Food and Agriculture Organization
of the United Nations

Engaging with small and medium agrifood enterprises to guide policy making

A QUALITATIVE RESEARCH METHODOLOGICAL GUIDE

SUSTAINABLE MARKETS, AGRIBUSINESSES AND RURAL TRANSFORMATIONS ◀ SMART

Engaging with small and medium agrifood enterprises to guide policy making

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by

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Acronyms

CAQDAS	computer-assisted qualitative data analysis software
EU	European Union
FAO	Food and Agricultural Organization of the United Nations
GAP	Good Agricultural Practice
GNI	gross national income
HACCP	Hazard Analysis and Critical Control Points
ICT	Information and Communications Technology
ILO	International Labour Organization
ISO	International Organization for Standardization
NCD	non-communicable disease
NGO	non-governmental organization
R&D	research and development
SMAE	small and medium agrifood enterprise
SMART	sustainable markets, agribusinesses and rural transformation
SME	small and medium enterprise
WHO	World Health Organization

Executive summary

International development discourse has increasingly emphasized the importance of the middle segment of agrifood value chains for pro-poor and sustainable growth in developing countries. More specifically, due to their local embeddedness in the local community fabric, small and medium agrifood enterprises (SMAE) can better adapt essential services, such as transportation, food processing and distribution to local circumstances. In doing so, these small firms make important grassroots investments in rural areas; in addition to connecting farmers to markets, adding value locally to agricultural produce, and creating employment opportunities that are inclusive of women and young people. Given the growing demand for food, emanating from population growth and urbanization, there is increasing scope for SMAEs to contribute to rural development objectives. However, for this to happen, enterprises need to receive the appropriate technical and policy support.

Against this background, the role of SMAEs has been to the fore of the work of the Food and Agriculture Organization of the United Nation's (FAO) on sustainable rural development and in particular for its Strategic Objective on enabling inclusive and efficient food systems. To understand how donors and the public sector can better support the role of SMAE in food systems transformation, FAO, with support from the European Union (EU) and the Government of Japan, has designed a cross-disciplinary business model appraisal methodology, focussing on small food processors operating in staple food sectors.

The methodology captures the multifaceted nature of SMAE business models, adding contextual insights to the literature and policy formulation processes on these small firms, which are often treated homogenously. The framework upon which the methodology is based links the business model of an SMAE to various policy areas including farmer-market linkages, decent employment (including gender equality and youth inclusion aspects), rural finance and investment, nutrition, food losses and waste as well as food safety and quality. This makes it possible to identify intervention areas that can help reconcile the commercial objectives of SMAEs with sustainable rural development outcomes. There is also scope for adapting the methodology to carry out further research on environmental sustainability and digitalization. Ultimately, more pertinent lessons can be drawn for policy making purposes only by understanding the complex business arrangements of SMAEs and their interactions with the external environment, including the policy and institutional climate, consumer and supply base, as well as the community in which they operate.

The methodological guide has been designed to be applied to food processors in particular; however, it also includes some elements that are relevant to the operations of SMAEs in general. The main audience for this publication are development practitioners and project designers, including public, private and non-governmental organizations (NGO) investigating and providing support to SMAEs; however, the methodology could also be useful to academics, including students, researching topics related to food systems, rural development and agribusiness.

The guide has been piloted in a number of countries across sub-Saharan Africa guiding in-country semi-structured interviews at factory level, and with national policy makers, in addition to a cross-sectoral literature appraisal of national policies and programmes pertinent to SMAEs. The results of the piloting of the methodology will be published in forthcoming FAO country case studies (see Ilie and Kelly, 2021). The piloting process has also allowed for its revision based on the researchers' and participants' feedback, and the approach is presented here as a practical guide with the hope that it will facilitate further research on SMAEs and their role in food systems transformation.

1. Introduction

1.1. Background

Urbanization has long been regarded as a panacea for economic development but recent studies suggest that it is rather the growth of the rural sectors, both agricultural and non-agricultural, that holds the key to poverty reduction in developing countries (Imai, Gaiha and Garbero, 2014). The development of agriculture, along with an increase in unskilled labour-intensive activities in the rural non-farm economy, can be particularly effective in sub-Saharan Africa (de Janvry and Sadoulet, 2010).

Employment opportunities can be enhanced by increasing the value added of agricultural chains, especially for the young who are more likely to spend their hours of labour in the off-farm agrifood sector (Dolislager *et al.*, 2019). Young entrepreneurs are an important resource for Africa's economies as they can enhance value addition in agrifood sectors if they are properly supported with regulatory frameworks, policies and programmes (FAO, 2019a).

