Statistical manual on business function classifications

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Manuals and guidelines

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1. Introduction

Economic policy making requires high quality statistics on where enterprises[1] are sourcing specific business functions. This new demand stems from the mainstreaming of offshoring and outsourcing [2] strategies by enterprises across size, industry classifications and economic territory. It cannot be assumed that enterprises will carry out all, or even most business functions entirely within their organizations and within their domestic economy. Furthermore, organizational and geographic fragmentation in global value chains (GVCs) is not only evident in enterprises' main revenue-producing activity, but also across a range of supporting, or ancillary business activities such as R&D, ICT services, customer support, and various management and administrative activities. A measurement framework based on business functions is required to capture enterprise-level information on these arrangements.

The business function classification is intended for use in the production of business statistics, building on experiences from several recent surveys in Europe, Canada, the United States and India. The main use of business function statistics is to examine the details of international sourcing, however it could be also applied to domestic sourcing. International sourcing statistics can help statisticians and policymakers measure and monitor organizational and spatial patterns in national, regional and global value chains, and allow the effects of these patterns — on employment, wages, innovation, skills, firm survival and turnover — to be measured. In case of domestic sourcing, business function classification is useful to analyse dynamics on business functions specialization.

The primary use of the classification is as a tool for statistical analysis. The scope of the classification is restricted to the enterprises as defined in the SNA 2008 (a corporation, a quasi-corporation, a non-profit institution or an unincorporated enterprise). The statistical unit used is the enterprise.

The manual is organised as follows. In section 2, the concept of business functions is described, along with its use in statistical surveys, both in general and for the measurement of domestic and international sourcing. A key distinction between core and support functions is made, and a few of the policy issues addressed by international sourcing statistics are identified. Prior uses of business function classification in statistical surveys will also be examined. Section 3 described the classification of business function which comprises seven business functions (expandable to nineteen). Appendices, provided in separate excel files, provide draft correspondence between the proposed classification of business functions and the Statistical Classification of Products by Activity (CPA),

[1] An enterprise may be a corporation, a quasi-corporation, a non-profit institution or an unincorporated enterprise (SNA 2008).

[2] Outsourcing refers to an organization contracting work out to a third party, while offshoring refers to getting work done in a different country.

International Standard Classification of Occupations (ISCO), Statistical Classification of Economic Activities in the European Community (NACE), International Standard Industrial Classification (ISIC) and Central Product Classification (CPC).

2. The concept of business functions and its use in statistical surveys

The concept of business functions is well known in the field of management. It can be traced to the early work of Michael Porter (1985), who identified a list of nine "activities" in a generic "value chain". Five "primary" activities follow a rough value-added sequence (inbound logistics, operations, outbound logistics, marketing and sales, and service), while four "support" activities serve the entire organization (firm infrastructure, human resources, technology development, and procurement). Individual functions can be further subdivided into sub-functions.[3]

In his generic model, Porter was clearly including activities relevant for a manufacturing enterprise, but the concept was meant to be flexible, with strategic managers using categories based on the actual functions carried out within their organizations.

The importance of Porter's model, therefore, is not in the specific list of activities (or business functions) it provides, but in the influence of his work and the work of his many followers among enterprise managers, who were exhorted to undertake a careful analysis of their organizations according to specific functions within its value chain. The idea was to divide the activities of the enterprise into "physically and technologically distinct categories."[4] While the division and sub-division of activities could be carried out *ad infinitum*, managers were instructed to identify activities that have 1) different economics (e.g., scale or transport requirements), 2) have a high potential impact of differentiation (e.g., could provide competitive advantage over rivals), or 3) represent a significant or growing proportion of costs.

Once identified, business functions could be measured and evaluated in quantitative terms (most basically in terms of costs and profit margins for each) and decisions then taken in regard to external or internal sourcing[5]. At a time when leading industries such as computers were shifting from a "vertical" organizational structure, where firms performed

[3] Note that in Porter's framework, an "activity" does not refer to the industry of the enterprise as is the case in European business statistics, but a more or less coherent set of tasks organized for an identifiable purpose, referred to in this manual as a "business function."

[4] These categories were expected to vary according to the enterprise's "history, its strategy, its approach to implementing strategy, and the underlying economic of the activities themselves." (Porter, 1988, p. 33)

[5] Internal sourcing refers to sourcing within the enterprise or enterprise group, while external sourcing refers to sourcing outside the enterprise or enterprise group (outsourcing). See Figure 1 for a detailed overview.

most functions in house, to a "horizontal" structure where firms specialized in specific functions based on an identified "core competence" (Prahalad and Hamel, 1990; Grove, 1996), Porter's concepts provided a method for analysing the enterprise in advance of making critical decisions about which functions to outsource and which functions to keep in-house. When costs or market access were important, offshoring was a favoured strategy, especially to large market countries with low operating costs such as China and other countries in East Asia (Gereffi, 1994; Baldwin, 2011).

