Part III GVC Framework for integrated business statistics

Contents

A. The global enterprise perspective

1. Global enterprises are multi-national enterprises with a global reach. They organize and coordinate their production activities and other business functions among various suppliers across the world and may have different ownership and control relationships with different suppliers, which themselves may have other suppliers with different ownership and control relationship. In general, a global enterprise is the ultimate investor and controls the GVC. This means that a global enterprise is a lead firm within a specific GVC. A global enterprise could have a number of different and important business lines. This means that such enterprise could be a lead firm for GVCs for different specific industries. Therefore, business, trade and investment data would need to be collected at the analytical statistical unit of the business line of a global enterprise to allow for the correct data specification of the industry specific GVCs controlled by the lead firm.

2. Business lines are characterized by a sequence of business processes that brings a product from its conception to its final consumers. Describing the various business lines is an integral part of the profiling the enterprise. and for which data is collected for each business lines separately. For instance, Philips N.V. is known for its consumer electronics, but also produces medical devices as a second line of business; Unilever is known for producing food items, but also for non-food products such as toothpaste, shampoo, soap and detergents.

3. For each line of business, the enterprise needs to invest in R&D, set up production processes and services for engineering and testing, and have dedicated marketing, sales and after sales. The enterprise may further have ICT services, logistic and transportation services and administrative functions, which it shares across a number of business lines. These business functions can be divided into core functions and support functions, of which core business functions are activities of an enterprise yielding income, and support business functions, which are carried out by the enterprise in order to permit or to facilitate the core business functions. A distinction has to be made between production units which undertake support business functions for own use (in the one or more industry specific core functions) and for sale in the market or for third parties.

4. Based on its industrial strategy and financial and tax planning considerations, a global enterprise defines a business model of where to allocate the different types of activities and transactions domestically or internationally and either within or outside the enterprise group. Business models can be classified into three different types: divisional, functional and complex-matrix. In the divisional model each business line is organized as a specific entity that includes all the related business functions. In the functional business model, business lines and the related business functions are split in different organizational entities in order to maximize the benefits that specialized, independent and supporting business functions can provide to business lines. The complex-matrix business model combines the two approaches in a flexible way. This mixed type of business model is most commonly adopted by global enterprises in both developed and developing countries.

5. The statistical relevance of the specific business model adopted by a global enterprise is twofold. First, it provides guidance to better understand the way enterprises tend to arrange their activity in a country based on the set up of legal entities. Second, it is crucial to understand the availability of economic variables based on financial or managerial accounts held by the legal entities that are influenced by the specific business model adopted by the enterprise.

6. In order to operate a business in a country as an affiliate of the global enterprise, a new resident legal entity needs to be established. Such legal entity can assume different forms: a foreign affiliate, a branch or a special purpose entity. The adoption of a specific form of legal entity depends on national regulatory environment and is sensitive to financial and tax planning motivations. The statistical implications in terms of availability of data are quite different, since only in the case of foreign affiliate the full set of variables included in the financial statements is usually available, while in the case of a branch a more limited set of business data is usually available. Special purpose entities are entities that have little or no physical presence and no significant production activities and provide supporting functions in terms of administrative, financing and insurance services. The latter institutional units present relevant challenges both in terms of effective residence of the activity in the country and availability of business data.

7. In the case of the divisional model, the global enterprise tends to establish a single legal entity for each business line in every country where it operates. This legal entity usually assumes the form of

resident-corporation under the control of the global enterprise and includes all the business functions associated to the business line. This legal framework is replicated for each different business line, which is created by the global enterprise in the host country. By contrast, in the case of the functional model, legal entities are set up for each business function, which would support the various business lines in the host country in a consolidated manner. Finally, in the case of the complex-matrix business model, a specific legal entity is set up for each of the business lines as well as the business functions that are considered relevant by the global enterprise.

8. The high fragmentation of activities in a large number of legal entities, and their instability over time, generate statistical problems in terms of data collection, and the accuracy and consistency of statistical figures. Fragmentation and changes in the legal entities may cause problems in updating information statistical units in the business register, which impacts the quality of business data for short terms indicators, and in targeting the data collection for the structural business survey.

9. Industrial strategy of the global enterprise tends to be quite stable over time in terms of business lines and business functions carried out in a country. A better understanding and tracking of the industrial strategy and the business model of the global enterprises can improve the updating of the business register, and improve data collection strategies as well as the overall consistency of official figures across different statistical domains.