The positive relationship between adding value and reducing poverty is apparent for both staples and cash crop chains, including products such as cassava, honey and tropical fruit (for instance, Berem, Owuor and Obare, 2011; Lundy, Ostertag and Best, 2002; Maria Gottret and Patino, 2004). In particular, small and medium service providers (i.e. transportation, processing, distribution) connecting farmers with buyers, which comprise the mid-segment of agricultural value chains, have become the largest investors in creating markets for agricultural produce in Africa. Food processors receive 95 percent of the total small farm supply in the region (Reardon *et al.*, 2019a). The availability of processed food can also substitute for home food preparation, allowing women to free up time to engage in non-farm employment and ultimately contribute to household welfare (Liverpool-Tasie, Adjognon and Reardon, 2016).

Upstream and downstream changes, along with shifts in policy that now favour liberalizing and privatizing supply chains, have stimulated a proliferation of these mid-stream located small and medium enterprises (SME) (Reardon *et al.*, 2019b). For instance, urbanization and infrastructure enhancement have led to longer chains for food to pass from rural areas to towns and cities, requiring more actors to move the supply. Increasing incomes and urbanization have encouraged demand for processed, ready-available food, which now constitute 40 to 65 percent of urban and rural food expenditures (Tschirley *et al.*, 2015). Studies also indicate that much of this processed food is produced domestically and is available in grocery stores of all sizes. Intensification and diversification of agricultural production have also enhanced opportunities for private sector development further down the chain (Reardon *et al.*, 2019b).

These changing trends, along with the fact that domestic markets will continue to enlarge considerably in the coming decades (Reardon, *et al.*, 2013), means that there is increasing scope for small and medium agrifood enterprises (SMAE) to grow and contribute to inclusive rural transformation. A dynamic national market holds even more opportunities for the smaller of the actors who cannot gain access to global markets. However, domestic processors – particularly small and medium-sized ones – might face great difficulties in keeping up with modern agrifood chains as they lack the resources needed to adapt to these radical changes (Reardon and Berdegué, 2002; Weatherspoon and Reardon, 2003). In addition to intensified competition and market requirements, SMAEs in developing regions often face the same constraints as small farmers, including low technical and managerial skills, lack of access to tailored financial instruments, absence of support services, and poor infrastructure imposing high transaction costs (see Eskesen, Agrawal and Desai (2014) for an overview). Furthermore, these businesses face a multitude of challenges inherent to being small including lack of economies of scale and a limited base of internal resources (Welsh and White, 1981).

Governments should thus acknowledge the barriers these actors face in doing business and build a better enabling environment by strengthening market and service linkages between urban and rural areas (Reardon *et al.*, 2019b); this can be done, for instance, by adopting a territorial approach towards agro-industry development (see De Janvry and Sadoulet (2007) for evidence from Latin America and FAO (2017) for best practices and tools).

1.2. Research motivation

Despite the challenges they face, SMAE processors have been neglected in both policy and research. First, in addition to being overlooked by development agencies who focus primarily on more disadvantaged groups such as smallholders, the regulation of SMAEs tends to receive very little attention; it falls between the policy mandates of the Ministries of Agriculture, and Trade, Industry and Commerce.

Second, there is an increasing number of quantitative studies aimed at documenting changes across the food value chain in developing countries, mostly on export and high value crops (Maertens and Swinnen, 2009; Neven and Reardon, 2004; Rao and Qaim, 2011) but more recently also on staples (Minten *et al.*, 2016; Reardon *et al.*, 2012; Soullier and Moustier, 2015). However, to complement these findings and achieve more business-oriented conclusions, research should also focus on how enterprises are arranging their business models in such a way as to deal with the changing dynamics of the food value chains in which they are operating.

Even though the concept of business models has received increasing attention from multiple research streams (e.g. strategic management, innovation, or information systems),[1] studies have been predominantly conducted in relation to large firms in developed countries. As policy often highlights the need for SMEs to develop competitive business models, especially in the context of increased internationalization, more research is necessary to understand how models are shaped by the inherent characteristics of small firms (McAdam *et al.*, 2018). Even more, there is a gap in the literature on business models in Africa, since most studies focus on European enterprises (Lambert and Davidson, 2013).

Filling this research gap can allow policy makers to understand how SMAEs can be supported to respond to changing dynamics in value chains. In-depth firm examination can also support the identification of linkages between specific business activities and rural development outcomes – namely food availability, quality, nutritional value and safety, employment and income – which would ultimately inform policy on how commercial objectives can be reconciled with sustainability. From a practical perspective, sharing knowledge on competitive business models is also important since "by providing a license to copy, successful enterprises extend their impact beyond their local markets" (Kubzansky, 2013).