In this way, it became more common for managers to conceive of, evaluate, and monitor their organizations in terms of a parsimonious list of business functions that were functionally distinct (e.g. manufacturing vs. transport vs. administration), strategically important (e.g., R&D, product design, and marketing), and costly (e.g., manufacturing and IT services). Of course, a Porteresque value chain analysis also allowed managers to identify functions that were strategically unimportant, and thus top candidates for outsourcing and/or offshoring.

The influence of Michael Porter's ideas on enterprise managers is difficult to overstate,[6] and here lies an opportunity for economic statistics: to collect innovative business statistics by leveraging enterprise managers' manner of thinking about — and often measuring — activities within their own organizations. However, not all managers have internalized the concept of business functions in relation to their businesses, and as business function surveys shift from an experimental status, where surveys sought out responses from higher-level managers for their 'best estimates' of enterprise characteristics according to business functions, to a more standard survey which might be received and completed by accounting departments on a routine basis, familiarity with the concept cannot be assumed. The classification of business functions will support the adaptation of current approaches to designing business surveys to seek responses through regular data collections.

2.1 Adapting the concept of business functions for use in statistical surveys

The concept of business functions is relatively new to the statistical toolbox. Business functions offer statisticians and survey respondents a limited (parsimonious) yet relatively comprehensive set of generic, easy-to-understand categories that describe the various functions carried out by enterprises, including and in addition to their main economic activity. Business function statistics are needed because enterprises, in addition to producing the goods or services from which they earn their turnover, typically require a set of functions to support their core revenue-producing function. Since support functions are

[6] As of February 4, 2019, Michael Porter had 421,937 citations on Google Scholar. The 1985 book, *Competitive Advantage: Creating and Sustaining Superior Performance*, in which the concept of business functions was introduced, has been published in thirteen languages in thirty reprintings over eleven editions and garnered 94,832 citations. Complementary influencers have also been important. For example, the 1990 *Harvard Business Review* article by CK Prahalad and Gary Hamel entitled "The Core Competence of the Corporation" garnered 34,217 citations.

defined separately from the main industry classification, they can be expressed as a generic list. Therefore, business functions are identifiable parts of business statistics.

The concept of business functions has commonalities with existing concepts in economic statistics such as occupations, industries/activities, or products, but is distinct. From a conceptual point of view, they are defined as **a grouping of common tasks that enterprises must carry out on a regular basis, either internally or externally, in order to bring goods or services to market**, such as administration and management, R&D and marketing and sales. They are typically differentiated from business processes, which refer to work organized temporarily to achieve a specific goal. As such, business functions are relatively stable in an organization, while business processes last only until the goal is met. Business functions might usefully be thought of as the 'occupations of enterprises.' They can be corresponded with specific industries/activities, occupations, and products in a general way but are not reducible to them. The business function classification proposed is therefore not a complimentary grouping within any other classification. It is based on a novel concept in business management.

2.2 Using business function surveys to detect patterns of industrial organization and sourcing location

The main motivation for business function surveys stems from the need to measure outsourcing and offshoring. These strategies are most often thought of in connection with manufacturing and manufacturing services. Outsourcing and offshoring of labour-intensive parts of the manufacturing process was a long-standing practice in certain industries and countries, such as the semiconductor and television assembly in East Asia for the U.S. market and apparel assembly in North Africa for European markets (Fröbel *et al*, 1980; Grunwald and Flamm, 1985), but in the 1990s and 2000s, it became more common and generalized across more industries, such as telecommunications equipment, automobiles and automotive parts, and commercial aircraft parts (Sturgeon, 2002).

Some goods-producing enterprises partially maintained internal manufacturing while others became entirely 'factory-less' (Bernard and Fort, 2013), sourcing all production externally. As such, these manufacturers never pursued the strategy of in-house production. As a result, 'contract manufacturers' such as Flextronics, Foxconn, and Pao Chen increased in number, size and scope, creating an easy-to-access 'global supply base' that encouraged more companies to engage in the twin, and often entwined strategies of outsourcing and offshoring (Sturgeon and Lester, 2004).

After 2001 outsourcing and offshoring became more common for support functions such as telephone marketing and customer contact services (often organized in 'call centres'), software coding, and 'back-office' functions such as payroll and document management, especially in India (Dossani and Kenny, 2003). The growing use and capabilities of ICT

systems have accelerated both outsourcing and trade in such ICT-enabled services[7] (Welsum and Reif, 2009). Similar to the rise of contract manufacturers, specialized service providers such as Infosys and Wipro grew and eventually set up international operations to provide remote services. More recently, enterprises have been experimenting with fragmenting and relocating parts of the R&D process, even in the context of contemporaneous projects (Cantwell and Mudambi, 2005; Manning et al., 2008; Lewin et al., 2009; Frick, 2014). Most recently, with the rise of the 'digital economy,' the ease and reliability of remotely accessing knowledge intensive-services and setting up internationally distributed business systems is increasing with great rapidity (UNCTAD, 2017).

