

### Chapter 3. Concepts and definitions for measuring business innovation

*This chapter provides a set of definitions to guide statistical surveys of innovation within the Business sector, including a taxonomy for different types of innovation. The definitions within this chapter also help characterise business enterprises in relation to their innovations and their activities in pursuit of innovation. The aim of this chapter's definitions and complementary guidance is to facilitate the collection and reporting of comparable data on innovation and related activities for firms in different countries and industries and for firms of different sizes and structures, ranging from small single-product firms to large multinational firms responsible for a wide range of products (goods or services). The chapter concludes with recommendations on the use of definitions in surveys.*

### 3.1. Introduction

3.1. Based on the concepts presented in Chapter 2, this chapter provides a set of definitions to guide statistical surveys of innovation within the Business sector. As innovation is a pervasive, heterogeneous and multi-faceted phenomenon, clear and concise definitions for innovation and related concepts are required for accurate measurement and interpretation of business innovation activities and to establish a common standard that serves the needs of the producers and users of innovation statistics.

3.2. The definitions given in this chapter facilitate the collection and reporting of comparable data on innovation and related activities for firms in different countries and industries and for firms of different sizes and structures, ranging from small single-product firms to large multinational firms that produce a wide range of products, including services.

3.3. Section 3.2 contains the main definitions for measuring innovation in the Business enterprise sector. Section 3.3 develops various taxonomies of business innovation including by type, and by novelty and impacts. Changes that are not innovations are described in section 3.4. Section 3.5 categorises firms according to their innovation status. Section 3.6 concludes with recommendations on the use of definitions in surveys.

### 3.2. Innovation in the Business enterprise sector

#### 3.2.1. Definition of innovation activities and innovation

3.4. As discussed in Chapter 2, the term “innovation” can be used in different contexts to refer to either a **process** or an **outcome**. To avoid confusion, this manual uses the term “innovation activities” to refer to the process while the term “innovation” is limited to outcomes.

3.5. The basic definition of (business) innovation activities is as follows:

*Innovation activities include all developmental, financial and commercial activities undertaken by a firm that are intended to result in an innovation for the firm.*

3.6. Innovation activities can result in an innovation (defined below), be ongoing, postponed or abandoned. Follow-on activities as defined in subsection 4.5.3 are generally outside the scope of innovation activity.

3.7. The organisation of innovation activities varies greatly between firms. Some firms manage their innovation activities through well-defined innovation projects or programmes with dedicated budgets, for which an innovation represents an intermediate or final milestone. Other firms primarily integrate their innovation activities into regular business operations and work to make continuous improvements to their products and business processes, while other firms primarily engage in innovation activities on an ad hoc basis. All methods of organising innovation activities are within the scope of the definitions and recommendations in this chapter. Additional details on the definition, categorisation and measurement of innovation activities are provided in Chapter 4.

3.8. This chapter focuses on the concept of innovation and provides summary definitions for innovation and for different types of innovation. Each definition is followed by additional details on the interpretation of the definition.

3.9. The basic definition of a business innovation is as follows:

*A business innovation is a new or improved product or business process (or combination thereof) that differs significantly from the firm's previous products or business processes and that has been introduced on the market or brought into use by the firm.*

3.10. As introduced in Chapter 2, a **product** is a good or service (or combination thereof). **Business processes** include all core activities by the firm to produce products and all ancillary or supporting activities.

3.11. A product is introduced when it is made available for use by its intended users. A business process is introduced when it is brought into actual use in the firm's operations. The act of introduction is defined as **implementation** and is the point in time when a significantly different product or business process is first made available for use. Firms will often make further adjustments to an innovation after its implementation (see Chapter 4), for instance to the characteristics of a new service. Some of these can be sufficiently different to count as an additional innovation.

3.12. The minimum requirement for an innovation is that the product or business process must have one or more characteristics that are significantly different from those contained in the products or business processes previously offered by or used by the firm. These characteristics must be relevant to the firm or to external users. For example, the firm may expect the new or improved characteristics of a product (or business process) to increase utility for users or to enhance its own competitive position in the market. Relevant characteristics are described below for product innovations and business process innovations.

3.13. An innovation can also result from a series of minor improvements made during the observation period, provided that the sum of these minor improvements results in a significant difference in the final product or business process.

3.14. The requirement for significantly different characteristics applies to product and business process innovations that a firm develops itself and innovations first developed by other firms, organisations or individuals, with little or no additional modification. Therefore, the definition of innovation also includes **diffusion**.

3.15. The adoption of a new or improved product or business process by a firm that is part of an enterprise group is an innovation, even if the new or improved product or business process has previously been introduced on the market or brought into use by other firms within the same enterprise group. For instance, the adoption, by a subsidiary firm, of a new business process that was developed and brought into use by the parent firm is an innovation for the subsidiary firm. However, the adoption of a new or improved product or business process that was already in use in a different section or division of the same firm is not an innovation.

