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Handbook for the Quantitative Economic Assessment Tool

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This handbook provides a detailed description of the quantitative economic assessment tool and a guide to its use by producers involved in SFSCs. The handbook presents both the full and the simplified versions of the tool.



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1. Introduction

The present quantitative economic assessment tool aims at identifying and estimating the value of inputs used (costs) and of products sold (revenues), for both SFSCs and benchmark longer/conventional distribution channels.

The overall objective is to reconstruct costs and revenues at each link in the value chain, for both distribution channels, focusing only on postharvest distribution (from farm's gate onwards), under the assumption that agricultural costs are the same no matter the distribution channel used to sell final products.

Agricultural production costs are not considered in the quantitative methodology, because they normally are not dependant from the marketing channel used. Moreover, their calculation it is normally difficult, due to lack of data and high variability.

This kind of analysis and the related data collection process can be rather difficult, due to the complexity of the subject, the informality and lack of economic and financial in many SFSCs' initiatives, and the strong interconnection between firms' multiple production processes and distribution channels, which make it hard to isolate costs related to single products and single marketing channels. This is why, to be implemented, the quantitative methodology may require the support of an expert, which explains why this document often refers to an "interviewer" guiding the producer (the interviewee) in the quantification exercise.

The full version of the quantitative economic assessment tool consists of an Excel file containing several grids designed to collect data on costs and revenues.

When the full quantitative methodology is too difficult to implement (e.g., complexity, lack of data), producers can utilize a simplified version of the tool, consisting of an Excel file with a simplified table for collecting data on costs and revenues. The simplified table allows to report data (or estimates) on costs and revenues in a more synthetic way, without the need to descend into analytical details, but providing an estimation for each cost item in the distribution process of the firm/actor interviewed.

In the sections below, this document will present and describe both the full and simplified versions of the quantitative economic assessment tool, providing a detailed guide to its use.

2. Full Quantitative Economic Assessment Tool

Sheet “1. Map of production processes”

Sheet 1 contains a map of the potential production processes activated by a producer. The aim of the map is to help the interviewee reflecting on the structure of revenues and costs associated to the main value creation processes activated by his/her firm, and to the corresponding distribution channels. This will help to better define the scope of the C&B analysis (which process/es to consider), and to become aware of the operational and accounting links between the different processes of the firm.

The map has only an illustrational purpose and does not require to be filled. The interviewer should guide the interviewee through the reading and understanding of the map, stimulating his/her reflection upon his/her own firm, before moving to the quantification of revenues and costs (sheets 2 to 3.6).

MAP OF PRODUCTION PROCESSES OF A COMPANY			
SHORT FOOD SUPPLY CHAIN Total distribution channel or relevant product A	SHORT FOOD SUPPLY CHAIN Relevant product B	BENCHMARK (SHORT/LONG) DISTRIBUTION CHANNEL Total distribution channel or relevant product A	OTHER DISTRIBUTION CHANNEL Total distribution channel or relevant product A
Value of production	Value of production	Value of production	Value of production
Specific variable costs For each step of the value-chain: - Preservation and storage - Packaging - Processing - Retail - Transportation and logistics - Administration/marketing /advertising	Specific variable costs For each step of the value-chain: - Preservation and storage - Packaging - Processing - Retail - Transportation and logistics - Administration/marketing /advertising	Specific variable costs For each step of the value-chain: - Preservation and storage - Packaging - Processing - Retail - Transportation and logistics - Administration/marketing /advertising	Specific variable costs For each step of the value-chain: - Preservation and storage - Packaging - Processing - Retail - Transportation and logistics - Administration/marketing /advertising
Specific fixed costs (e.g. specific workforce, amortization, specific machinery)	Specific fixed costs (e.g. specific workforce, amortization, specific machinery)	Specific fixed costs (e.g. specific workforce, amortization, specific machinery)	Specific fixed costs (e.g. specific workforce, amortization, specific machinery)
JOINT COSTS A+B (e.g. retail workforce, retail facilities amortization, energy, etc.)			
COMMON COSTS (e.g. workforce, tractors amortization, vehicles and trucks, etc.)			
GENERAL COSTS (e.g. managerial workforce, utilities, buildings amortization, general administrative costs, etc.)			

Each column of the map can be considered as referred to the total amount of products sold in the corresponding distribution channel, or to a single relevant product (e.g., relevant product A) representing a significant percentage of the channel’s total sales value. Multiple relevant products can be identified for the same marketing channel and are represented in the corresponding supplementary columns (e.g., relevant product B).