The concept of "outsourcing" assumes a shift from internal to external sourcing, and while this may have been common in the earlier rounds of externalization and internationalization, many younger firms now begin operations with heavy reliance of external and international sourcing for a variety of business functions. This is why the term "outsourcing" is not used in this manual unless it specifically refers to the movement from internal to external sourcing. The terms used: "internal and external sourcing, and domestic and international sourcing" are neutral in regard to the original state of enterprise organization (vertically integrated or vertically specialized) and the direction of change in sourcing choices (internal or external).

Traditional business statistics have few tools for capturing or characterizing these new sourcing patterns and the enterprise configurations and business models that go with them, especially in an international context. New international input-output datasets, constructed by merging multiple national-level supply-use tables with international trade statistics, are providing researchers and policymakers with new information on the various roles countries play in "global value chains," such as export assembler, exporter of low or high value intermediates, and so on.[8] There is demand for statistical tools that can 'look inside' the enterprise to gain a better understanding of how enterprises are linked to affiliated and on-affiliated suppliers both in the domestic territory and abroad. International sourcing surveys using a business function classification have been designed to meet this demand.

To create full picture, international sourcing surveys need to collect information on both domestic and international sourcing. And, both domestic and international sourcing can be carried out within the enterprise or enterprise group[9] or by external suppliers. This presents

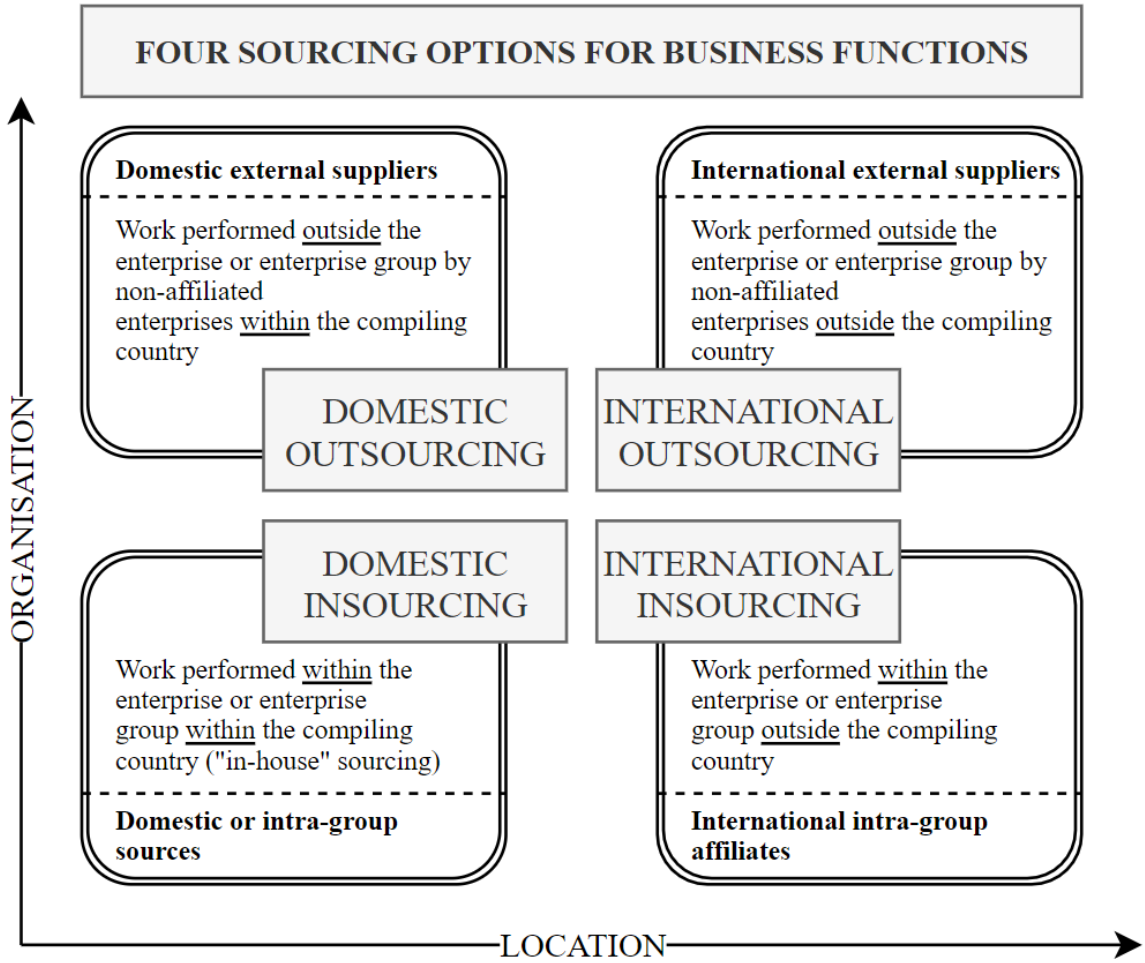
[7] ICT-enabled services are services products delivered remotely over ICT networks (as defined in "International trade in ICT services and ICT-enabled services", UNCTAD).