3.16. The concept of a "significant" difference excludes minor changes or enhancements. However, the boundary between a change that is an innovation and one that is not an innovation is unavoidably subjective because it is relative to each firm's context, capabilities and requirements. For example, an improvement to an online service could represent a minor change for a large firm in a research and experimental development (R&D)-intensive industry but be a significant difference for a small firm in a less R&D-intensive industry.

3.17. The definition does not require an innovation to be a commercial, financial or strategic success at the time of measurement. A product innovation can fail commercially or a business process innovation may require more time to meet its objectives.

3.18. The definition of an innovation does not require it to have a positive value for society, or a positive benefit for the firm. In the former case, an innovation can lead to a significant boost in the financial performance of the firm while providing fewer benefits to consumers than other offerings from the same firm or its competitors. An innovation can also result in safety, health or environmental problems. Conversely, an innovation does not necessarily improve the market position or financial performance of the firm when their users benefit from it. For example, an innovation can improve the utility for users without increasing a firm's sales, market share or net earnings.

### 3.2.2. *Division of innovation effort and responsibilities*

3.19. The division of labour that underpins economic specialisation also applies to innovation activities, as a majority of firms are unlikely to possess all of the necessary capabilities and property rights to develop an innovation. Many innovations are based on purchasing, imitating or modifying products, business process equipment, or business methods that are already in use by other firms or organisations. Consequently many firms do not develop all of the concepts, prototypes or designs that underpin their innovations and multiple firms can derive similar innovations from a single concept or technology. Nor do firms implement all of the concepts or prototypes they develop, for example when a firm only licenses an invention to other firms. These relationships and how they result in different types of innovations are discussed in detail in Chapter 6.

3.20. Innovations that have been developed in full or in part elsewhere, or in partnership with third parties are not necessarily less valuable; they may only signal a higher degree of specialisation. Data collection should encourage respondents to report all innovations, including those that were not primarily developed by their own firm.

## 3.3. Taxonomies of innovation

3.21. Innovation changes the characteristics of one or more products or business processes and consequently common usage describes innovation in terms of its purpose or object. For example, managers may refer to their firm's service innovations or to a delivery system innovation. Information on the object of an innovation is useful for assessing the purpose of the innovation, its general characteristics, its potential impacts on the firm, and the types of innovation activities that are relevant to its development and implementation.

### 3.3.1. *Innovation types by object: Product and business process innovations*

3.22. There are two major types of innovation by object: innovations that change the firm's products (product innovations), and innovations that change the firm's business processes (business process innovations).

3.23. Product innovations are divided into two main types, while business process innovations are divided into six broad types (see below). A single innovation can involve combinations of different types of product and business process innovations. Consequently, the typology of innovation types by object is not a classification of mutually exclusive categories. Furthermore, a firm can introduce more than one type of innovation over the observation period for data collection. It is therefore recommended to collect information on multiple types of innovations on the assumption that the responses can refer either to different innovations or to innovations that combine two or more innovation types.

#### *Product innovation*

3.24. The term "product" is defined in the System of National Accounts and encompasses both goods and services. Products are the economic output of production activities. They can be exchanged and used as inputs in the production of other goods and services, as final consumption by households or governments, or for investment, as in the case of financial products (EC et al., 2009).

*A product innovation is a new or improved good or service that differs significantly from the firm's previous goods or services and that has been introduced on the market.*

3.25. Product innovations must provide significant improvements to one or more characteristics or performance specifications. This includes the addition of new functions, or improvements to existing functions or user utility. Relevant functional characteristics include quality, technical specifications, reliability, durability, economic efficiency during use, affordability, convenience, usability, and user friendliness. Product innovations do not need to improve all functions or performance specifications. An improvement to or addition of a new function can also be combined with a loss of other functions or a decline in some performance specifications.

3.26. Relevant characteristics can include financial attributes such as affordability and financial convenience. Examples of innovations with financial characteristics that provide benefits to users include dynamic toll pricing to ease traffic congestion, the introduction of a new product line that uses less expensive materials and is consequently offered at lower cost, and a service for automatic payment of a taxi ride after the ride has taken place.

3.27. An additional characteristic of both goods and services that can influence usability or utility is product design. New designs or improved design features can influence the appearance or “look” of a product and consequently enhance the user’s utility, for instance through a substantial design change that creates a positive emotional response. However, minor design changes are unlikely to lead to goods or services that differ significantly from previous ones (see below).

3.28. A product innovation must be made available to potential users, but this does not require the innovation to generate sales. Limiting product innovations to those with sales would exclude product innovations that fail to meet established or expected demand or where sales require a longer observation period to materialise. In addition, this would exclude digital products that are offered at no cost to users, with revenue obtained from advertising, monetising user information, or through other methods.