10. Business data could be collected from financial statements or from managerial reports. Financial statements are usually available at the legal entity level and are written for external reporting purposes, while managerial reporting (internal reporting) is usually organized by business processes. Therefore, managerial reporting is more important as a source for high quality information from the global enterprise for statistical purposes.

11. IT solutions may assist to reconcile and integrate external reporting with internal reporting Enterprise resources planning (ERP) software incorporate the key business functions of an organization with full scalability of the business data process from internal reporting to financial statements. International accounting standards, such as the consolidation of corporate financial accounts according to the International Financial Reporting Standards (IFRS Standards), not only provide a common global language for business affairs, but also ensure that company accounts are understandable and internationally comparable. These accounting standards also provide guidance for the data collection from global enterprises, such as the accountability of international transactions in goods, services and intangible assets. In addition, the reporting based on the international accounting standards also result in high quality data on key financial variables broken down by business lines and economic jurisdictions.

12. In order to fully exploit the informative potential of those internal and external business accounts based on international accounting standards, national statistical authorities have to closely engage with the global enterprises, while at the same time strengthening their capability to classify, analyze and integrate those data in standard statistical processes.

B. Classification of business lines and related business functions

13. The business statistics framework introduced in this Handbook integrates the business models and business accounting schemes concretely adopted by global enterprises in their day to day activities. As such the enterprise activities can be broken down first by business line and then then by the supporting business functions, which together define the business process. Each business function of a business line can be carried out inside or outside the global enterprise, and be either in the resident country or abroad.

14. The starting point of this approach is the business line, which consists of the production of a specific group of goods or services. According to the principles of international accounting standards, a business line is characterized by well-defined information systems of costs and revenues and is related to the industrial strategy of the enterprise. It is also characterized by a dedicated internal information system for the monitoring of the company's economic performance, and is related to a decision centers that have a certain degree of independence over budget and production –related decision.

15. The proposed classification framework can be used to classify business processes carried out by the global enterprise independently from the organization of its legal entities. This approach is flexible across different business models and is relatively independent of changes in the structure of legal entities of the enterprise. However, enterprises can adopt different criteria in defining their business lines. They can use a production process, a technological or client portfolio, or a geographical market segmentation, as relevant criteria, including a combination of them. <to be elaborated>.

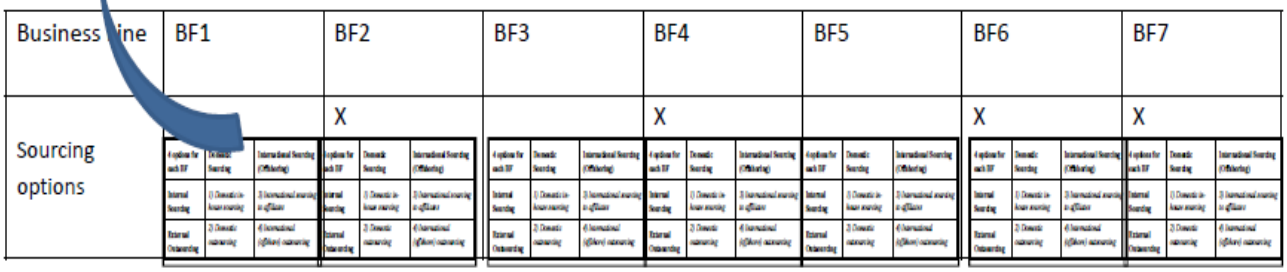
16. The classification by business processes allows for a better understanding of the international flows in goods, services and intangible assets either intra or extra group. Mapping of each business process with a breakdown by location, markets, and ownership linkages will allow for the classification of complex operations including the concentration of business functions in global or regional hubs.

C. Business Functions and sourcing arrangements

17. Lower trade and investment barriers, liberalized domestic markets, sharp reduction in transportation, and communication cost, allowed the unbundling and geographical dispersion of value chain activities. Digitization and technological development coupled with new institutional environment allowed the domestic enterprises to increasingly organise their business processes globally, breaking up their business processes in distinct business lines and functions of which the goods and services are supplied by a growing number of affiliate and non- affiliate firms either within or outside the national economy. International sourcing of business functions is a key feature as global enterprises in the industrialised economies increasingly optimize their production processes globally.