[8] Prominent examples of publicly-available IIOs include the World Input-Output Database (WIOD) Project, funded by the European Commission as part of the 7th Framework Programme; the OECD/WTO's Trade in Value Added database; and Eurostat's inter-country supply, use and input-output tables, called 'Full international and global accounts for research in input-output analysis' (FIGARO).

[9] An enterprise group is an association of enterprises bound together by legal and / or financial links (Council Regulation 696/1993).

managers with the four basic sourcing options shown in Figure 1: 1) internal domestic sourcing from within the enterprise or enterprise group, and 2) external domestic sourcing from independent (non-affiliate) suppliers; and two international options: 3) internal international sourcing from within the enterprise group (i.e. foreign affiliates), and 4) external international sourcing from independent suppliers.

Figure 1. Organization and location: four sourcing options



Source: adapted from Nielsen, 2008, and Eurostat's methodology for international sourcing surveys.

While Figure 1 shows the sourcing options available for a single business function, or for the enterprise as a whole, the four options are possible, in theory, for any business function, and enterprises can and do source various functions differently. Information on domestic and international sourcing can be captured in a single survey question by asking respondents to characterize the four options for a pre-determined list of business functions. This concept is shown as a generic survey question in Table 1.

Table 1. Generic survey question on business function sourcing by organization and location

	Location:	**Domestic sourcing**		**International sourcing**	
	Organization:	Internal (domestic in-house)	External (domestic outsourcing)	Internal (foreign affiliates)	External (international outsourcing)
Business functions:	Function A				
	Function B				
	Function C				
	Function D				
	Function…				

To help illustrate how this framework can help to describe the sourcing practices of an enterprise, consider a hypothetical example of a firm that primarily manufactures automotive parts. It may produce some of those parts (its core business function) in-house in one or more of its domestic factories and also manufacture other parts internationally (offshore) in the factories of affiliated companies in other countries. The firm might have in-house expenditures devoted to research and development and new product development, source transportation services from a local trucking companies in each of its production locations, and internationally source a portion of its software design and coding work (included in the IT services function) from an external supplier located in India.

While most survey research using the business function framework have focused on capturing such patterns of domestic and international sourcing, the classification of business functions can be useful for classifying and comparing almost any enterprise characteristic, such as employment and wages, technology adoption, training and skill requirements, and so on. In other words, business functions can provide an alternative method for comparing enterprise characteristics. As an example, one could compare the wages of employees between business functions or job skill requirements in order to identify high skilled jobs (functions).

2.3 Core vs. support business functions

As just discussed, enterprises have options to sourcing their main activity internally or externally and domestically or internationally. More recently, similar options have emerged for a range of business services that typically support the main activity. It is useful to analyse these ‘core’ and ‘support’ functions separately, and most international sourcing surveys have made a clear distinction between ‘core’, ‘primary,’ or ‘main’ business functions and various ‘support’ functions. It is therefore important that the differences between the two be made clear.

The core business function represents the revenue-producing activity of the enterprise. It will, in most cases, be consistent with the main activity of the enterprise as classified by the activity or industry code entered in the business register. Core business functions denote a set of functions that produce goods or services intended for the market. The core function may span several activities and include related vertical activities (e.g. production of inputs).

While enterprises do incur costs from carrying out core business functions, the outputs of these functions can also be directly associated with turnover.
An enterprise may have one or more core functions.

Support business functions are carried out in order to permit or facilitate the production of goods or services. They do not directly generate turnover, only costs. However, the cost, efficiency, and quality of support functions, especially management, marketing, logistics, R&D and other innovation-related activities, can and do make important contributions to the competitiveness of enterprises. As an example, the definition of core and support functions, as used in prior European international sourcing surveys, is presented in Table 2.

The concept of support business functions is related to the concept of ancillary activities. As defined in the SNA 2008, an ancillary activity is incidental to the main activity of an enterprise. It facilitates the efficient running of the enterprise but does not normally result in goods and services that can be marketed.

Table 2. Core and support business functions

Core business function:
Activities of an enterprise yielding income: the production of final goods or services intended for the market or for third parties. Usually the core business functions make up the principal activity of the enterprise, but they may also include other (secondary) activities if the enterprise considers these as part of its core functions.
Support business function:
Supporting activities carried out by the enterprise in order to permit or to facilitate the core business functions, its production activity. The outputs (results) of support business functions are not themselves intended directly for the market or for third parties.

Source: https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Business_functions

An important point is that while core functions may produce either goods or services, support functions consist purely of services[10]. Thus, measuring support functions is akin to measuring the internal and external provisions of business services. Business function classifications used in statistical surveys have generally excluded support services that require investments in large-scale shared infrastructure such sewerage, roadways, and public telecommunications systems. However, such products and services may comprise the core business function of an enterprise. They are therefore included in the classification of business functions.