The scheme represents the structure of costs of the hypothetical producer, distinguishing between the following typologies:

- **Specific variable costs:** costs specifically related to the marketing of a single product or to the whole basket of products commercialised in the same distribution channel, varying according to quantities produced and sold (e.g., specific raw materials).
- **Specific fixed costs:** costs specifically related to the marketing of a single relevant product or to the whole basket of products commercialised in the same distribution channel, which are fixed regardless the quantities produced and sold (e.g., specific workforce, specific machinery, dedicated warehouses, etc.).
- **Joint costs:** costs related to the marketing of multiple relevant products commercialised in the same distribution channel (e.g., retail workforce, retail facilities, energy, etc.).
- **Common costs:** costs related to multiple distribution channels (e.g., vehicles and trucks amortization).
- **General costs:** costs related to all products and to all distribution channels used to sell resulting products.

Sheet “2. Revenues”

In this sheet the interviewer should report producer’s revenues related to the sale of products. This must be done for both the SFSC initiative and the benchmark alternative channel.

The sheet is organised to give the interviewer the possibility to choose between two different approaches, depending on the actor’s sales characteristics and data availability:

- **Single product approach:** when it is possible and meaningful to identify 2-3 relevant products in the basket of products sold in the SFSC, representing a very high percentage of total channel’s sales compared to the rest of the products, the interviewer can collect data about them (e.g., *price, quantity sold, percentage on the channel’s total revenues*) and reconstruct total channel’s revenues starting from the single product level.
- **Total channel approach:** when the mix of products sold in the SFSC is too complex, with no clearly predominant products and/or lack of data availability, the interviewer can work at channel level, collecting data on total channel’s revenues.

The same approach should be followed for both the SFSC and the Benchmark alternative channel.

Sheets “3.1 → 3.6: costs”

The set of sheets from 3.1 to 3.6 are dedicated to the reconstruction of resources employed and the related costs at the different steps of the value chain. Only sheet referring to the steps the producer is involved in must be considered and filled in. The methodology considers the following typical cost items: buildings, machinery and equipment, workforce, raw materials, energy/fuel, outsourced services/contract work, taxes, and other costs.

In this step of the methodology (quantification of costs & benefits) the agricultural production phase is not considered, under the assumption that the choice among alternative distribution channels does not influence the organization and management of the production phase in terms of cultivation techniques, decisions on varietal or animal breed, etc.

All sheets in this group are organised in the same way, and have two set of columns, one for the SFSC and the other for the Benchmark alternative channel. The interviewer can choose whether to work on:

- **A typical-day basis:** collect data on a typical day of activity (e.g., a day at the farmers' market, a round of deliveries at Solidarity Purchasing Groups, etc.) and then reconstruct annual costs by multiplying those data for the number of activities carried on during the year.
- **An annual basis:** collect data on annual costs. This approach is more convenient when the interviewer can access to the firm's financial reports or some form of accounting/bookkeeping.

Costs must be quantified for both the SFSC and the Benchmark channel, and the same approach must be followed for both channels.

Each excel sheet reports a list of typical cost items a firm usually has to face performing a specific step of the supply chain¹:

- a) **Buildings (e.g., warehouse, barn, etc.):** the interviewer should specify the amortization (depreciation), maintenance and insurance costs for the time period of reference. Where needed, specify:
 - a. The amortization, maintenance and insurance rates and quotas. Alternatively, instead of quantifying quotas and rates (computed costs) it is possible to report the actual expenses incurred (if the actual value is unknown, a percentage of the total value of the expenses can be ascribed to the underlying item and reported).
 - b. The allocation method (e.g., hours of use, km traveled, etc.).
- b) **Machinery and equipment:** the interviewer must specify the amortization, maintenance and insurance costs for the reference time period. Where needed, specify:
 - a. The amortization, maintenance and insurance rates and quotas. Alternatively, instead of quantifying quotas and rates (computed costs) it is possible to report the actual expenses incurred (if the actual value is unknown, a percentage of the total value of the expense can be ascribed to the underlying item and reported).
 - b. The allocation method (e.g., hours of use, km traveled, etc.).

Both a) and b) costs should be accounted for when they have a real incidence on the activity of the firm related to SFSC (e.g., if the SFSC represents only 1% of the total sales of the firm, and buildings are used indifferently for all the products sold, amortization of buildings may not be estimated).

- c) **Workforce:** report the total cost of labour, indicating the hourly wage rate and the amount of hours worked for the reference time period. This must be done distinguishing between *hired casual workers, hired fixed term or permanent workers, family workers*. For family workers, the opportunity cost of family labour must be considered, computed as the wage family workers would earn working off the farm.
- d) **Raw materials:** cost of raw materials used in the production process.
- e) **Energy/fuel:** cost of motor fuels, electricity, heating fuels, etc.