Figure 1: Business lines broken down by business functions and sourcing arrangements

4 options for each BF	Domestic Sourcing	International Sourcing (Offshoring)
Internal Sourcing	*1) Domestic in-house sourcing*	*3) International sourcing to affiliates*
External Outsourcing	*2) Domestic outsourcing*	*4) International (offshore) outsourcing*



18. Business functions can be sourced domestically or internationally, and be sourced within the enterprise through affiliates or outside the enterprise by non-affiliated enterprises. In addition to producing the goods or services from which they earn their revenues, enterprises require a variety of service functions to support their core line of business. Business functions can be viewed as an aggregation of certain supporting tasks carried out by the enterprise. They are equally applicable to goods-producing and services-producing enterprises. The concept of business function is similar to the concept of occupation, but is focused on business activities rather than the activities of individual workers. A specific business function will typically involve a range of job categories and tasks.

19. The concept of business functions can be described by nine generic business functions: R&D, design, production, marketing and sales, distribution, customer service, firm infrastructure, human resources, and technology development. For the purpose of statistical surveys, business functions can be defined in terms of international product classifications such as the Central Product Classification (CPC). However, since any product of a business function like manufacturing services, engineering services, etc. can be the main output of an enterprise for the market of third party, the producers of the business functions can also be classified through its primary product to an industrial activity (industry) codes such as ISIC.

20. . The core business function of the global enterprise represents the revenue-producing activity of the enterprise and will in most cases equal the main economic activity of the enterprise. It includes production of goods or services intended for the market or third party. The core function may also include other (secondary) revenue generating activities if the enterprise considers these to be part of the core

business function. Support business functions (i.e. ancillary activities) are carried out in order to permit or facilitate production of goods or services, but are not themselves sold directly for the market or to third party. The latter functions do not directly generate revenues, but only costs. However, the cost and quality of support functions can make important contributions to the competitiveness of enterprises. Annex 1 shows the changes made over time in the Business Functions surveys carried out in Europe and North America.

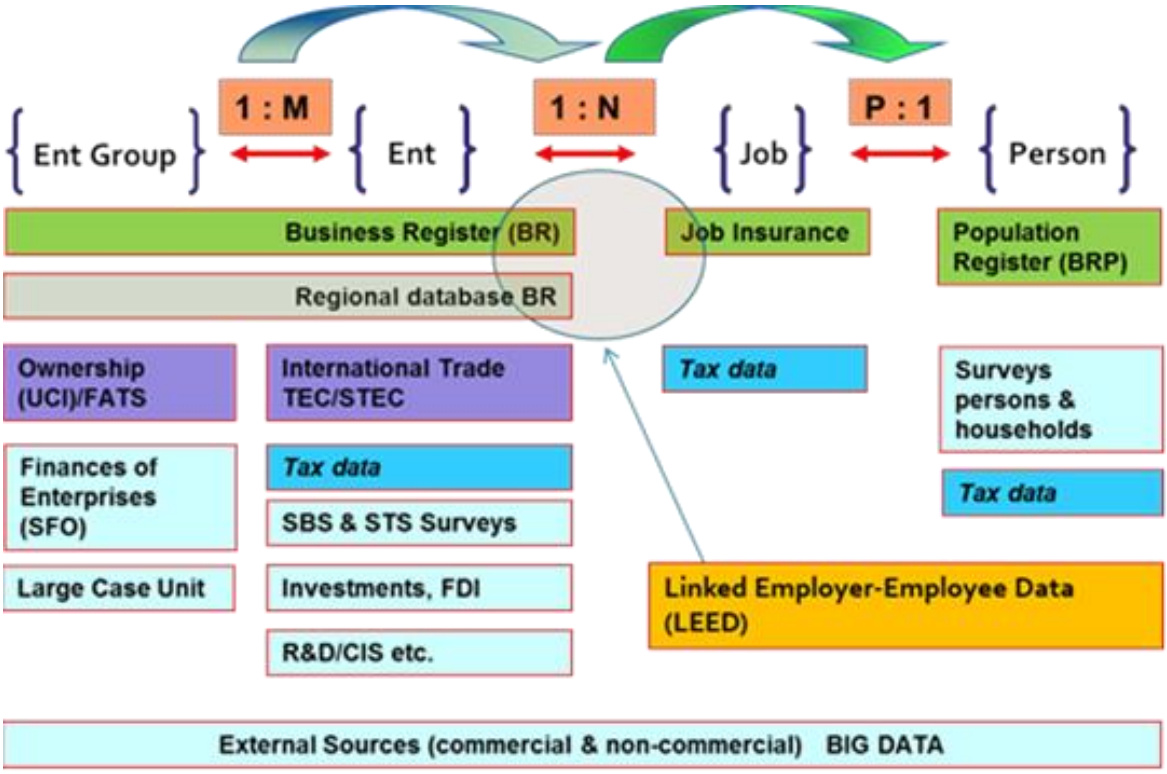
D. Micro Data Linking, data exchange and data linking