3.29. Product innovations can use new knowledge or technologies, or be based on new uses or combinations of existing knowledge or technologies.

### *Types of products*

3.30. Product innovations can involve two generic types of products: goods and services. These product types have been introduced in Chapter 2 and are defined below drawing on the System of National Accounts (SNA) (EC et al., 2009).

- **Goods** include tangible objects and some knowledge-capturing products (see below) over which ownership rights can be established and whose ownership can be transferred through market transactions.
- **Services** are intangible activities that are produced and consumed simultaneously and that change the conditions (e.g. physical, psychological, etc.) of users. The engagement of users through their time, availability, attention, transmission of information, or effort is often a necessary condition that leads to the co-production of services by users and the firm. The attributes or experience of a service can therefore depend on the input of users. Services can also include some knowledge-capturing products (see below).

3.31. As noted in Chapter 2, the dividing line between goods and services can sometimes be difficult to establish and some products can have characteristics of both. A company can sell goods to its customers or rent their use as a service, as is often the case for durable consumer goods and for assets for business production. Firms can also bundle ancillary services such as service contracts or insurance with their goods.

3.32. Knowledge-capturing products (as identified in the SNA) can have the characteristics of either a good or service and concern the provision, storage, safekeeping, communication and dissemination of digital information that users can access repeatedly. These products can be stored on physical objects and infrastructure, such as electronic media or the Cloud. An example is when access to digital products such as music, films and books is provided on demand to consumers for a fee. Knowledge-capturing products are similar to a good if consumers can share or sell them to others after purchase, but they are similar to a service if the consumer's rights are limited by a license that restricts sharing or selling. Digital technologies, through reducing the cost of copying and exchanging information to a negligible amount, have contributed to the proliferation of knowledge-capturing products.

3.33. At a minimum, it is recommended to collect data on both goods and services. Surveys should specifically refer to services to ensure that the questions are relevant to respondents from service sector firms. Where possible, data should be collected on knowledge-capturing products, especially those of a digital nature, to support research on the prevalence of these products and the factors that influence their development.

#### *Business process innovation*

3.34. All business functions can be the object of innovation activity. The term business process includes the core business function of producing goods and services and supporting functions such as distribution and logistics, marketing, sales and after-sales services; information and communication technology (ICT) services to the firm, administrative and management functions, engineering and related technical services to the firm, and product and business process development. Business processes can be considered as services for which the firm itself is the customer. Business processes can be delivered in-house or procured from external sources.

*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 in the firm.*

3.35. The relevant characteristics of an improved business function are related to those for an improved product, in particular services that can be delivered to business customers. Examples include greater efficacy, resource efficiency, reliability and resilience, affordability, convenience and usability for those involved in the business process, either external or internal to the firm.

3.36. Both new and improved business processes can be motivated by goals to implement business strategies, reduce costs, improve product quality or working conditions, or to meet regulatory requirements. A business process innovation can involve improvements to one or more aspects of a single business function or to combinations of different business functions. They can involve the adoption by the firm of new or improved business services that are delivered by external contractors, for instance accounting or human resources systems.

3.37. Business process innovations are implemented when they are brought into use by the firm in its internal or outward-facing operations. The implementation of a business process innovation can require several steps, from initial development, pilot testing in a single business function, to implementation across all relevant business functions. Implementation occurs when the business process is used on an ongoing basis in the firm's operations. This can occur shortly after pilot testing.

3.38. Digital technologies and practices are pervasive across business processes. They are used to codify processes and procedures, add functions to existing processes and enable

the sale of processes as services. The implementation of business process innovations is therefore often tied to the adoption and modification of digital technologies.

### *Types of business processes*

3.39. Business process innovations concern the different functions of a firm. Management research has produced several lists of business functions that differ by the definition of core functions (activities that produce income) and supporting business functions, and by how different activities are grouped (Brown, 2008). Business functions have proved useful for the study of global value chains, for example in Canada's Survey of Innovation and Business Strategy (SIBS) and the European Survey on International Sourcing of Business Functions (see Chapter 7).