It is against this background that the Food and Agriculture Organization of the United Nations (FAO), with support from the European Union (EU) and the Government of Japan, developed and tested a case-oriented and interview-based methodology in seven countries across Africa on processors operating in staple food sectors. The methodology has been revised based on the feedback received from the researchers and participants during the pilot study, and it is presented in this publication as a tool with the hope that it will facilitate more research on SMAE business models in a standardized and consistent manner.

1.3. Research question and objectives

The overarching research question of our study can be articulated as: *How do firm-level dynamics influence rural transformation?* The specific objectives of the research study are: i) to document the business models of SMAE processors operating in agrifood chains; ii) to understand their role in rural development; in order to iii) identify better policy options, technical assistance or improved investments and institutions that could ultimately allow these enterprises to become sustainable development catalysts.

To pursue this question and objectives, the research must probe how entrepreneurs arrange their business models based on external cues from the enabling (or disenabling) environment, but also how their businesses then shape the economic opportunities and development outcomes of the rural communities where they are situated. As such, this guide is particularly useful for research that aims to qualitatively examine agrifood enterprise business models and/or investigate the links between agrifood business activities and development objectives.

The methodology presented here draws upon important work by social researchers, including Ritchie and Spencer (2002), Braun *et al.* (2018), Eriksson and Kovalainen (2008a), Miles, Huberman and Saldaña (2013). The reader can use their papers to gain more insights into various qualitative methodologies and tools. Dejardin's (2014)

[1] See, for instance, Casadesus-Masanell and Ricart (2010), Kelly *et al.* (2015), Osterwalder *et al.* (2005), Teece (2009).

guide, which provides a methodological tool for qualitative research in relation to employment and working conditions, has also been a source of inspiration with respect to the structure and content of this paper.

This manual is organized as follows:

- Chapter 2 presents the conceptual framework upon which the methodology is based, building on the value chain model in Porter (1985), which is linked to policy areas including farmer-market linkages, decent employment, nutrition, food safety and quality, food losses and waste as well as rural finance and investment. This conceptual framework guides the development of the topic agenda for the data collection stage.
- Chapter 3 then discusses why it is important to conduct qualitative research in relation to SMAEs.
- Chapter 4 introduces the research design, which employs a case study approach.
- Chapter 5 discusses important aspects with respect to ethics in qualitative research.
- Chapter 6 provides guidance for the data collection stage and introduces the interview questionnaire to be used in the field.
- Chapter 7 provides guidance for the data analysis stage of the research process.
- Chapter 8 discusses how rigour can be ensured in this type of study.
- Chapter 9 presents several conclusions.

2. Conceptual framework and definitions

As House (2002) describes, concepts "are maps for generating or revising a research design and, in the best case, for broadening our understanding of a situation"; concepts can either stem from formal theories or from the researcher's knowledge or prior experience. This section thus introduces the concepts upon which the methodology is based; the conceptual framework developed here builds on both well-grounded literature and FAO's experience in the field, particularly in relation to rural development objectives and small and medium agrifood enterprises.

2.1. Business models

As a commercial entity, the behaviour of small and medium processors is dictated by a dynamic business model comprising an inter-related and complex set of activities and relationships that influence one another. For instance, networking opportunities might support SMAEs in developing strong partnerships, making them more able to develop efficient farmer-market linkages due to the resources provided by partners (Kelly and Ilie, 2017). The notion of business models as a unit of analysis has been moving increasingly towards conceptual consolidation and can be defined as "a systemic perspective on how to 'do business,' encompassing boundary-spanning activities, and focusing on value creation as well as value capture" (Zott, Amit and Massa, 2011). In other words, a business model implies an activity system bringing together human, physical and/or capital resources by firms to fulfil their commercial objective (Child *et al.*, 2017).

While other business model analysis approaches have been developed, Porter's value chain is suitable for this kind of research as it is able to clearly illustrate all value-adding activities and can allow us to link them with specific rural development objectives. Additionally, the framework is flexible enough to be employed in any food commodity sector. Porter's value chain framework, its adaptation to this methodology, and its linkages with specific development objectives are described in the next sections.

