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Summary of the study plan for sector reports

The Study Plan implements the conceptual building blocks presented in the methodology paper. The plan consists of three parts which are carried out sequentially.

STAGE ONE: Value Chain Mapping

Stage One of the research focuses on describing the characteristics and dynamics of the value chains that have been selected in each sector. The term ‘value chain’ is used primarily as a device to direct attention away from the purely logistical aspects of supply chains and toward the transaction structure of a sector. Transaction structures relate to the transfer of *value* in a market place. For this reason, *value chains* must be identified for specific products or product areas in different sectors. In practice, the value chain and supply chain are often identical and the production of most goods and services involves access to *several supply chains*, often in different economic sectors. The value chain mapping procedure has two components:

1. A general description of the industry and market structures and trends that are relevant to the chosen sector.

Background information is required about such structural matters as the number of firms in the sector, the concentration or distribution of economic activity, the size of firms in different production tiers, barriers to entry, stability of relations between firms, special national conditions or considerations, and so forth. Information is required also about significant trends in the sectors such as internationalisation, industry restructuring, etc.

2. A detailed description of the value chain structures that are relevant to the chosen sectors (see Figure 3 in the summary of the Methodology) such that:

- all of the major inputs and outputs are captured (focussing on the selected products to which the value chains apply)
- a representative selection of large and small firms that participate in the sector is encompassed for the purpose of conducting the survey
- the most important linkages with other sectors are included.

The value chains will be constructed in enough detail to identify and describe the characteristics of:

- the production tiers and the supply chain relations for each tier
- the marketplaces in which goods and services are exchanged between tiers
- the intermediaries which operate in the relevant marketplaces.

STAGE TWO: Field Research

The objective of Stage Two is to gather information directly from proactive firms, and from a selection of their main suppliers and customers, about where, why and how they are engaging in electronic commerce. Changes in business structures and practices of major proactive actors in a given marketplace has substantial potential to influence the evolution of buyer-seller relationships throughout the value chains in which they participate.

1. Sample Selection

Once sectors have been chosen, the methodology requires the selection of a core group of proactive firms in each sector. Ideally, there should be a minimum of three and a maximum of five firms in each core

group. This range may be expanded or enlarged, however, depending on sector characteristics and national conditions.

The behaviour of proactive firms with respect to electronic commerce will then be assessed through desk and interview-based research. In the process of interviewing each of the core group of firms, a second group of firms will be identified which are suppliers and customers in specific value chains of each firm in the core group of proactive firms. These suppliers and customers will then be surveyed by telephone, using the same research protocol that was applied to proactive firms, but in less depth or detail. This second set of interviews explore how suppliers and customers respond to the electronic commerce activities of each proactive firm.

It is important that the firms selected for interview be as representative as possible of the e-commerce activities in the value chain. In some cases, most or even all of the proactive firms may be concentrated in one particular tier. In other cases, they may be distributed widely throughout the chain. The selection of the core group of proactive firms and the second group of supplier and customer firms must be made in order to ensure that there is a reasonable description of network relations between firms that covers as much of the value chain as possible.

2. Background Information

Background information should be compiled for each firm in the core group of proactive firms and the second group of firms formed by a selection of suppliers and customers of the proactive firms. Background for the second group need not be as comprehensive as for the proactive firms. Background studies can be carried out by desk research using publicly available information on individual firms and on sector characteristics and performance.

The position of the firm in the value chain - With reference to the value-chain maps as developed in Stage One, this area is designed to build up a comprehensive picture of how a firm relates to its various competitors, customers, suppliers and intermediaries in a given value chain. As much quantitative information as possible should be collected on the following:

- number of people employed nationally and world-wide
- domestic and world-wide revenues
- number of countries in which the firm has subsidiaries
- number of suppliers and customers, either directly or through intermediaries
- number of intermediaries (*as purchasers and/or sellers*)
- distribution of main suppliers by size (*Very small <10 empl.; SME's <250 empl.; Large enterprises >500; Public administrations; individuals*)
- distribution of main customers by size (*Very small <10 empl.; SME's <250 empl.; Large enterprises >500; Public administrations; individuals*)
- percentage of suppliers and customers based abroad
- number of firms that have recently entered and/or exited the market.

Business profile of the firm – What are the main factors influencing the firm's business processes?

- factors related to product characteristics (*e.g. digital or material*)
- factors related to the characteristics of the transaction structure (*e.g. negotiation or routine, importance of proximity to customers, nature of logistical requirements*)
- factors related to the business structure (*e.g. business model, internal and external business processes*)
- factors related to production inputs (*e.g. factor dependencies*).