**Table 3.1. Functional categories for identifying the type of business process innovations**

Short term	Details and subcategories
1. Production of goods or services	Activities that transform inputs into goods or services, including engineering and related technical testing, analysis and certification activities to support production.
2. Distribution and logistics	This function includes: a) transportation and service delivery b) warehousing c) order processing.
3. Marketing and sales	This function includes: a) marketing methods including advertising (product promotion and placement, packaging of products), direct marketing (telemarketing), exhibitions and fairs, market research and other activities to develop new markets b) pricing strategies and methods c) sales and after-sales activities, including help desks other customer support and customer relationship activities.
4. Information and communication systems	The maintenance and provision of information and communication systems, including: a) hardware and software b) data processing and database c) maintenance and repair d) web-hosting and other computer-related information activities. These functions can be provided in a separate division or in divisions responsible for other functions.
5. Administration and management	This function includes: a) strategic and general business management (cross-functional decision-making), including organising work responsibilities b) corporate governance (legal, planning and public relations) c) accounting, bookkeeping, auditing, payments and other financial or insurance activities d) human resources management (training and education, staff recruitment, workplace organisation, provision of temporary personnel, payroll management, health and medical support) e) procurement f) managing external relationships with suppliers, alliances, etc.
6. Product and business process development	Activities to scope, identify, develop, or adapt products or a firm's business processes. This function can be undertaken in a systematic fashion or on an ad hoc basis, and be conducted within the firm or obtained from external sources. Responsibility for these activities can lie within a separate division or in divisions responsible for other functions, e.g. production of goods or services.

*Source:* Adapted from Brown (2008), "Business processes and business functions: A new way of looking at employment", [www.bls.gov/mlr/2008/12/art3full.pdf](http://www.bls.gov/mlr/2008/12/art3full.pdf) and Eurostat (2018), *Glossary of Statistical Terms*, [http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Business\\_functions](http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Business_functions).

3.40. Table 3.1 provides a list of six main business functions – based on the relevant management and statistical literature – that may be the object of innovation. The function "production of goods and services" constitutes the core function of a firm, whereas the

other five functions comprise ancillary activities to support production and bring products to the market. Firms can develop business process innovations that target one or more functions. For example, the implementation of an online ordering system could represent an innovation in to the distribution and logistics business functions. The short descriptions of each business function, followed by the detailed description, are recommended for use in data collection. The list is sufficiently brief for use in surveys and provides moderate comparability with the definitions of process, organisational, and marketing innovations in the third edition of the *Oslo Manual*. More detailed applications of this taxonomy can improve comparability with the results of innovation surveys that followed the third edition of this manual. The new categories also cover areas that were not identified in the third edition, such as changes in financing (item 5c) and changes in functions dedicated to product or process development (item 6).

3.41. The latter captures business process innovations in the business function dedicated to the development of products and other business processes of the firm. There was no equivalent type of business process in earlier editions of this manual. Examples of innovations in this function include the use of new gene editing technologies to develop either existing or new plant varieties or pharmaceuticals and the application of data mining analysis to large databases to identify potential market development opportunities. Other examples for an innovation in this category include the adoption of new methodologies such as design thinking, co-creation, rapid prototyping or high-throughput screening. An innovation of this type may just seek to introduce incremental modifications that do not qualify as innovations – e.g. to be able to cater to different customers’ needs – or may seek to bring about product or business process innovations. However, there is no guarantee that such innovations will ultimately materialise.

3.42. For data collection, some functions can be combined into a single item or disaggregated. For example, functions 1 and 6 could be combined into a single function that includes both production activities and the development of products and business processes. Functions 3 and 5 could be further disaggregated to facilitate comparison with the definitions of organisational and marketing innovation in the third edition of the manual (see next section for details).

#### *Comparison of innovation types with the previous edition of the Oslo Manual*

3.43. Table 3.2 compares the types of product and business process innovations used in this manual with the definitions used in the third edition of the *Oslo Manual*.

3.44. Two types of marketing innovation that are included in the third edition of the *Oslo Manual* (adoption of methods for product placement and product promotion or pricing) are not listed in the short description of the six business functions in Table 3.1, but these are included in the detailed descriptions. In addition, this manual assigns innovations involving the design of products under product innovation, whereas the third edition included these under marketing innovation. The change is due to the close relationship between design activities and the development of product characteristics for both goods and services. However, changes in the design of packaging remain under marketing.

3.45. There is a good match between the fourth edition and the third edition’s definitions for two types of business process innovations, namely the production of goods and services and for distribution and logistics. The third edition’s subcategory of ancillary services is divided in this edition between information and communication systems on the one hand and administration and management on the other, with the latter including activities that are listed in the third edition under organisational innovation.



