities. On the other hand, certain data seem to vary each CIS round, oscillating around a certain equilibrium. Barring 2014, cooperation on innovation activities remains between 30 and 40%, going up one year, going down the next. Other variables not included in this summary behave similarly.

One might have expected more innovation post COVID, as the pandemic would have interrupted ongoing innovation projects or even postponed innovation plans. But the uptick in product innovation is rather modest in 2022, whereas business process innovation has decreased slightly. The latter seems to suggest enterprises were forced to innovate business processes during COVID, leading to a diminished need for more innovations *after* the pandemic, although the decrease remains within the margin of error, so it is not conclusive.

Having used a different statistical unit (enterprise) has influenced the Nace codes assigned to certain enterprises, as well as their size (both in number of employed persons as in terms of turnover), which in turn had an influence on the assigned weights. One would expect all these changes to have a significant effect on the results. Surprisingly, the difference between the new methodology and the previous methodology is usually limited to a few percentage points.

CIS 2024 will bring added complications to our ability to analyze trends or observed evolutions in innovation data, as the revised Nace classification will be used for the first time. It ought not, however, influence the overall results as changes in the Nace classification are not substantial enough to cause big changes in the CIS population makeup.