¹ Some sheet reports slightly different cost items, depending on the step of the value chain to which it is referred.

- f) **Outsourced services/contract work:** costs of activities and services outsourced off the firm, work carried out by contractors, and hire of machinery.
- g) **Taxes:** costs related to taxation specific to post-agricultural production phases of the value chain, excluding VAT.
- h) **Other costs:** all other costs not included in the above cost items.

For each cost item, rows can be added to include all detected costs.

For what concerns the vertical organisation of the sheets in the Excel file, each of them has 5 columns next to each cost item:

- **Column B:** the interviewer should describe and explain the nature and origin of each cost. At the beginning of the sheet, next to the name of the corresponding value chain's step (*row 5*), this column has to be filled in with a description of the phase, indicating whether it is carried on by the actor in both channels (A and B) or just in one of them, and describing significant costs' variations in the two channels.
- **Column C:** percentage of attribution of each cost to the distribution channel (A or B), that is how much each cost is related to products sold in that specific channel².
- **Column D:** here the estimated value of each cost should be reported.
- **Column E:** explanation (if needed) on how the value of each cost (in column D) was computed.
- **Column F:** here the interviewer must indicate whether each cost refers also to other stages of the value chain carried on by the same firm, and which one. This is to avoid the risk of duplicating costs, and in case of a cost that refers to multiple steps of the supply chain, this has to be indicated only once (in one single sheet).

For each cost item, it is useful to ask to the interviewee to report some description on the nature and composition of each cost and how it was calculated or estimated, to complement, better understand and explain the numerical data. Producers should be also asked to describe their production/distribution process, to understand the structure of costs and how costs might be related across different products, production phases and distribution channels.

Sheet 4. Recap Table for Costs & Revenues

The Recap table allows to group together data on costs and revenues of each single firm/actor collected in the previous Sheets, being able to compare different cost items and easily calculate profitability indicators.

The table is composed of two different sub-tables, *Table A* and *Table B*. Each table reports a list of cost items (which is the same you find in the single costs' sheets 3.1 to 3.6) and revenues, and it is organised in two columns, *Channel A (SFSC)* and *Channel B (Benchmark)*. As usual, you should compare and insert data/estimates on distribution costs and revenues for a chosen product/set of products, for both channels.

² As reported in the map in Sheet 5, some costs ("common costs" and "general costs") can be related to multiple distribution channels, so we need to allocate a percentage of those costs to the channel we are analysing.

Table A reports all the cost items divided by phase of the value chain. You can report costs from the previous costs' sheets (3.1 to 3.6), directly linking the cells across the different sheets.

Revenues can be taken from the revenues sheet (sheet 2), and you can report revenues per unit of product (setting reference quantity=1) or total revenues (total quantity * price; see the figure below and the Excel file). In the reference unit cell, please indicate how data are expressed (kg, quintal, jars, no., etc.).

Costs data can be taken from the cost's sheets (sheet 3.1 to 3.6) and must be expressed in the same way as revenues (in the same reference unit and in the same reference quantity). The Total Costs cell is the sum of all cost's cells below (see formula in the cell).

At the end of the table, two synthetic economic indicators, transformation value and value added, are computed directly with pre-set formulas as follows:

Transformation value = Total Revenues – Total Costs (for distributing the product on the specific channel)

Value added = Transformation value + Workforce + Machinery and Equipment + Buildings/Sale Facilities

Value added can be alternatively calculated as follows:

Value Added = Total Revenues – (Raw Materials + Energy/Fuel + Outsourced Services + Taxes + Other Costs)

The transformation value represents the difference between the total revenues from the product and the total costs for distributing the product on the specific channel.

The value added, instead, represents the economic enhancement a company gives its products or services before offering them to customers. It is computed as the difference between the total revenues from the product and the total costs for distributing the product on the specific channel, except for costs related to workforce, machinery/equipment and buildings/sale facilities (i.e., the transformation value plus the costs related to workforce, machinery/equipment and buildings/sale facilities). For computing the value added, all the costs related to workforce, machinery/equipment and buildings/sale facilities in the different steps of the value chain performed by the firm must be added up and summed to the transformation value.