Technology profile of the firm – This part relates to the type of technology used (or planned to be used in the future) by the firm to conduct electronic commerce or to support related business functions.

- types of transactions or related business functions with customers or suppliers supported by electronic commerce applications (*e.g. advertising, catalogues & stock lists, information services, negotiation, ordering, billing & payment, finance, delivery, capture of transaction information, management of transaction information, market analysis, market development*)
- types of computer-mediated networks or applications used to conduct or support business functions with suppliers or customers (*e.g. EDI, EDI over Internet, Videotex (Minitel), E-mail, WWW, Extranet*)
- migration from one technology to another for specific business functions
- main reasons for migrating or not migrating to a different type of technology
- relationship between the type of computer-mediated networks or applications used and the characteristics of customers or suppliers (*e.g. size, structure, sector*)
- relationship between the type of computer-mediated networks or applications used and the location of customers or suppliers (*e.g. domestic or abroad*)

3. Interviews

Interviews are conducted in a semi-structured format using a common interview protocol. The interview structure comprises three main question areas. In each question area, interviewers should apply the following principles and procedures:

- This study uses a specific broad definition of electronic commerce - *the application of information and communication technology to any of the activities involved in making commercial transactions*. This definition should be clarified with the interviewee at the contact stage.
- Provided that all of the topics and subjects on the checklist below are covered, research teams may adjust the interview strategy and tactics as appropriate according to field conditions in different firms, countries and sectors. It is not necessary to cover the topics and questions in the order below. Researchers should conduct structured in-depth interviews and engage interviewees in a conversation mode.
- During and following the interview, the interviewer should take care to check that all required topics have been touched upon, and must remember to ask for quantitative information wherever possible. Follow-up contacts may be necessary if significant gaps are left.
- For proactive firms, researchers will explore each of the topics and subjects in as much depth as possible. For firms in the group of suppliers and customers of the proactive firms, researchers will use the same basic protocols, but the issues will be explored more selectively, guided by information gathered from the proactive firms.
- Each interview will refer throughout to the main markets for the main products or services to which each value chain refers. These products or services must be defined clearly before starting the interview.
- Many firms will be part of multinational enterprises. During the interview, responses should be solicited always from the perspective of the firm being interviewed, irrespective of its position or role in any larger enterprise group. In order to avoid confusion, the status of the firm in the enterprise as a whole should be clarified before starting the interview (i.e. national subsidiary, independent firm etc.)
- In conducting interviews, researchers should be aware that firms can use several different e-commerce systems, often depending on whether they act as a seller or buyer. The management of different systems can be entirely separate - firms might be proactive in one system but not in others. Researchers must ensure that these differences are captured in the collected data.

All interview respondents should be assured that no information collected during the study will be attributed to individuals or identified with companies without their explicit permission.

The following list of essential topics and subjects for each question area constitutes a checklist to guide the interviewer in preparing and conducting the interviews.

Motivations -What has motivated the firm to become engaged in electronic commerce? What has motivated proactive behaviour and practices? In this question area, researchers should explore:

- firm expectations regarding the effects of electronic commerce on the transaction process (*e.g. transaction completion, transaction preparation, production support functions*)
- firm expectations regarding the effects of electronic commerce on general business processes (*e.g. product innovation, process innovation, relational innovation*)
- firm expectations regarding the effects of electronic commerce on the business environment in the value chain (*e.g. market entry and exit, market organisation, supplier and customer base*).

Obstacles & Advantages - Once the decision to engage in electronic commerce was made, which factors impeded progress in achieving electronic commerce goals? Which factors aided or facilitated firm efforts to achieve electronic commerce goals? In this question area, researchers should explore:

- factors relating to the telecommunications infrastructure (*e.g. costs, reliability and flexibility of telecommunications networks*)
- regulatory factors (*e.g. transaction security, authentication and certification, legal structures, protection of intellectual property*)
- internal factors (*e.g. available computer technology, skills and training issues, investment and life-cycle costs of electronic commerce systems, management attitudes*)
- external factors relating to relations with other enterprises (*e.g. human factors, competition between transaction systems, brand image, existing commercial relations*)
- strategic factors relating to competitiveness (*e.g. implementation of lock-in strategies, cost of reaching customers or suppliers, intermediation, supplier and customer management*)
- government policy (*e.g. R&D or diffusion support, awareness raising programmes, training programmes, government on-line service provision*). In addition, researchers should ask the firm's view on which would be the most useful measure the government could take to stimulate the uptake of electronic commerce?