2.2. Porter's value chain framework

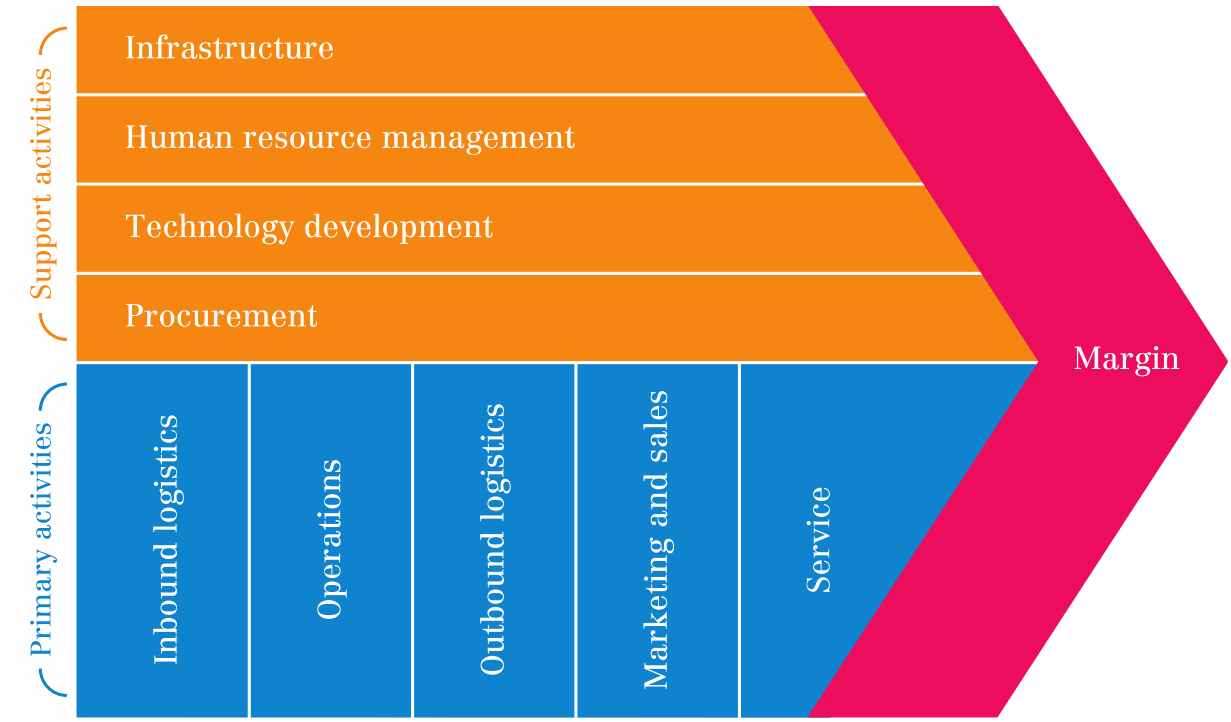
The model allows for the disaggregation of the business into strategically relevant activities that create value for the customer, either directly or indirectly. Porter's value chain is today one of the most popular management tools used by organizations worldwide – from multinationals or local businesses to educational institutions or non-governmental organizations (NGOs) – to help them improve processes or activities in order to enhance value and increase profits.

The value chain model was originally devised as a framework for quantitative analysis based on allocating costs to individual activities to identify bottlenecks and areas of improvement. Our study employs the model to qualitatively describe the disaggregated business model and illustrate the linkages of specific business activities with the external environment. While costs are also incurred, these are mainly to illustrate challenges, or best practices. However, if accounting books can be provided by participants in the study and data cross-checked, an accurate analysis of costs along the value chain can only strengthen the research.

Porter's value chain should not be mistaken for the common understanding of the value chain as a meso-level construct that refers to the stages of a product's production, from raw materials procurement down to the final purchase by the consumer.[2] Porter's model is strictly concerned with firm-level strategy and value addition within, and for the firm.

[2] For more detailed background and insights into the concept of sustainable food value chains, see FAO (2014).

Figure 1. Porter's value chain framework



Source: Porter, 1985.

Figure 1 depicts Porter's value chain model. The activities are organized according to the implications for value they create for the customer and the influence it has on the margin (i.e. the profit the firm makes). As such, activities that aim to maximize the margin by directly adding value to what the business is offering to its customers are called Primary and are situated in the bottom half in the same order that the raw materials flow through the process. Activities that erode the margins and whose purpose is to support the main activities are called Secondary and are depicted in the upper half rows.

Any business model operates in, and is influenced by, an external environment comprising political, economic, sociocultural, demographic, technological, environmental, and legal factors (Gitman *et al.*, 2018). These factors interact with the specific business components identified and can either hinder or support them in achieving their commercial objectives. The section below describes each component in the value chain, their relevance for the agrifood sector and the external forces that can influence them.