21. The trade in goods statistics by enterprise characteristics (TEC) are developed to compile indicators of globalisation by linking two major statistical domains which have traditionally been compiled, structural business statistics and international trade in goods statistics. Specifically, TEC answers questions such as what is the share of small, medium and large-sized enterprises in total international trade? However, to answer globalization more comprehensively, these globalization statistics have to be complemented with GVC related statistics so as to describe the relationships in specific GVC industries of the impact of a change in demand for a final product on other countries that provide the intermediate goods and services in the value chain. Fully understanding the nature of GVCs and global dependencies requires an integrated global view of production and consumption for specific GVC industries.

MDL is an appropriate statistical instrument for measuring the production arrangements of the global firm in industry specific global value chains. Micro Data Linking (MDL) is the combining of micro data on entities such as enterprises, jobs and persons. MDL has become an important cornerstone in the production of new statistics, both for national and international purposes, and is now also widely acknowledged as a strategic activity to reduce respondent burden. MDL can assist in answering questions on the domestic and cross border interconnectedness of the firm network and its consequences for jobs, income and growth. At national level, it can help to analyze job dynamics, income and welfare for its citizens. MDL also supportsanalysis of both firm and employee characteristics, which allows for improved understanding of the social implication of increased international trade, of outsourcing and off-shoring of business functions, and of growing foreign direct investment flows that imply that locally operating firms are increasingly owned, controlled and managed by foreign enterprises. The creation of a linked employer-employee dataset (LEED) primarily involves the integration of a wide variety of variables on employees and labour force with the statistical business register that provide for firm-level variables, such as foreign ownership, production, turnover, innovation, investments, or trade. The actual organisation of LEED databases depends on the national system(s) of the data collection (preferably based on unique identifiers) and the availability of administrative registers.

22. .

Figure 2. General MDL Model used at Statistics Netherlands



23. Direct access and data sharing of micro data at international level has proven to be limited due to strict privacy and confidentiality laws governing these data. Instead, the so called co-ordinated microdata linking or distributed micro data research approach has been used in most business statistics related MDL projects in order to compile international comparable statistics on economic globalisation. It requires central coordination of the data base construction, the analysis and publication respecting subsidiarity and national legislation. A typical co-ordinated microdata linking is carried out in three separate phases:

i. The first phase involves the construction of the linked micro dataset. The project coordinators produce standardised guidelines explaining in detail how the datasets in each participating country are to be structured and provide a common code to ensure that identical tables are made in all countries. Each country records information from all the data sources used in the project into its own national database. These linked micro datasets are stored locally at the national statistical institutes throughout the project and are not shared with third parties.

ii. In the second phase of the project, the dataset is tested for consistency. Although each dataset being used in the project has already been carefully edited, it is necessary to carry out further checks to ensure, for example, that enterprises are represented by the same statistical units across different datasets and over time, as the reporting units used for specific enterprises can, and often do, differ across the data sources in each project. In fact in all business statistics projects many differences are found and corrected. Tests used in this phase of the projects are devised by the project coordinators and implemented locally by the national statistical institutes.

iii. In the third phase of the project standardised statistical output is created in each country consisting of descriptive and longitudinal analysis. Sometimes more sophisticated statistical methods are used.

24. An important application of co-ordinated microdata linking or distributed micro data research approach in GVC measurement is the determination of a complete and accurate picture of the activities of MNEs within the national borders. The first priority is to compile nationally consistent data on large MNEs. Next, there is a great value in sharing data even at the aggregated level. In addition, statistical offices need to find solutions for sharing granular data as long as confidentiality and trust of respondents can be guaranteed, because policy makers are asking for granular data.

25. Innovative solutions need to be developed, where data are collected once and used often for different purposes. Bringing together legal experts, IT-experts and statisticians may help to advance this work. Pilot exercises could help identifying which data should be shared internationally and how it can be done in practice. Visiting global enterprises can help to resolve inconsistencies between data from different sources. These visits may also allow for the identification and the access to business accounting data that are not collected nationally but can be retrieved from the internal and external business accounting reports across the business operations of a MNE. The cooperation would also allow clarifying how the MNE should report their data for national statistics such as for Intellectual Property Products (IPP).