[10] Council Regulation (EEC) 696/93, (Section IV of the Annex) mentions exceptional cases where the production of goods can be considered as an ancillary activity ("…non-durable goods which do not form part of the unit's end product (e.g. small implements or scaffolding)"). If such cases are identified in a business functions analysis, they can be classified under "other support functions". However, the vast majority of support functions (in terms of number and also employment/cost) are services.

Because the core business function can be either goods- or services-producing, business function classification is equally applicable to manufacturing or service enterprises. The benefit of this is that the same survey can be completed by both types of enterprises, and the results can be directly compared or aggregated as needed.

Table 3. Core and support business functions comparison

Core business function		Support business function
Outputs are directly linked with turnover (revenue-producing)		Outputs do not directly generate turnover, only costs
Goods and services produced are intended for the market	**VS.**	Goods and services produced are intended for internal use (not for the market)
Consistent with the main activity of the enterprise		Related to the concept of ancillary activities[11]

2.4 Policy issues

Business function statistics can be used to inform a wide variety of research and policy questions, but surveys-to-date have focused on characterising enterprise-level patterns of domestic and international sourcing. Using this approach, surveys have been able to answer basic yet important policy questions such as: What are the main business functions that are internationally sourced, and where are they sourced? Conversely, international sourcing surveys that also measure domestic sourcing can answer questions about the functional specialization of economies (e.g. innovation vs. production). Are enterprises mainly sourcing low value-added functions internationally such as manufacturing and back-office work or are strategic, high value functions such as R&D also being internationally sourced? What are the trends? What are the effects on employment and wages? Do countries in the global economy tend to play specific roles in global value chains by specializing in specific sets of business functions? How do these data compare to estimates arrived at by other means, such as international input-output datasets, industrial production censuses, and occupational employment statistics.

When linked to industrial performance measures and information about enterprise characteristics in business registers, a host of questions can be answered, such as: How do enterprises that internationally source various business functions perform relative to enterprises that do not? Does the type of function or source country make a difference? What is the impact of various business function sourcing choices on the employment and wages of specific workers?

[11] The 2008 SNA does not treat the research and development activity as an ancillary activity, however this Manual treats it as a supporting function.

Classifications of business functions, deployed in surveys across countries and over time, are already helping policy makers answer these questions, and providing researchers with estimates that can be incorporated into econometric models that shed light on topics such as functional specialization in trade (e.g. Timmer et al, 2018)

3. Classification of business functions

Surveys using business function classifications have been proven effective in several contexts. Valuable new data has been collected. Questions about business functions are typically well understood by respondents (enterprise managers) and the results from surveys have begun to provide useful insights into important policy questions. The extent and character of outsourcing and offshoring practices in a certain period can be known for entire enterprise populations, with detail about sourcing by business function, the location of sourcing, and when linked to information in the business registers and other micro-data statistical registers, the relationship between international sourcing, enterprise characteristics and jobs.

The distinction between core and support functions, as described in Table 2, was first introduced in the European Survey on International Sourcing in 2007 and has been used in most business function surveys since. Although the distinction between the core and support business functions can be made clear — as turnover-producing vs. cost-incurring functions — the concept has proven difficult to implement in some surveys. In a methodological review of the European 2017/2018 IS/GVC survey, it was found in some countries that a significant number of respondents had difficulty understanding the concept, especially in countries with many small enterprises. For example, about 30% of the enterprises had problems providing information on employment by business function. These were mainly enterprises active in trade (retail/wholesale), logistics and ICT. They either assigned all employees to the core business function or did not assign any persons employed to the core function but assigned all employment to various support functions.

There are several possible reasons for this difficulty. First, a single function can be split between core and support, for example when an enterprise both sells software in the market and also produces software for internal use. Not only is it difficult for respondents to provide accurate answers in this sort of mixed situation, it can render the concepts of core and support confusing if it arises in multiple functions. Second, enterprises that have multiple revenue streams and have difficulty identifying a single function as core. In fact, one benefit of business function surveys is to help identify situations where enterprises have multiple revenue streams. Third, respondents may understand the concept of core, as in “core competence” as being related to the specific intellectual property assets or difficult-to-replicate competencies that provide the enterprise with competitive advantage over rivals, even if no revenue is directly generated. Fourth, the distinction between core and support functions can be especially difficult for smaller enterprises, which may not have specific divisions or groups within the enterprise responsible for distinct functions. In

small enterprises, employees can have responsibility for multiple functional areas, which suggests that it may be best to exclude small firms entirely from business function surveys.

Finally, as the practice of fielding surveys based on business function matures, it could become more difficult for respondents to make distinctions based on management concepts such as business functions, however popular they may be in business schools and in practice. As the administration of business function surveys becomes more mainstream, it will be more likely that surveys will be completed in countries and by individuals with less familiarity with the concept of business functions. In earlier, more experimental surveys, top managers could be consulted for their 'best estimates' of various business practices by business functions, and provide accurate answers. By contrast, future surveys are more likely to be completed out by personnel in regular administrative and accounting roles. This heightens the importance of providing a simple classification of business functions with reasonable and intuitively resonant correspondences to existing product and occupational classifications.