PROCUREMENT

In the simplest terms, procurement refers to what a company does to obtain its raw materials. Procurement processes entail supply-focused activities such as conducting research for identifying and recruiting the best suppliers for the firm's needs, negotiating terms, developing contracts or agreements, which can be either formal or informal. In an agrifood sector context, raw materials mostly include agricultural produce but could also comprise already processed ingredients such as oil or spices, or packaging materials such as plastic containers or paperboard. In this case, suppliers are usually local farmers but also traders, middlemen or even other processors.

The set of processes that the enterprise designs in order to deal with suppliers can become a strong factor in its success (McPhee and Wheeler, 2006). Developing a strong procurement component is of even more strategic importance in developing countries where the agricultural sector is more likely to be characterised by low productivity, inefficient practices and weak technology absorption. To compensate for these shortcomings and secure a consistent and quality supply, agrifood enterprises will dedicate important efforts to this area, to the detriment of other activities. These efforts can include, for instance, developing a support portfolio for farmers comprising agricultural services, inputs and credit, or physically going in the field to teach farmers best practices and discourage side selling.

As such, external factors impacting on the procurement processes of agrifood enterprises are those directly affecting the status of agricultural production in the country. These can include the availability of inputs to farmers such as fertilizer or seeds but also access to resources such as extension services or finance. Environmental issues such as climate change or weather patterns will often affect crops and production. Land tenure can also influence agriculture as farmers need land to farm; weak legal recognition of property rights to land, for instance, can discourage investments in the sector.

Another category of external factors consists of those that directly impact on the firm's procurement practices rather than farm production. These are related to purchase-related legislation and the structure of the supply chain. In an agrifood context these can include taxation on imports (i.e. in the case of ingredients procured from abroad) or the regulatory framework on contract farming, which can enable or hinder firms from engaging in these practices. The structure of the supply chain is also relevant; in this case, how a farmer organizes produce – such as through cooperatives – or the presence of middlemen in the chain will have an effect on the price and quality of agricultural produce and the agrifood firms' procurement choices.

LOGISTICS – INBOUND AND OUTBOUND

While inbound logistics refer to the handling of raw materials after they leave the farm and before they reach the processing stage, outbound logistics refers to the handling of the finished goods from the factory or processing point to buyers such as distributors or retailers. These inbound or outbound activities can include, for instance, transportation, storage, loading and offloading and the overall handing of the raw materials.

Logistics are a key factor in achieving competitiveness in the agrifood sector since efficiency can have major implications for the quality of the final product and the profitability of the manufacturer (Gebresenbet and Mpagalile, 2015; van der Vorst, Da Silva and Trienekens, 2007). SMAEs are disadvantaged because their lack of economies of scale translates into higher expenses dedicated to logistical activities.

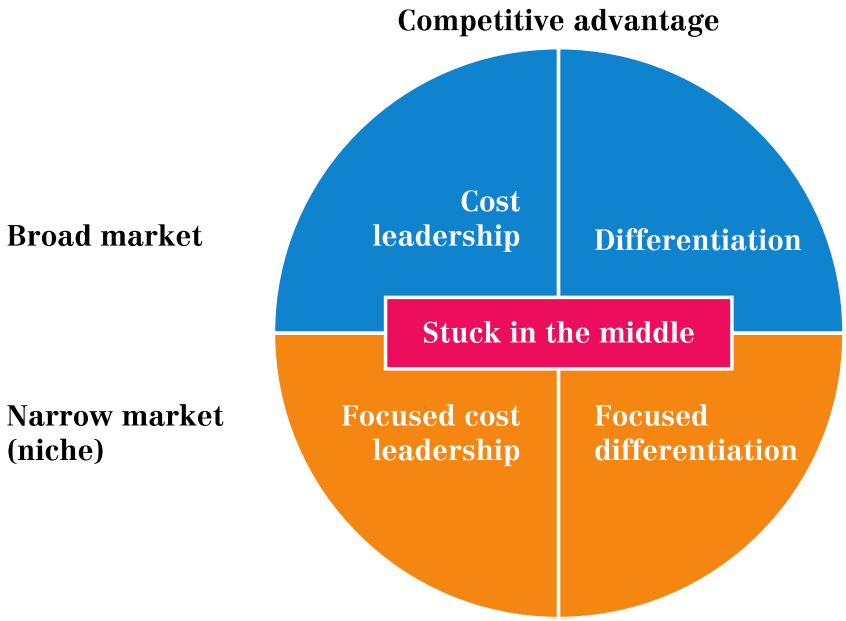
Improving storage conditions to maintain the quality of raw materials or increasing the capacity of transportation to decrease costs are examples of how value can be added at these stages of the chain. Logistics are highly dependent on the infrastructural fabric of the country; poor roads, for instance, can impose higher transportation costs by affecting fuel efficiency. Access to support services in the country will also affect the firms' choices with respect to logistics; many enterprises will choose to outsource services such as warehousing and distribution so they can focus on other aspects of their business. In the absence of these providers, for instance, agrifood firms might have no choice than to allocate their already limited resources across a whole range of activities. On one side, this brings advantages such as better quality control but on the other side, it might induce firms to shift their focus away from their core business.