26. Legal and confidentiality considerations constraint the exchange of micro-data. Especially in cases where MNE data are already publicly available, the principle of confidentiality for the exchange of micro-data may have to be amended. For example, European legislation accommodates for the possibility of transmission of confidential data both within the European Statistical System (ESS) and within the European System of Central Banks (ESCB).

27. Another way to address the legal obstacles associated with data exchange is to help countries draft legislation that facilitates data exchange. For example, it would be useful to consider an exemption to data confidentiality to allow such firm level data which are made publicly available by the respondent itself, directly or indirectly, to be considered non-confidential. This could include data published through annual or quarterly reports, if they meet the statistical definitions. These data could then also be exchanged freely among producers of official statistics.

28. It would also be useful to add a common element on the exchange of individual data between national statistical offices and possibly with their other producers of official statistics. Exchange of individual data, including identifiers, between national producers of official statistics may take place exclusively for “statistical purposes” in the respective area of competence of each producer. Use of data for “statistical purposes” should be defined as the exclusive use of data for the development, quality improvement and production of official statistics, statistical analyses and statistical services Mentioning quality improvement would be important as it is a key justification for engaging in data exchange.

E. Reconciling bilateral asymmetries

29. Whenever bilateral statistics are reported independently by national statistical offices (NSOs) in different countries on the same transaction or the same economic activity, inconsistencies can occur and will occur. Examples of bilateral statistics are international merchandise trade statistics (IMTS), statistics on international trade in services (SITS), foreign direct investment (FDI) statistics and statistics on multi-national enterprises and foreign affiliates. Underlying these international transactions and activities are specific contracts between two (or more) economic entities. In principle, the economic transaction is an agreement on a delivery of goods and services against financial compensation (or some equivalence of a financial compensation). The two sides in a bilateral transaction agree on a specific compensation between the buyer and the seller.

30. So, why would we ever end up with different numbers in the bilateral statistics of trading partners? The first reason is practical. The NSOs – in most cases – do not share the same data source to compile their national statistics. The NSOs rely on their own national Customs administration in the case of compilation of IMTS, or conduct their own surveys in case of SITS. FDI statistics are based on different administrative records or surveys.

31. In the case of IMTS, the NSO of the exporting country uses the export declarations, while the NSO of the importing country uses the import declarations. Further, the export declaration is completed by the exporting company or its agent and vice versa the import declaration is completed by the importing company or its agent. So, even if NSOs of bilateral partners source from the same kind of administration, the actual records may have been completed differently and will therefore lead to discrepancies in trade statistics. Discrepancies will of course get worse if data for the compilation of trade statistics are for one NSO coming from administrative sources and for another NSO from enterprise surveys, as is the case for SITS. Other practical reasons for discrepancies in trade statistics are due to differences in the actual classification of the traded goods on the export declaration versus the import declaration, or due to difference in the time of recording (leaving the exporting country and entering the importing country), especially for transport by sea.

32. Besides those practical reasons, bilateral asymmetries appear because of conceptual differences in IMTS, notably in the valuation, trade system and partner attribution of imports and exports. Merchandise trade imports are recommended to be valued including the charges for freight and insurance, whereas export valuation excludes both of those components. Some countries define their territory for the purpose of international trade statistics with exclusion of its own commercial and processing free zones. The most significant bilateral trade asymmetries, however, occur when a disagreement exists about which country would actually be the bilateral partner. In other words, if we want to solve bilateral asymmetries, we should make sure that we agree which two countries are the actual partners in a bilateral transaction. As obvious as that statement may sound, the concepts of international merchandise trade statistics (IMTS) contain such fundamental asymmetry in the trading partner attribution.

33. For the purpose of constructing the GVC specific multi-country SUT, bilateral difference need to be reconciled. This needs to be done for the bilateral transactions of goods and services. The following topics should be considered in the reconciliation of trade in goods:

- Partner country attribution. It is advised to use the country of consignment principle to reconcile a difference between country of origin (at the import side) with country of destination (at the partner's export side).
- Valuation. It is recommended that both the importing and the exporting country use FOB valuation
- Trade system. Both bilateral partners should use the general trade system, or agree on which transactions should be excluded.
- Goods for processing. If an export transaction happens to be an export from an exporting country after inward processing, the export value could have been declared at factory price. The corresponding import value of the same product by the importing country could have been declared normally at market price. In such case, the partners need to agree, if the difference (which may be largely for the compensation for intellectual property rights) would need to be allocated as an additional export of services from third country..

34. Reconciliation of bilateral asymmetries in SITS and FDI will have to be studied on a case by case basis. Exchange of micro data would be certainly the best solution in all cases.