**Table 3.2. Comparing types of innovation in the current and previous *Oslo Manual* editions**Fourth edition, 2018 (*OM4*) compared to third edition, 2005 (*OM3*)

<i>OM3</i>	<i>OM3</i> subcomponents	<i>OM4</i> <sup>1</sup>	Differences
Product	Goods Services	Goods Services Goods and services include knowledge-capturing products, and combinations thereof. Includes the design characteristics of goods and services.	Inclusion of product design characteristics, which were included under marketing innovation in <i>OM3</i> .
Process	Production Delivery and logistics Ancillary services, including purchasing, accounting and ICT services	Production Distribution and logistics Information and communication systems	Ancillary services in <i>OM3</i> moved to administration and management.
Organisational	Business practices Workplace organisation (distribution of responsibilities) External relations	Administration and management	Organisational innovations in <i>OM3</i> are under administration and management subcategories a, b and f in this edition of the manual. Ancillary services in administration and management (subcategories c, d, and e) were included under process innovation in <i>OM3</i> .
Marketing	Design of products Product placement and packaging Product promotion Pricing	Marketing, sales and after-sales support	Marketing innovations in <i>OM3</i> are included under subcategories a and b in this manual. Innovations in sales, after-sales services, and other customer support functions were not included in <i>OM3</i> . Innovations related to product design are included under product innovation in this manual.
N/A	N/A	Product and business process development	Not explicitly considered in <i>OM3</i> , most likely reported as Process innovation.

1. Additional granularity is possible by disaggregating the detailed descriptions in Table 3.1.

3.46. Empirical research has shown that business managers can find it difficult to differentiate between organisational and process innovations. Organisational innovations in this manual are therefore subsumed under one type of business process (administration and management) that includes activities that can involve what previously was described as organisational innovation, such as strategic management (business practices and external relations in the third edition) and human resource management (workplace organisation in the third edition).

3.47. The third edition of the manual supported the construction of a category of “product or process innovators only” that excluded firms that were only organisational or marketing innovators. This category can be approximated using this manual’s category of product innovation plus three business process categories: (i) production of goods or services; (ii) distribution and logistics; and (iii) information and communication systems. The approximation is not perfect because of differences between the third and current edition in the classification of different types of product design, purchasing and accounting services.

3.48. Previous innovation surveys that followed the third edition of this manual collected data on multiple types of innovation. For example, the European Community Innovation Survey (CIS) collected data on two types of product innovations, three types of process innovations, four types of organisational innovations and four types of marketing innovations. This data can be reanalysed to approximate the innovation categories in Table 3.1, thus minimising the impact of a break in series. However, there are several exceptions where surveys based on the third edition cannot replicate the categories of this manual, due to a lack of coverage of several administrative and management functions (e.g. corporate governance), financing, after-sales services, and the business function of product and business process development.

#### *Combinations of several innovation types by object*

3.49. Many innovations are bundled, presenting characteristics that span more than one type (O'Brien et al., 2015; Frenz and Lambert, 2012; OECD, 2013). This is due to the complementarity between different types of innovations. Some possible combinations of innovation types are as follows:

- A business process innovation can significantly improve the quality of a product, resulting in a joint business process and product innovation.
- A product innovation can require a supporting business process innovation. This is particularly common for service innovations. For example, a new online function for selling information products is both a business process innovation (requiring ICT and web development) and a service innovation for potential users. If it creates a new sales channel for the first time, it can also be a marketing innovation.
- Product and business process innovation can be closely intertwined, especially when the process is not distinguishable from the product. This applies particularly to services for which production, delivery and consumption occur simultaneously.
- Changes by the firm to non-economic outputs of production processes, such as carbon or NO<sub>x</sub> emissions from energy generation, are due to innovations in business processes, but firms can choose to include emission changes in the product description if there is market demand. In this example, low emission energy can be a business process innovation and a product innovation.

3.50. The object approach discussed in Chapter 10 can help obtain information on the incidence of different types of bundled innovations.

#### *Business model innovations*

3.51. A business model includes all core business processes such as the production, logistical, marketing and co-operative arrangements in use as well as the main products that a firm sells, currently or in the future, to achieve its strategic goals and objectives. A firm can use a single business model or several business models at the same time, for instance for different product lines or markets. The innovation management literature notes that successful business models combine a method for better meeting the needs of users relative to what competitors can deliver and a profit formula for earning income from delivering utility to customers (Johnson, Christensen and Kagermann, 2008).

3.52. There is no single, recognised definition of a business model innovation, which can vary from partial business model innovations that only affect either a firm's products or business functions, to comprehensive business model innovations that involve both products

and business functions. In many cases it is difficult to distinguish partial business model innovations from product and business process innovations.

3.53. Comprehensive business model innovations are of greater interest because they can have substantial effects on supply chains and economic production, transforming markets and potentially creating new ones. They can influence how a firm creates utility for users (product innovation) and how products are produced, brought to market, or priced (business process innovations).

3.54. There are three types of comprehensive business model innovations in existing firms: (i) a firm extends its business to include completely new types of products and markets that require new business processes to deliver; (ii) a firm ceases its previous activities and enters into new types of products and markets that require new business processes; and (iii) a firm changes the business model for its existing products, for example it switches to a digital model with new business processes for production and delivery and the product changes from a tangible good to a knowledge-capturing service.