For these reasons, the classification proposed in Table 45 dispenses with an *ex ante* distinction between core and support functions, and instead bases the framework on the more traditional and widely understood distinction between goods and services.

Table 4. Proposed classification of business functions

1. Production of goods and materials
1.1 Agriculture and fishing
1.2 Manufacturing and assembly
1.3 Energy and extraction of raw materials
1.4 Construction
2. Provision of services
2.1. Management and administration
2.1.1 Management (e.g. human resource management, financial management, or strategy formulation)
2.1.2 Administration (e.g. legal, bookkeeping, purchasing, or other back office functions)
2.2. Engineering and research and development (R&D)
2.2.1 Engineering and related technical services
2.2.2 Research and development
2.3. Information technology
2.3.1 Information technology services (e.g. computer system and web design and consulting)
2.3.2 Software programming
2.3.3 IT system installation, maintenance, and help desk services
2.4. Marketing, sales, and after-sales service
2.4.1 Marketing
2.4.2 Sales (including wholesale and retail)
2.4.3 After sales services
2.5. Transportation, logistics, and storage
2.5.1 Transportation and logistics (road, water, or air)
2.5.2 Warehousing and storage
2.6. Other services n.e.s.
2.6.1 Facility management (e.g. catering, security)
2.6.2 Maintenance and repair services
2.6.3 Other (e.g. leasing)

While the proposed classification of business functions means that the distinction between core and support function will be absent in the survey instrument, the concept is still important in the analysis phase. It is therefore recommended that statisticians use the results of the survey and (when available) information from business registers to determine core and support functions that are assigned after-the-fact, in the analysis phase. Methods for determining core functions are provided in the next sub-section.

A second difference from prior business function classifications is the inclusion of a full range of sectoral categories in the goods-producing functions: agricultural production and fishing, manufacturing and assembly, energy and extraction of raw materials, and construction. Almost any type of goods-producing enterprise of sufficient size has the potential for engaging in external and international sourcing. Including the full range of goods-producing sectors also helps with the process of creating correspondences to activity classifications. However, the correspondences are not a direct correlation and should mainly be considered as a survey tool guiding responding enterprises and helping survey managers.

Finally, the classification includes a three-level hierarchy of functions. The hierarchical structure opens the possibility for collecting greater or lesser detail, which can be especially important in heterogeneous — in terms of skills and wages for example — functions such as management and administration; engineering and R&D; marketing, sales, and after-sales service; and transport, logistics, and storage.

3.1 Methods for identifying the core business function

The basic approach that can be used to identify the core business function of an enterprise is employment. Because prior surveys have consistently found the share of employment in the core/primary business functions to average between two-thirds to three quarters of total enterprise employment, by far the largest share, statisticians can assign the label ‘core’ to the business function with the largest share of employment with some level of confidence.

However, this misses information about multiple sources of revenue, and may misassign the core function when enterprises generate a large share of revenue from business functions with few employees (e.g. enterprises with fully automated factories). Observing the mix of revenue-producing functions in a manufacturing enterprise can also be helpful in characterizing the increasing content of services in goods production (sometimes referred to as *servicification*). It can be assumed that information on which business functions produce turnover in an enterprise will be apparent to respondents.

In countries where international sourcing surveys can be linked to information in the business register, the industry/activity code of the enterprise can be used to increase the confidence level when assigning the designation of core function to an enterprise. In practice, the main activity of an enterprise in the Business Register is in some cases determined using information about the allocation of employees[12]. These three options are depicted in Table 5.

[12] Details on how to determine the main activity of an enterprise are provided in the NACE Rev. 2 manual.

Table 5. Approaches for identifying core business function: employment or turnover

	Share of employment	Share of turnover	Industry code from the business register
1. Production of goods and materials			
2. Provision of services			
2.1. Management and administration			
2.2. Engineering and R&D			
2.3. Information technology			
2.4. Marketing, sales, and after-sales service			
2.5. Transportation, logistics, and storage			
2.6. Other services n.e.s.			
Total	**100%**	**100%**	