MARKETING AND SALES

This business component entails those activities that create awareness of what the business is offering, provide a sales channel and persuade buyers to purchase the product in order to gain market share. While under Porter's value chain, "marketing and sales" strictly refers to marketing-based activities such as advertising, pricing or sales channel selection, we will treat this component as a core management activity entailing not only product promotion but the overall strategy that the business develops to compete and gain market share.

The value proposition that the firm brings to its clients (i.e. what the business offers) is also known as its competitive advantage. A sales strategy, as such, aims to create competitive advantage. Porter (1985) identified two types of competitive advantage, namely cost leadership, which refers to offering the lowest price in the industry, and differentiation, which entails offering products with unique attributes (e.g. better quality) that can command a higher price. The firm can choose to seek these two types of competitive advantages within a broad (industrywide) or narrow (niche) market. Firms who do not pursue any of these specific competitive strategies are said to be "stuck in the middle" and they risk being outcompeted. The generic strategies based on the type of competitive advantage and the scope of focus is depicted in Figure 2.

Figure 2. Porter's generic strategies



Source: Authors' elaboration based on Porter (1985).

It should be noted that the strategy the firm chooses to pursue underpins every other strategic choice the firm makes across its whole value chain – thus, not only marketing activities will be performed according to the firm's competitive advantage and scope but all other value-adding activities including logistics, operations, procurement, as well as financial and human resources management. This interview section in our methodology will aim to understand the extent to which the companies' development of competitive advantage is in line with its other business activities.

With respect to marketing activities specifically, SMEs generally do not engage in conventional marketing textbook techniques; as opposed to larger companies, SMEs' marketing is generally arbitrary, informal and more likely to be shaped by the firm's internal culture such as the managerial style of the entrepreneur (Franco *et al.*, 2014; O'Dwyer *et al.*, 2009). Nonetheless, even though the marketing activities of SMEs are often affected by their inherent constraints and limited expertise, these firms can still successfully use marketing to generate sales (O'Dwyer, 2009).

Again, there are external factors that can shape the marketing and sales strategy of a company. One category of such factors consists in those affecting the firms' efforts to create awareness about their products. Promotion activities, for instance, will be shaped by the firm's market characteristics such as income or age but will also be determined by accessibility to marketing tools (e.g. social media platforms) for both customers and businesses. The government can also create awareness among buyers by implementing its own promotional activities on domestically produced goods. For instance, platforms or trade fairs can be initiated to bring together producers and buyers.

Labelling and packaging are important marketing tools because they can facilitate communication between the business and the customer. Legislation in this area can have a say on what the firm displays to attract customers. Intellectual property can also be seen as a marketing tool, which can be used to establish and grow the firm's reputation, and to strengthen the differentiating attribute of the products; thus, the ability of the firm to use this marketing tool will depend on the legislation related to the protection of property rights in the country.

TECHNOLOGY DEVELOPMENT

Activities under this component relate to the firm's management of technology – either as know-how or equipment – to innovate, increase efficiency or decrease production costs. While it is critically important for an agrifood processor to use technology, both for improving products and processes, it is mostly larger enterprises that have a dedicated team for extensive innovation activities such as research and development (R&D). Technology, as such, will be left out of our framework as a component on its own and will be examined across other activities, as relevant. Use of equipment, for instance, will be discussed under Operations and staff skills under Human resources.

SERVICES

This value-adding activity refers to the post-sale services that the business undertakes to maintain or strengthen the value of the product after it has been sold to the customer; these include, for instance, warranties or support in using the product. However, this aspect is not very relevant to SMAEs whose post-sales services often do not go beyond basic contact such as providing follow-up or dealing with complaints. Services are more often directed at suppliers in order to secure good quality and consistent supply (see the section on procurement). As such, this component will be left out from the model.