Table A: Costs by phase

RECAP TABLE FOR COSTS & REVENUES		
ACTOR: _____		
TABLE A: Costs by phase	CHANNEL A (CSAFC):	CHANNEL B (BENCHMARK):
	Product: _____	Product: _____
Reference unit (kg, quintal, no., jar, etc.)		
Reference quantity (1 or total quantity)		
Price (or average price)		
TOTAL REVENUES	0,0000 €	0,0000 €
TOTAL COSTS	0,0000 €	0,0000 €
Preservation and storage		
Buildings		
Machinery and equipment		
Workforce		
Raw materials		
Energy/fuel		
Outsourced services		
Taxes		
Other costs		
Processing		
Packaging		
Transport & Logistic		
Retail		
Admin.-Mark.-Adv.		
TRANSFORMATION VALUE		
(T. REVENUES - T.COSTS)	0,0000 €	0,0000 €
VALUE ADDED		
(TRANSF. VALUE + WORKFORCE + MACHINERY AND EQUIPMENT + BUILDINGS/SALE FACILITIES)	0,0000 €	0,0000 €

Table A is expandable. Click on the "+/-" buttons on the left side of the Excel sheet to expand/reduce the different sections of the table.

NB: Table A is expandable. Click on the "+/-" buttons on the left side of the Excel sheet to expand/reduce the different sections of the table.

Table B reports all the costs together, divided only by cost item, without distinguishing among the different steps of the value chain performed by the firm. In this table, cells are linked to those of Table A, with formulas summing together similar cost items across different phases. Once you have completed Table A, Table B should fill in automatically.

Therefore, only Table A has to be manually filled in.

At the end of Table B, transformation value and value added are computed, in the same way of Table A (see explanation above).

Table B: Aggregated costs

<i>TABLE B: Aggregated costs</i>	CHANNEL A (CSAFC):	CHANNEL B (BENCHMARK):
TOTAL REVENUES	0,0000 €	0,0000 €
TOTAL COSTS	0,0000 €	0,0000 €
Buildings/Sale facilities	0,0000 €	0,0000 €
Machinery and equipment	0,0000 €	0,0000 €
Workforce	0,0000 €	0,0000 €
Raw materials	0,0000 €	0,0000 €
Energy/fuel	0,0000 €	0,0000 €
Outsourced services	0,0000 €	0,0000 €
Taxes	0,0000 €	0,0000 €
Other costs	0,0000 €	0,0000 €
TRANSFORMATION VALUE (T. REVENUES - T.COSTS)	0,0000 €	0,0000 €
VALUE ADDED (TRANSF. VALUE + WORKFORCE + MACHINERY AND EQUIPMENT + BUILDINGS/SALE FACILITIES)	0,0000 €	0,0000 €

NB: In the Excel sheet, next to *Table A and B*, you will find some cells containing explanatory notes by the authors (University of Florence). Click on the cells to read the note. *Table B* fills in automatically once you fill in *Table A*, as cells are cross-linked together.

Sheet "5. Glossary"

Sheet 5 contains a glossary with the definitions of the variables, the terminology employed in the Excel file, other useful economic terms and concepts, and suggestions on how to measure/estimate and compute quantitative variables.

3. Simplified Quantitative Economic Assessment Tool

In cases when the full quantitative methodology is too difficult to implement (e.g., complexity, lack of data), a simplified version of it has been designed and employed, consisting of a simplified table for collecting data on costs and revenues. The simplified table allows to report data (or estimates) on costs and revenues in a more synthetic way, without the need to descend into analytical details, but providing an estimation for each cost item in the distribution process of the firm/actor interviewed. For instance, it is no longer required to specify depreciation, insurance and maintenance costs, which are often difficult data to collect and isolate, but only to report the cost generated by buildings or machinery as an all-included cost/estimate based on personal experience of the respondent.

SIMPLIFIED TABLE FOR COSTS & REVENUES				
ACTOR: _____				
SIMPLIFIED TABLE FOR COSTS & REVENUES	CHANNEL A (CSAFC):	Notes Channel A	CHANNEL B (BENCHMARK):	Notes Channel B
	Product: _____		Product: _____	
Reference unit (kg, quintal, no., jar, etc.)				
Reference quantity (1 or total quantity)				
Price (or average price)				
TOTAL REVENUES	0,0000 €		0,0000 €	
TOTAL COSTS	0,0000 €		0,0000 €	
Buildings/Sale facilities				
Machinery and equipment				
Workforce				
Raw materials				
Energy/fuel				
Outsourced services				
Taxes				
Other costs				
TRANSFORMATION VALUE (T.REVENUES - T.COSTS)	0,0000 €		0,0000 €	
VALUE ADDED (TRANSF. VALUE + WORKFORCE + MACHINERY AND EQUIPMENT + BUILDINGS/SALE FACILITIES)	0,0000 €		0,0000 €	

Even in this simplified version of the quantitative methodology, producers should be asked to describe in detail the nature of costs and how they were computed/estimated, to better understand and explain the numerical data.

At the end of the table, the same two synthetic economic indicators, transformation value and value added, are computed directly with pre-set formulas as explained in the paragraphs above.