Impacts - Which outcomes can be significantly or uniquely attributed to the involvement of the firm in electronic commerce? Researchers should endeavour at all times to procure specific quantitative measures, or qualitative determinations of impacts of the following:

- electronic commerce on business functions related to the transaction process (*e.g. transaction completion, transaction preparation, production support functions*) along with the benchmark and/or metric by which the impact can be demonstrated.
- electronic commerce innovations on general business processes (*e.g. product innovation, process innovation, relational innovation*) along with the benchmark and/or metric by which the impact can be demonstrated.
- electronic commerce on the business environment in the value chain (*e.g. market entry and exit, market organisation, supplier and customer base*).
- In addition, researchers should try to find out as much information as possible about what gains or losses in employment, turnover and profitability can be uniquely or significantly attributed to electronic commerce.

Finally, firm-level case study data collected in Stage Two (and entered into the data reporting sheets) is summarised and synthesised for each proactive firm using the analytical grid format as shown in Figure 7 of the summary of the Methodology.

STAGE THREE: Analysis

Stage Three involves the following:

- knowledge gained from the firm-level case studies is modelled conceptually with reference to the value-chain maps as assembled in Stage One.
- results of Stages One and Two are checked through consultation with representatives of firms participating in the study, and external experts.
- finally, once the results from the firm-level case studies are analysed, a wider analysis of the sector as a whole is undertaken.

The objectives of Stage Three are to present the research findings from proactive firm case-studies so that they indicate significant changes in the structure and operation of value chains. They are intended to show general patterns and trends in the evolution of electronic commerce in the selected sectors.

The basic approach adopted here employs the grid format as shown in Figure 7 of the Summary of the Methodology, which relates selected business functions with different types of electronic commerce innovations. Depending upon the results for specific firms in each sector study researchers can revise or expand the grid nomenclature according to the principles laid out in the methodology paper.

A major aspect of Stage Three is to demonstrate how the dynamics of electronic commerce as indicated in the proactive firm case studies relate to the value chain as a whole. That is, to relate changes in technology, business practices, industry organisation and market structure to the environment (or environments) in which specific types of commercial exchanges take place and to map these into changes in the sector value chain as a whole. Forward-looking scenarios can also be built.

Suggested structure of sector reports

A sector report of the firm-level case studies will contain four main sections which coincide with the structure of the data reporting sheets and synthesises the outputs of Stages One, Two and Three:

1. Introduction and background
2. Value chain analysis (incorporating Stage One outputs)
3. Case study presentations (incorporating Stage Two outputs)
4. Modelling and exploratory scenario building (incorporating Stage Three outputs).

In order to facilitate comparison of the reports prepared in all participating countries, researchers must adhere as far as possible to this report structure. In addition, report writers should avoid vague descriptions and always use statements that can be backed up with quantitative or qualitative evidence.

Section One - Introduction and background

Section One comprises a concise description of the sector and product areas chosen for study, along with the reasons for these choices and a general description of the national and international environment in which the chosen sector operates.

Section Two - Value chain analysis

Sub-section 1 - Product and transaction characteristics

Describe each sector in terms of transaction and product characteristics (as laid out in Figure 6 in the methodology paper):

- dominant characteristics of the product group (i.e. 'digital' or 'material')
- dominant characteristics of the transaction structure (i.e. 'negotiation' or 'routine').

Sub-section 2 - Value chain characteristics

Describe the following characteristics of the value chain(s) for each sector:

- production tiers and supply chain relations for each tier
- marketplaces in which goods and services are exchanged between tiers
- intermediaries operating in relevant marketplaces
- key transaction points in each relevant marketplace

Sub-section 3 - Dynamics and trends

Describe main conditions, dynamics and trends of the selected value chain(s):

- in general terms (e.g. structural pressures, internationalisation, competitiveness issues, innovation etc.)
- in particular, regarding ICT and e-commerce.

Sub-section 4 - Position of proactive firms in the value chain

Attention should be drawn to the business characteristics of proactive firms (functions, models, practices etc.) and any observed concentration of proactive firms in specific tiers.

Section Three - Case study presentations

Firm-level case studies will be presented based on the contents of the data reporting sheets. Each case study will summarise and synthesise the data collected.

Section Four - Modelling impacts and building exploratory scenarios

This section shows the likely implications of firm behaviour as demonstrated in the case studies for the sectors as a whole. The section summarises research findings and presents the results in the format shown in Figure 7 of the summary of the Methodology. It also sets out forward-looking exploratory scenarios for future developments.