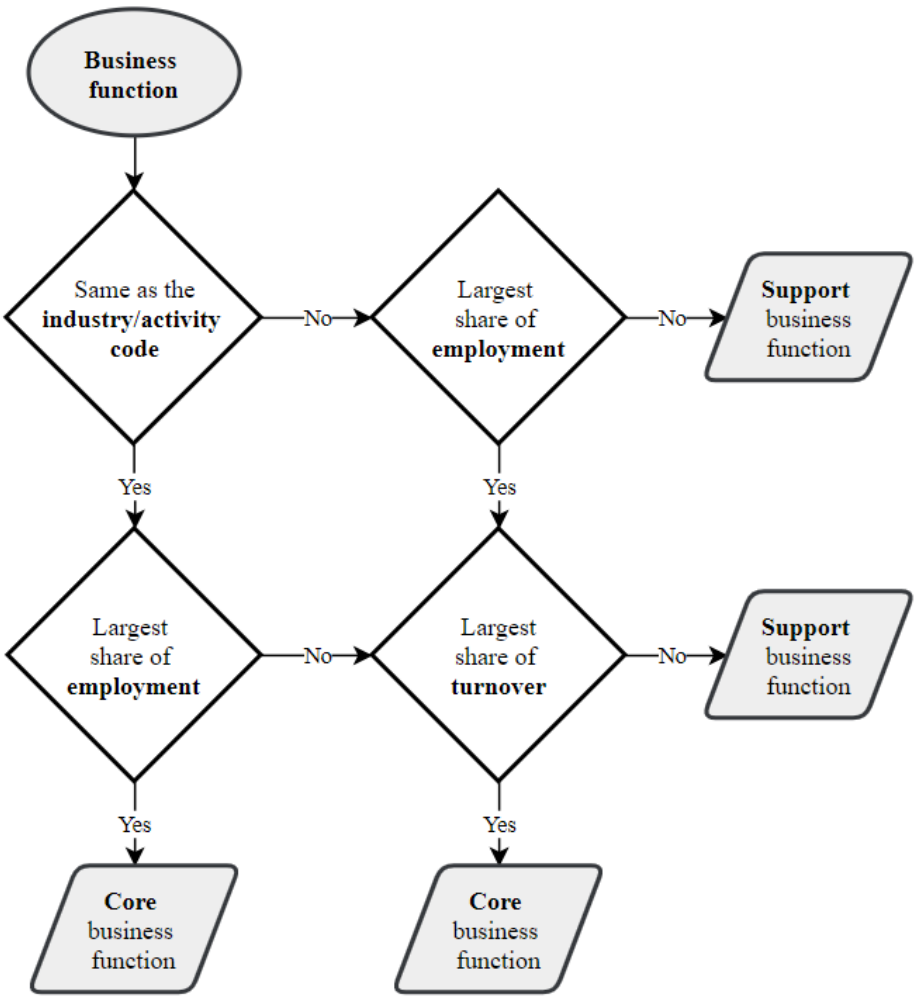
Largest value associated with core business function

Largest value associated with core business function

Industry code should reflect core business function

Statisticians should be able to predict with high probability whether a business function is 'core' or 'support' if it satisfies at least **two out of the three criteria** from the Table 5. The process for the business functions identification is depicted in Figure 2.

Figure 2. Business function identification flowchart



4. Concluding comments

Innovations in business statistics are rare, and take time to test, deploy, and perfect. The use of a business function framework as a tool to discover and classify changes in enterprise characteristics, especially patterns of domestic and international sourcing, has proven effective and of high policy interest. Macro-patterns of GVC-engagement can be estimated with recent innovations such as IIOs but business function surveys can provide an important bottom-up picture of global integration and a great deal of policy-relevant detail, especially when linked to micro-data resources on enterprise and worker characteristics.

Statisticians have already learned a great deal from international sourcing surveys, much of it in line with expectations. For example, international sourcing is rare among enterprise populations, but more common for large enterprises. Most international sourcing is to affiliated enterprises. In the EU, China is the most common extra-EU destination for core functions, and India is the most common for support functions. There is churn in international sourcing, with the number of jobs relocated abroad because of international sourcing roughly double that of jobs added from reductions in international sourcing. Job relocations abroad resulting from international sourcing are concentrated in manufacturing, and affect low skilled workers the most.

However, as the surveys and the practices they are measuring mature, several adjustments may be needed, both to the classification of business functions and to survey methods. This manual has proposed a simple (yet expandable) classification of business functions that is likely to be well understood by personnel in addition to top strategic managers. The potential confusion from *ex ante* division of business functions into core and support has been eliminated. The recommendation is to assign these labels after-the fact, based on either the function with the largest employment or revenue, the activity code in the business register, or some combination. It will be crucial for policy-makers to be able to detect which business functions are “sticky” to the enterprise and domestic economy, and which are more “footloose”.

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Annex I:
Definitions

The following is a list of concepts and their definitions as used in this Manual.

CONCEPT	DEFINITION
Activity (economic activity)	Economic activity is understood as referring to a process, that is to say, to the combination of actions carried out by a certain entity that uses labor, capital, goods and services to produce specific products (goods and services) (IRIS 2008).
Ancillary activity	An activity incidental to the main activity of an enterprise. It facilitates the efficient running of the enterprise but does not normally result in goods and services that can be marketed (SNA 2008).
Business functions	A grouping of common tasks that enterprises must carry out on a regular basis, either internally or externally, in order to bring goods or services to market.
Core business function	A set of functions that produce goods or services intended for the market.
Enterprise	A corporation, a quasi-corporation, a non-profit institution or an unincorporated enterprise (SNA 2008).
Factoryless goods producer (FGP)	Enterprises that outsource the manufacturing transformation activities but own the underlying intellectual property products (IPPs) and control the outcome of the production process (UNSD definition).
Global value chains (GVC)	The sequence of all functional activities required in the process of value creation involving more than one country.
Insourcing	Getting work done in-house (within the enterprise or enterprise group, regardless of location)
Offshoring	Getting work done in a different country (in-house or by a third party)
Outsourcing	Contracting work out to a third party.
Sourcing	Refers to either outsourcing or insourcing.
Support business function	A set of functions that permit or to facilitate the core business functions, the outputs of which are not intended for the market.