3.55. It is not recommended to directly collect data on business model innovation as a distinct, stand-alone category through innovation surveys because of the difficulty in differentiating partial business model innovations from other types. However, the occurrence of comprehensive business model innovations could be estimated through analysis (see Chapter 11) that combines information on the types of innovations introduced by a firm with other questions on innovation objectives, including a question on the objective of establishing a new business model (see Chapter 8). Identifying the third type of comprehensive business model innovation could require dedicated questions on changes to existing products.

### 3.3.2. *Types of innovation according to novelty and impacts*

3.56. The basic requirement for an innovation is that it must be significantly different from the firm's previous products or business processes. As "significantly different" is subjective and will vary according to the firm's capabilities and context, the interpretation and comparability of innovation statistics can benefit from additional data on the significance of innovations in terms of their *novelty* or economic *impacts*. Some forms of novelty, such as *disruptive* or *radical* innovations, and some types of economic impacts are difficult to identify within the limited observation period recommended for innovation surveys. Alternative measures of novelty, "innovativeness" and economic impacts that are suitable for survey observation periods include:

- whether an innovation is new to the firm only, new to the firm's market, or new to the world
- the firm's expectation of the potential to transform the market in which it operates
- the firm's expectation of the potential to improve its competitiveness.

3.57. The first and most widely used approach is to determine the novelty of a firm's innovations (or at least one of its innovations) in comparison with the state of the art in the market or industry in which the firm operates. A firm can serve a single market (if it only offers one type of product) or several markets (if it offers different types of products). A market can be geographically restricted (if a firm only serves customers in specific regions) or it can be global. A firm can sell its products directly on local, regional, national or international markets or through the use of intermediaries. Innovation can also create new markets, which could allow the innovative firm to benefit from monopoly prices for a certain period of time.

3.58. It is recommended to ask respondents if their firm has one or more product innovations or business process innovations that are a market novelty (i.e. a first to their market innovation). The interpretation of market novelty must be combined with information on the geographical area served by the firm. A local or regional market novelty could be based on imitating what is already available in other geographical markets, whereas a world-first innovation will be a market leader.

3.59. Respondents can find it difficult to estimate if they have a world-first product innovation, unless the innovation is based on one or more patented inventions that underwent rigorous screening to establish global novelty. A world-first product innovation implies a qualitatively greater degree of novelty than a new-to-market innovation.

3.60. Firms that first develop innovations are often drivers of follow-on innovation within an industry. New ideas and knowledge often originate from these firms, but the economic impact of their innovations will usually depend on the adoption (or imitation) of their innovations by other firms. Information on the degree of novelty can be used to identify the developers, adopters and imitators of innovations, to examine patterns of diffusion, and to identify market leaders and followers.

3.61. The novelty of business process innovations in comparison to what is already in use by other firms can be difficult for respondents to determine due to the importance of secrecy and confidentiality for protecting business processes. However, evidence from cognitive testing suggests that many managers are able to assess the novelty of process innovations in their market, particularly for their most important business process innovations. Furthermore, a “don’t know” response can provide valuable information on the extent to which secrecy is used in specific industries or types of firms.

3.62. The second option on the potential for an innovation to transform (or create) a market can provide a possible indicator for the incidence of a radical or a disruptive innovation. Radical innovations are considered to transform the status quo, while a disruptive innovation takes root in simple applications in a niche market and then diffuses throughout the market, eventually displacing established competitors (Christensen, 1997). Although managers may be able to estimate the potential of an innovation to transform a market, radical and disruptive innovations are likely to be very rare and therefore innovation surveys may be a poor instrument for their detection. Relevant questions should be limited to a single, most important innovation (see Chapter 10).

3.63. The third option on the effect of innovations on the firm’s competitiveness can be assessed for product innovations through the observed change in sales over the observation period (see Chapter 4) or by asking directly about future expectations of the effect of innovations on competitiveness (see Chapter 7).

### 3.4. Changes that are not innovations

3.64. This section discusses changes that are either not an innovation or which can only be considered an innovation if specific conditions are met. The basic principles are those introduced earlier in section 3.2, namely that an innovation must have been implemented and must be significantly different from the firm’s previous products or business processes.

3.65. **Routine changes or updates** do not by themselves represent product innovations. This includes software updates that only identify and remove coding errors and seasonal changes in clothing fashions.

3.66. **Simple capital replacement or extension** is not an innovation. This includes the purchase of identical models of installed equipment or minor extensions and updates to existing equipment or software. New equipment or extensions must be new to the firm and involve a significant improvement in specifications.

3.67. Product introductions that only involve **minor aesthetic changes**, such as a change in colour or a minor change in shape, do not meet the requirement for a “significant difference” and are therefore not product innovations.

