7 e-Commerce

7.1 Domain description

The growth of business to consumer and, in particular, of business to business commercial transactions over the Internet is bringing about important changes, which are represented by the emergence of new products and services, new delivery methods, innovative business processes and new business organisations. Due to the pervasive nature of such changes, the electronic revolution in commerce is strongly affecting the performance of the economies as a whole and, at the same time, is having important effects on the socio-political context of different countries. As a consequence there has been a growing interest among academic researchers, statistical agencies and policy makers in recent years towards the way in which electronic commerce can be measured, which has in turn raised relevant issues concerning the notion of electronic commerce itself.

The existing theoretical approaches that aim at assessing electronic commerce from a quantitative perspective vary substantially across different studies and these differences are mainly attributable to the lack of a common definition. SIBIS adopts the OECD approach, which is quite flexible, in that it involves two definitions of electronic transactions. These definitions are based respectively on a narrow and on a broad notion of the *communications infrastructure*. According to the narrow definition, an Internet transaction is the sale or purchase of goods or services, whether between businesses, households, individuals, governments and other public or private organisations, conducted over the Internet. According to the broad definition: an electronic transaction is the sale or purchase of goods or services, whether between businesses, households, individuals, governments and other public or private organisations, conducted over computer-mediated networks.

Along this line, the focus of the analysis should be on the most developed and largest markets for electronic transactions: business-to-business, business-to-consumer, and business-to-administration (government). The attention in SIBIS is on the first two of these categories. Businesses can act either as sellers or as users of products/services, in which case we talk about electronic procurement. This definition implies that the simple process of gathering information does not constitute alone electronic commerce: in order for electronic transactions to take place, it is necessary that at least the purchasing/ordering step is carried out. However, in the design of a comprehensive measurement framework, it is important to consider also the processes of delivery, payment and customer support, as long as it is possible to develop useful and appropriate indicators for these functions.

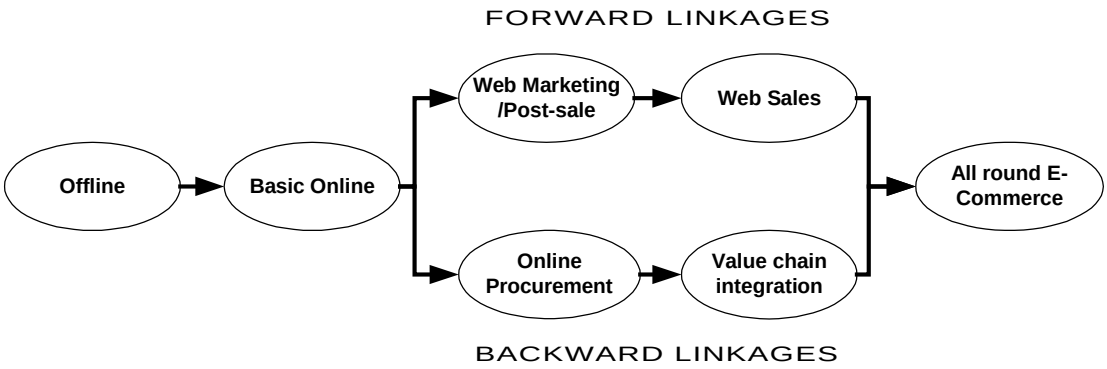
7.2 Description of major problems and gaps in statistical coverage

The existing literature on e-commerce tends to integrate two major objectives. On the one hand, it focuses on a quantitative dimension, i.e. the measurement of electronic commerce (for which different working definitions are being used). On the other hand, it concentrates on a qualitative dimension, i.e. the analysis of the impact of this phenomenon on the social and economic systems.

In consideration of the development of innovative indicators for the assessment of electronic commerce, it is worth remembering some features of electronic commerce that help identify an appropriate set of measures for its evaluation. First, electronic commerce is not an insulated phenomenon, but it constitutes an important manifestation of the wider process of digitalisation of the economy as a whole. This means that it is advisable to consider the measurement of electronic commerce as a crucial step in the path of measuring the digital economy and that therefore the design of the evaluation framework should be modular and expandable, in terms of the underlying conceptual model and indicators. Second, electronic commerce is not simply a technological system that must be implemented, but it involves the interplay between technology and business. Electronic commerce concerns the development of electronic or on-line services and the consequent changes needed to make this possible in business processes and organisation networks. Within this context, ICT play an important role

as enablers of electronic transactions. Third, electronic commerce drives a process of value chain deconstruction and reconstruction, since most components of the business functions can be organised to a varying extent by electronic means. The implementation of electronic commerce applications can be seen as a process of dismantling and reforming (in different and innovative ways) the existing value chains, so that some links will remain the same, some intermediaries will disappear, while new agents will emerge. As a consequence, electronic commerce leads to the development of new business models, which will all differ in terms of the business processes that can be conducted electronically and in terms of innovation. This phenomenon often requires substantial organisational adaptations and learning.