F. Building a global enterprise groups register

35. Understanding the structures, governance and business strategy of global enterprise groups is crucially important for the analysis of global value chains. The first step is identifying the firms that are part of such groups, recording their locations of operations, mapping their relationships to other firms in the group, and identifying the ultimate controlling institutional unit (UCI). A global groups register (GGR) would significantly help in showing the structures and links among enterprises in different countries and would indicate how control is exercised throughout the global value chain.

36. The aim of the GGR project is to register as much information as possible on all multinational enterprise groups worldwide and to make it live, dynamic and freely accessible to the public. The following statistical units and their characteristics should be included in the GGR:

- legal units: identity, demographic, control and ownership characteristics;
- enterprises[1]: identity and demographic characteristics, activity code (NACE), number of persons employed, turnover, institutional sector;

[1] According to the ISIC definition "*an enterprise is a legal unit (or the smallest set of legal units) producing economic goods and services with autonomy in respect of financial and investment decision-making, as well as authority and responsibility for allocating resources for the production of goods and services*". http://unstats.un.org/unsd/cr/registry/isic-4.asp.

- enterprise groups: identity, demographic characteristics, the structure of the group, the group head, the country of the global decision centre, activity code (NACE), consolidated employment and turnover of the group.

37. The GGR is likely to be located on a global platform with inputs from many sources. It could be hosted on the global platform for data collaboratives under the Statistical Commission2. This is a platform for collaboration and use by the global statistical community. The access and use should be controlled, but open, as any sort of systematic collection and updating of data for this register will need the input from many interested parties.

38. The GGR is likely to grow organically depending on opportunities and interests of different groups. Those interest groups will partly come from the community of official statistics, but could come as well from a multitude of associations (i.e., public, private and civil society). It is envisioned that a collaborative effort among public and private sector partners will take place, including input from large MNEs themselves. Benefits of cooperation for the MNEs would be that they are offered the platform to showcase their efforts on social responsibility towards achieving the Sustainable Development Goals. Many large companies see social responsibility as part of their branding. The benefit for the statistical community is getting insights into the supply chains and the company structure.

39. Some specific information on large MNEs could be collected in the framework of the international work on GVCs, in which very specific information about a certain sector and for a certain region is being gathered (e.g. North American Automotive industry). Not all industry sectors for all regions of the world will be systematically covered. Some relationship information could also be collected through direct contact with MNEs in the framework of international profiling.

[2] https://unstats.un.org/unsd/statcom/48th-session/documents/BG-3d-global-platform-for-data-services-applications-E.pdf

Annex 1: Business Functions surveys

2007 International Sourcing (Eurostat)	**2012 International Sourcing/Global Value Chains Survey (Eurostat)**	**2010 National Organizations Survey (USA: Brown and Sturgeon)**	**2009/2012 Survey of Innovation and Business Strategy (Statistics Canada)**	**Proposed Business Function List**
1 core and 6 support functions	**1 core and 5 support functions**	**1 core and 7 support functions**	**2 core and 12 support functions**	**2 core and 10 support functions**
Core business function	Core business function	Primary business function	Provision of goods Production of services	**1. Core business functions** 1.1 Production of goods (for the market or third party) 1.2 Provision of services (for the market or third party)
Distribution and logistics	Distribution and logistics	Transportation, logistics, and distribution	Distribution and logistics	**2. Transport, logistics, and distribution support functions**
Marketing, sales and after sales services including help desks and call centers	Marketing, sales services and after sales services, incl. help desks and call centres	Customer and after-sales service Sales and marketing	Call centers and help centers Marketing, sales and after sales service	**3. Marketing, sales, after sales service support function**
ICT services	ICT services	Information technology systems	Data processing Software development Information & comm. Tech. (ICT) services	**4. IT services and software support functions** 4.1 IT Services 4.2 Software services *Note: telecommunications no longer included*
Administrative and management functions	Administrative and management functions	Management, administration, and back office functions	Legal services Accounting and book-keeping Human resource management Financial management	**5. Management, administration, and back-office support functions**
Research & Development	R&D, engineering and related technical services	Research and Development of Products,	Engineering and related technical services	**6. R&D, Engineering and related technical services and R&D support**

Engineering and related technical services		Services, or Technology	Research and development (R&D)	**functions** 6.1 Research and development services (R&D) 6.2 Engineering and related technical services (except R&D)
Other	Other	Facilities Maintenance Other	Other	**7. Other business functions** **7.1 Maintenance and repair services** **7.2. Education and training** **7.3 Other**