3.68. Firms engaged in **custom production** make single and often complex goods or services for sale on the market (e.g. computer games, films) or according to customer orders (e.g. buildings, production plants, logistic systems, machinery, consulting reports). Unless the one-off item displays significantly different attributes from products that the firm has previously made, it is not a product innovation. It is not a business process innovation unless developing the one-off item required the firm to develop and use significantly different or enhanced capabilities. However, the first use of customised production can be a business process innovation.

3.69. An **advertised concept, prototype or model of a product that does not yet exist** is in general not a product innovation because it does not meet the implementation requirement, even if customers can pre-order or make advance payments for the concept, such as a product concept funded by crowdsourcing. The concept can fail or take considerably longer than expected before it is available for use.

3.70. It may be more difficult to decide whether implementation has taken place in the case of new knowledge products that have been sold to other parties. While the seller has brought a new product to the market, the buyer may hold on from using it in their business processes or taking it to their own markets. Such information may not be known to the knowledge provider that is the subject of measurement and has to decide on whether to report an innovation. If the knowledge product meets the novelty and significance requirements to be considered a product innovation, a knowledge product can be considered to pass the implementation test if it has been sold in the market by a firm to another party or parties.

3.71. The **outputs of creative and professional service firms**, such as reports for clients, books, or films are not by default an innovation for the firms that develop them. For example, a report by a consulting firm that summarises the results of a design project without major novelty elements conducted under contract for a client is not a product innovation for the consulting firm. The report’s role in innovation for the buying firm depends on whether or not its results are used in the client firm’s innovation activities. However, the consulting firm could be credited with an innovation if it implemented new business processes as part of conducting the project for its client, or if the blueprints or designs that are sold on the market meet the innovation requirements of novelty and significance. These phenomena are considered in more detail in Chapters 4 and 6.

3.72. Actions by retail, wholesale, transport and storage, and personal service firms to **extend the range of products handled or offered to customers** are only an innovation if the extension requires significant changes by the firm to its business processes. A fruit importer or wholesaler who adds a new variety of fruit for sale to retailers is not engaged in innovation unless the extension requires a major change to business processes such as developing a new supply chain or the purchase of novel refrigerating equipment (e.g. to permit the delivery of fresh produce that was not previously possible).

3.73. The **activities of newly created firms** (most of which are service firms) present a potential source of confusion with respect to the basic definition of an innovation because

for a period of time a new firm will have no previous products or business processes for comparison. In this case, the comparison group is what is available in the relevant market. A product of a new firm is an innovation if it differs significantly from products available in its markets. Likewise, a business process of a new firm is a process innovation if it differs significantly from the business processes used by its competitors. However, respondents from new firms may view all of their products or business processes as innovations. Consequently it may be necessary to provide separate results for newly created firms such as start-ups. In addition, it would be worthwhile for specialised surveys of start-up firms to experiment with measuring product and business process novelty.

3.74. In the absence of further qualification, **mergers or the acquisition of other firms** are not business process innovations in their own right. Mergers and acquisitions can drive business process innovations, however, if the firm develops or adopts a new business process as a result of the merger or for the purpose of improving the success of the merger or acquisition.

3.75. **Ceasing to use a business process, ceasing to outsource a business process, or withdrawing a product from the market** are not innovations. However, the first implementation of business processes to determine when an activity should cease could meet the requirements for an innovation.

3.76. A change due to **externally determined factor prices** is unlikely to represent an innovation. For example, an innovation does not occur when the same model of a mobile phone is constructed and sold at a lower price simply because the price of a video processor chip falls.

3.77. The formulation of a new **corporate or managerial strategy** is not an innovation if it is not implemented. Furthermore, a change in a business process is not an innovation if it is already in use in an identical form in other divisions of the firm.

### 3.5. Innovation and business profiling

#### 3.5.1. Innovative and innovation-active firms

3.78. The innovation status of a firm is defined on the basis of its engagement in innovation activities and its introduction of one or more innovations over the observation period of a data collection exercise. As discussed in Chapter 9, the recommended observation period can vary between one and three years.

3.79. During the observation period, any given innovation activity of the firm can:

- Result in an innovation. The innovation activity can consequently cease during the observation period after implementation or it could still be ongoing if it is undertaken for other innovation projects.
- Be ongoing without an innovation. Work can still be in progress and proceeding according to plan, or delayed due to various reasons, such as technical difficulties or a shortage of expertise or finance.
- Be aborted, discontinued, or put on hold, for instance when activities to develop an innovation are stopped before implementation.

3.80. These three outcomes apply to the wide array of innovation activities and projects within a firm. The combination of data on the incidence of innovation and innovation activity (innovation status) produces four possible categories for the innovative status of a firm, as shown in Table 3.3.