According to the OECD methodology, we identify three areas of electronic commerce measurement - readiness, intensity and impact - which refer respectively to the enabling conditions (infrastructure and human resources) for the implementation of electronic commerce, to the magnitude and characteristics of electronic transactions and to the social and economic impact of this phenomenon. Readiness indicators are largely available across different studies and the geographical coverage is quite extensive. The suggestions for the development of innovative indicators in this area will be directed at generating composite indices of readiness. Intensity indicators have just recently emerged and have usually been proposed by country-specific statistical documents. Some gaps exist in this area, particularly with reference to the need of gathering information on qualitative issues such as the purchasing behaviour of consumers and the characteristics of on-line businesses, as well as on the differences between electronic and traditional economic transactions. There is also a lack of data which can show how e-commerce-related business activities diffuse inside of companies. Such data is of high importance for policy-makers as they need to know for which stage of diffusion companies (especially SMEs) are in most need of political support. The figure below shows the SIBIS e-business development model -- every company can be assigned to one of the e-business types in the model[1]. Data for this typology will be collected by SIBIS on a pilot basis.



Many gaps in available statistics refer to the impacts of electronic commerce and this is due partly to the early stage of development of electronic commerce across European countries and partly due to the intrinsic complexity of measuring the effects of this phenomenon on consumers and businesses, and on the economic/social context in which these agents operate. SIBIS proposes first steps towards gathering data on impact indicators using the tools for data collection which are available to the project, i.e. surveys of decision makers in establishments as well as consumers.

The structure of indicators as indicated in the table below follows the distinction between the two types of stakeholders that are relevant for the survey - the general population (consumers in B2C e-commerce) and establishments (supply in B2C e-commerce and supply as well as demand in B2B e-commerce).

[1] The figure shows the "ideal" diffusion path of e-business inside of companies, without proclaiming that such a sequence is the only possible one.

7.3 New indicators overview

The theoretical background for the development of innovative indicators for electronic commerce, from which the basic framework of analysis in terms of object and methodology was derived, is based on the literature analysis which covered scientific sources as well as key policy documents and statistical publications. This work enabled the project to identify the most important gaps in data coverage, which form the starting point for indicator development in SIBIS. The following list contains a selection of the level-1 indicators, many of which are being piloted through the SIBIS general population and establishment surveys. A central

Thematic Domain	Sub-domain	Selected new level 1 indicators	Piloting in SIBIS
Technology readiness and ICT penetration	establishments	Ÿ Use of ICTs	SIBIS DMS
		Ÿ Existence of a website	SIBIS DMS
		Ÿ Purposes of website presence	SIBIS DMS
		Ÿ Breadth of access - share of office workers with access for e-mail/ Internet/ Intranet	SIBIS DMS
	consumers	Ÿ Use of ICTs	SIBIS GPS
		Ÿ Intensity of use of e-mail and Internet	SIBIS GPS
Barriers to e-commerce	establishments	Ÿ Perceived barriers to e-commerce	SIBIS DMS
		Ÿ Perceived barriers to e-procurement	SIBIS DMS
	consumers	Ÿ Perceived barriers to e-commerce	—
E-commerce intensity	establishments	Ÿ Share of establishments according to e-commerce typology (offline; basic online; web marketing/post-sales; ...; all around e-commerce users)	SIBIS DMS
		Ÿ Scope of the website	SIBIS DMS
		Ÿ Participation in e-marketplaces as buyer/seller	SIBIS DMS
		Ÿ Geographical markets for online sales	SIBIS DMS
		Ÿ Share online sales of total sales to (a) consumers (b) businesses (c) public sector	SIBIS DMS
		Ÿ Dual-channel e-commerce: Share establishments using call center of all that sell online	SIBIS DMS
	consumers	Ÿ Scope of accessing the Internet	SIBIS GPS
		Ÿ Use of mobile commerce (online commercial transactions via mobile phone)	SIBIS GPS

Thematic Domain	Sub-domain	Selected new level 1 indicators	Piloting in SIBIS
E-commerce Impacts	establishments	Perceived impact of online selling on:	SIBIS DMS
		Ÿ (a) sales	
		Ÿ (b) costs	
		Ÿ (c) sales area	
		Ÿ (d) quality of customer service	
		Ÿ (e) efficiency of internal business processes	
		Indirect impacts of online selling on:	—
		Ÿ (a) inter firms alliances and agreements	
		Ÿ (b) development of new products and services	
		Ÿ (c) emergence of new groups of consumers	
		Ÿ Perceived impact of online procurement on:	SIBIS DMS
		Ÿ (a) costs	
		Ÿ (b) stock-keeping	
		Ÿ (c) number of suppliers	
		Ÿ (d) relations to suppliers	
		Ÿ (e) efficiency of internal business processes	
		Indirect impacts of online procurement on:	—
		Ÿ inter firms alliances and agreements	
	consumers	Ÿ Benefits of use of Internet (Hypothetical effects of not having access to the Internet)	SIBIS GPS
		Ÿ Consumer satisfaction with online purchasing	—
		Ÿ Substitution (types of products and services that could be purchased exclusively online)	—

The next step will include the development of composite indices, making use of data derived from our own surveys as well as from third sources, as appropriate.