FIRM INFRASTRUCTURE/FINANCE

Infrastructure comprises activities such as planning, finance, accounting, quality management or dealing with legal matters or government affairs. These activities support the entire value chain rather than specific stages. SMAEs, however, do not have a complex internal infrastructure. Due to a lack of resources, there are no individual departments or teams dealing with the aforementioned activities. One infrastructure-related activity stands out, however, which is finance.

Finance-related activities, including managing financial matters and dealing with access to finance, are vital not only for firm growth but also for day-to-day activities across the whole value chain. While business components such as marketing or partnerships can be perceived as optional, especially when there is a severe lack of resources, finance will always be on the agenda of SMAEs due to its influence on the whole business model, which can even halt production if not properly managed or when hindered by external factors. It is for this reason that finance will be treated as a component on its own.

There are several country-specific factors impacting on the firms' finance component that are related to either its management or access. Accounting as well as planning and control of monetary resources will depend on the availability of financial skills in the country, which might be lacking if the overall educational sector is weak. Financial illiteracy and or low penetration of financial services in rural areas might translate into limited options in terms of transaction and payment methods, which will eventually impact on cash flow. Finally, taxation can affect many finance-related strategic choices such as the legal form of the business or investment decisions.

Another category of external factors impacting on finance is access to financial services. SMAEs, especially those operating in developing countries, generally suffer from a lack of financial products tailored to their needs, including short-term funding, long-term loans, microfinance or even banking services such as saving or checking accounts, and insurance services. Financial aids such as subsidies in the form of cash grants or loans can also touch on this aspect of the business, encouraging firms to pursue certain activities that the government aims to promote.

OPERATIONS

This component entails the actual conversion of raw materials into finished products. Improving machinery to enhance the characteristics of the product is an example of how value can be added at this stage of the chain.

Operations are impacted by a wide range of external factors, most of them shared with logistics. A broad variety of machinery can be used in the food processing industry and naturally, access to adequate and affordable equipment will impact on the firm's strategic choices with respect to operations. The access to and quality of infrastructure services such as the provision of utilities or sanitation can affect processing activities and the attributes of the final product. The quality of the water, for instance, can affect the physico-chemical characteristics of the products, which is of critical importance for agrifood goods as they are destined for human consumption. Constraints such as electricity outages can force companies to discard, for safety reasons, the semi-processed

products that were on the processing line during the disruption. The firms' choices will be made according to strengths or weaknesses in infrastructure.

Relevant legislation for processing activities relates to food safety and quality, nutrition and environmental compliance. Such regulations might require from the business certain operational arrangements, processes or equipment.

PARTNERSHIPS

Partnerships is not a value-adding activity under Porter's value chain. Preliminary research conducted by FAO (Kelly and Ilie, 2017), however, suggests that SMAEs create strategic external networks in sub-Saharan Africa to support their other activities. These relationships might include firms, governments, communities, donors, and so forth, and are generally pursued by the actors to co-create value that is not only commercial but societal.

Indeed, management and strategy scholars have noticed that activities aimed at creating value through external relationships should be included in the model. This refers not only to firms simply being embedded in a network or community but strategically using these relationships "to increase value through, for example, innovation, knowledge capture, and reputation-building" (McPhee and Wheeler, 2006).

2.3. Policy areas

The adjusted conceptual framework based on Porter's value chain makes a direct correlation between the business activities of a food manufacturer, as described above, and assesses the implications of these activities on the community and markets where they operate. Understanding the implications of food manufacturing firms' activities on aspects such as, food safety, nutrition, employment, investment, and food losses and waste will better inform the design of policies that target the business enabling environment for this subsector and more broadly for SMEs operating in the food sector. The business activities described above can be linked with specific policy areas, as follows.

FOOD SAFETY AND QUALITY

Research on food safety in SMAEs found that food safety culture can thrive where management frameworks and policies are well articulated and individuals in the organization can perceive its benefits. Entrepreneurs can create a food safety culture not just through knowledge of best practices but also by demonstrating commitment, leadership and communication of these concepts (Griffith, Livesey and Clayton, 2010).

Ensuring the safety of food starts at the farm and ends with the consumer, thus being dependent on all actors in the value chain contributing to the management of risks by adhering to good practices and carrying out necessary controls. A distinction should be made between safety and quality. Unsafe food, which is often not detectable by human senses, can have drastic public health consequences. Food quality, on the other hand, refers to those attributes of the product that impacts on its value to the customer such as colour, origin, flavour, among others (FAO and WHO, 2003). Activities performed specifically by millers which can impact on food safety and quality are logistics (product handling, transportation, storage and packaging) and operations (the actual processing of the product). Additionally, a company's attention to food safety and quality is based on consumer demand, which can motivate or discourage investments in these areas.