**Table 3.3. Innovative and innovation-active firms**

	The firm has innovation activities in the observation period	
	Yes	No
<b>The firm has at least one innovation in the observation period.</b>	Yes	The firm has one or more innovations and is therefore an innovative firm. Innovation activities can be ongoing, put on hold, completed, or abandoned.
	No	The firm is innovation-active, but has not introduced an innovation, although it might do so in the future.
		It might occur if all work to introduce an innovation was conducted before the observation period.
		The firm is not engaged in innovation activities and has not introduced any innovations in the observation period.

3.81. The combinations in Table 3.3 result in three core definitions that apply to firms:

*An **innovative firm** reports one or more innovations within the observation period. This applies equally to a firm that is individually or jointly responsible for an innovation.*

*A **non-innovative firm** reports no innovations within the observation period.*

*An **innovation-active firm** is engaged at some time during the observation period in one or more activities to develop or implement new or improved products or business processes for an intended use. Both innovative and non-innovative firms can be innovation-active during an observation period.*

3.82. The fourth category of an innovative firm with no innovation activities during the observation period is very rare. It would for example occur if a firm undertook all innovation activities except implementation before the observation period and the implementation required no additional resources. It may also occur if an innovation results from generic business activities that were not explicitly aimed at introducing an innovation.

3.83. It is important for measurement practices to account for the dynamic relationship between innovation viewed as a process (innovation activities) and as an outcome. The length of the observation period will also directly influence the distribution of firms across the four categories in Table 3.3. In industries with short development times and long product life cycles, a short observation period could result in a low percentage of innovative and innovation-active firms. In industries with long development times, a short observation period could result in a high share of innovation-active firms combined with a low share of innovative firms that report at least one innovation. Chapter 9 provides further discussion of the effect of the observation period length on innovation status.

### 3.6. Use of innovation definitions in data collection

3.84. Innovation is a subjective construct with the potential for measurement to give diverging results, depending on the respondent's perspective, beliefs and context (Galindo-Rueda and Van Cruysen, 2016). To ensure statistical quality and comparability, the definitions used in surveys and other data collection methods must therefore capture the intended meaning of the definitions in this manual, while taking into account differences in language and the vocabulary used and understood by potential respondents.

#### 3.6.1. Use of the term "innovation" in surveys

3.85. An innovation survey can be designed to never use the term "innovation" in order to avoid conflicts between the formal definition of an innovation and each respondent's

own understanding. This could result in more objective responses and reduce issues of comparability across industries or countries. An example is the Australian Business Characteristics Survey, which replaces the term “innovation” with a description of all types of innovations. For instance, the 2013 survey (based on the third edition of the *Oslo Manual*) asks respondents “where did this business source ideas and information for the development or introduction of new goods, services, processes or methods?”. This also illustrates an important disadvantage of avoiding the use of “innovation”: it can require listing all types of innovations in multiple questions. However, the adoption in this manual of only two major categories of innovations, products and business processes, will improve the ability of data collection exercises to avoid the term “innovation” while ensuring some economy of language.

### ***3.6.2. Innovation profiles***

3.86. The minimum definition of an innovative firm is a poor indicator for comparing innovation across industries, firm size classes or countries because it does not capture variations in the novelty of innovations or each firm’s capacity to develop innovations. Information on firms’ innovation status can be combined with other information on innovation novelty, innovation activities (see Chapter 4), or the division of innovation effort (see Chapter 5) to produce indicators for the novelty of innovations and the innovation capability of each firm. These indicators can be aggregated to produce innovation profiles for firms by industry, firm size category or country. When combined with outcome data (see Chapter 11), profiles can be used to explore the contribution of innovation to firm performance and the utility for users of the innovation.

### ***3.6.3. Priorities for data collection about innovations***

3.87. It is recommended to collect data on the following topics of relevance to research on innovation status and innovation profiles (see Chapter 11).

3.88. Data on each main innovation type by object (product and business process) can be collected through a single question for each type, but it is useful for interpretation to include additional questions on the two types of product innovations and the six types of business process innovations. This will result in considerably more detailed information on the innovations of each firm and permit replication of the generic innovation types (i.e. product or process innovations) defined in the third edition of this manual.

3.89. The collection of data on innovation characteristics and novelty is recommended in order to create innovation profiles that classify firms according to the characteristics of their innovations and innovation efforts. Relevant questions for the construction of profiles include:

- The different levels of innovation novelty, as per subsection 3.3.2.
- The characteristics of product innovations, including design, as per subsection 3.3.1.
- The role of third parties in developing and implementing innovations, as per subsection 3.2.2 and Chapter 5.
- The existence of ongoing or discontinued innovation activities, as per subsection 3.5.1.

3.90. The concept of novelty is applicable to both product and business process innovations, but questions on novelty are likely to be easier for managers to answer for product innovations.



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