Annex II:
Business function classifications used in prior statistical surveys

The first official survey to introduce the concept of business functions in a statistical context was the 2007 European Survey on International Sourcing. The survey was repeated again in 2012 and 2017/2018, with minor modifications, as the International Sourcing/Global Value Chains (IS/GVC) Survey.[13] The 2007 survey was conducted in 13 European countries, the 2012 survey in 15 countries, and the 2017/2018 survey in 16 European countries.

Statistics Canada used a similar approach in 2009 and 2012 in its mandatory Survey of Innovation and Business Strategy (SIBS), covering about 9,600 enterprises. Unofficially, the approach was also pilot-tested by an academic team with a representative (by employment) sample of 317 enterprises in the United States in the National Organizations Survey (NOS) in 2010 (Brown *et al*, 2013). Other academic surveys have adopted the approach, including researchers from the Nyenrode Business Universiteit and Halle Institute for Economic Research (IEW) in 2013.

The business function classification for the three European surveys are shown in columns 1, 2, and 5 of Table 6. The 2010 NOS survey used a business function classification very similar to the 2007 and 2012 European surveys, but split the category of "marketing, sales and after sales services including help desks and call centres" into two, "customer and after-sales service" and "sales and marketing," and specified facilities maintenance as a distinct business function instead of including it in the residual "other business functions" category (see third column of Table 6).

[13] This survey was conducted in two rounds. The first round was conducted in 2017 and asked about international sourcing for the period 2014-2016 in Denmark, Germany, Italy, Latvia, Lithuania, Netherlands, Portugal, Romania, Slovakia, and Sweden. The second round was conducted in 2019 and asked about international sourcing for the period 2015-2017 in Austria, Bulgaria, Finland, Hungary, Norway, and Poland.

Table 6. Examples of business function classifications used in statistical surveys

2007 International Sourcing Survey (Eurostat)	2012 International Sourcing/Global Value Chains Survey (Eurostat)	2010 National Organizations Survey (US: Brown & Sturgeon)	2009/2012 Survey of Innovation and Business Strategy (Statistics Canada)	2017/2018 International Sourcing/ Global Value Chains Survey (Eurostat)
(7 functions: 1 core and 6 support)	**(6 functions: 1 core and 5 support)**	**(8 functions: 1 core and 7 support)**	**(14 functions: 2 core and 12 support)**	**(9 functions: 2 core and 7 support)**
Core business function	Core business function	Primary business function	Provision of goods	Core business functions • *Production of goods (for the market)* • *Provision of services (for the market)*
			Production of services	
Distribution and logistics	Distribution and logistics	Transportation, logistics, and distribution	Distribution and logistics	Transport, logistics, and distribution support functions
Marketing, sales and after sales services including help desks and call centres	Marketing, sales services and after sales services, incl. help desks and call centres	Customer and after-sales service	Call centres and help centres	Marketing, sales, after sales service support function
		Sales and marketing	Marketing, sales and after sales service	
ICT services	ICT services	Information technology systems	Data processing	IT services and software support functions
			Software development	
			Information & comm. tech. (ICT) services	
Administrative and management functions	Administrative and management functions	Management, administration, and back office functions	Legal services	Management, administration, and back-office support functions
			Accounting and book-keeping	
			Human resource management	
			Financial management	
Research & Development	Research & Development, engineering and related technical services	Research & Development of Products, Services, or Technology	Research and development (R&D)	R&D, Engineering and related technical services and R&D support functions • *Research & development services (R&D)* • *Engineering and related technical services (except R&D)*
Engineering and related technical services			Engineering and related technical services	
Other	Other	Facilities Maintenance	Other	Other business functions
		Other		

The Canadian Survey used a more granular classification, including 14 business activities plus a residual category (see fourth column of Table 6). The Canadian classification also split the core function into two; "production of goods" and "production of services," and identified "call centre and help centre activities" separately from the European aggregated support function "marketing, sales and after sales services including help desks and call centres." Furthermore, "ICT services" was divided into the following three groups; "software development", "data processing" and "ICT services." Finally, the support function "administrative and management functions" was divided into four activities; "legal services", "accounting and bookkeeping", "HR management" and financial management. The sub-categories of the Statistics Canada classification of business can be aggregated to the classifications used in Europe and the United States. As the fifth column of Table 6 shows, the 2017/2018 European survey followed the example of the Canadian

survey in several respects: it split the core business function into goods and services, and R&D/engineering function into R&D and engineering (as had the 2007 survey).