Since investments by food businesses in food safety and quality can be cumbersome and costly, and government intervention is often needed to guide and oversee SMAEs' adherence to good practices. More research is needed to understand how agrifood processors can respond to food safety and quality requirements, especially given the increasing complexity of standards demanded by globalized value chains.

NUTRITION

Good, safe food is the basis of a nutritious diet (FAO, 2019b). A healthy diet provides protection against malnutrition as well as non-communicable diseases (NCD) such as diabetes (WHO, 2018). Rising incomes and urbanization have translated into changing diets, which now include more animal-source foods, sugar, fats and oils, refined grains and processed foods. Such changes to diet bring a whole new set of challenges for policy as this

"nutritional transition" can cause increases in obesity, and NCDs (Hawkes, Harris and Gillspie, 2017). Nutrition requires commitment from all actors across the chain, and government intervention is needed when incentives for producers to invest in nutritious food are missing, or when demand for food does not coincide with a healthy diet (FAO, 2019c; WHO, 2018).

Similar to food safety and quality, activities undertaken by millers, such as logistics and processing, can determine the nutritional content of a product. Investments in this area are influenced by demand and consumer awareness of diet quality.

DECENT EMPLOYMENT

FAO defines decent employment as "work that provides a living income and reasonable working conditions" (FAO, 2019d). The International Labour Organization (ILO) has developed a set of indicators measuring decent employment that revolve around four main pillars, namely full and productive employment, rights at work, social protection and the promotion of social dialogue (ILO, 2019). Rural areas are particularly known for poor working conditions as jobs there are mostly informal, with no contracts or protection. They also require long working hours and provide low or unstable incomes. Those most vulnerable to these weaknesses in employment rights are children, women, migrants, casual labour and the elderly. By supporting SMAEs, several rural-specific concerns can be addressed including the risks of increased casualization or informalization of jobs, risk of excessive burden on women, or the risk of job losses due to agricultural modernization (FAO, 2012). A sense of community purpose, ethics and responsibility, also influenced by the religious beliefs held by company owners and managers, have also been found to positively influence employees' working conditions, and how firms engage with local communities and contribute to local economic development (Kelly and Ilie, 2017).

The analysis of both the human resources and procurement business components will add value to FAO's work on decent employment as the way in which these two areas are designed by the SME can directly affect aspects such as working conditions among employers and suppliers. Attention will also be given to child labour and the inclusion of youth or gender equality issues, which are part of FAO's work on decent rural employment.

RURAL FINANCE AND INVESTMENT

Investment relies on access to financial services, which are generally limited in rural areas where they involve more risks, higher transaction costs and historically low returns. Increases in food commodity prices, however, have opened up opportunities for profitable investments in agriculture and thus for poverty reduction in rural areas (FAO, undated). Development actors concerned with rural finance are thus working towards ensuring that rural populations and agrifood actors have access to financial services such as commercial loans, microfinance products or money transfer facilities.

This FAO priority area is related to the finance component of SMAEs, which have been found to drive important grassroots investments in rural areas (Reardon, 2015). Their ability to do this, however, depends on the availability of financial services that match their needs. Financing has been extensively examined in relation to SMEs in sub-Saharan Africa, often as part of the growing literature known as the "hidden" or "missing middle" (see, for instance, Beck and Cull, 2014; Quartey *et al.*, 2017). There is now agreement over the fact that access to financing generally drives firm performance and can be facilitated by creating the right enabling environment or addressed by innovative financing tools in the absence of adequate institutional support (White, Steel and Larquemin, 2017).

FARMER-MARKET LINKAGES

Approaches that connect smallholders to markets have been a primary focus of development actors as part of rural transformation programmes. Generally, research points to the fact that different farmer segments are suited to different markets due to their heterogeneity and distinct needs (Ferris *et al.*, 2014). Contract farming, for instance, is a popular approach promoted by development actors and adopted by businesses. When done correctly, contract farming can lower risks for both parties, ensure quality, quantity and fair payment. In the context of poor enabling environments, creative contract farming can even overcome legal or institutional constraints (FAO, 2013).

Nonetheless, analysing linkage models in different contexts is important for designing more appropriate policies aimed at providing various smallholders with access to markets. Examining the procurement and inbound logistics component of an SMAE can reveal what works for buyers in terms of smallholder integration and how their role in linking farmers to markets can be improved.

FOOD LOSSES AND WASTE

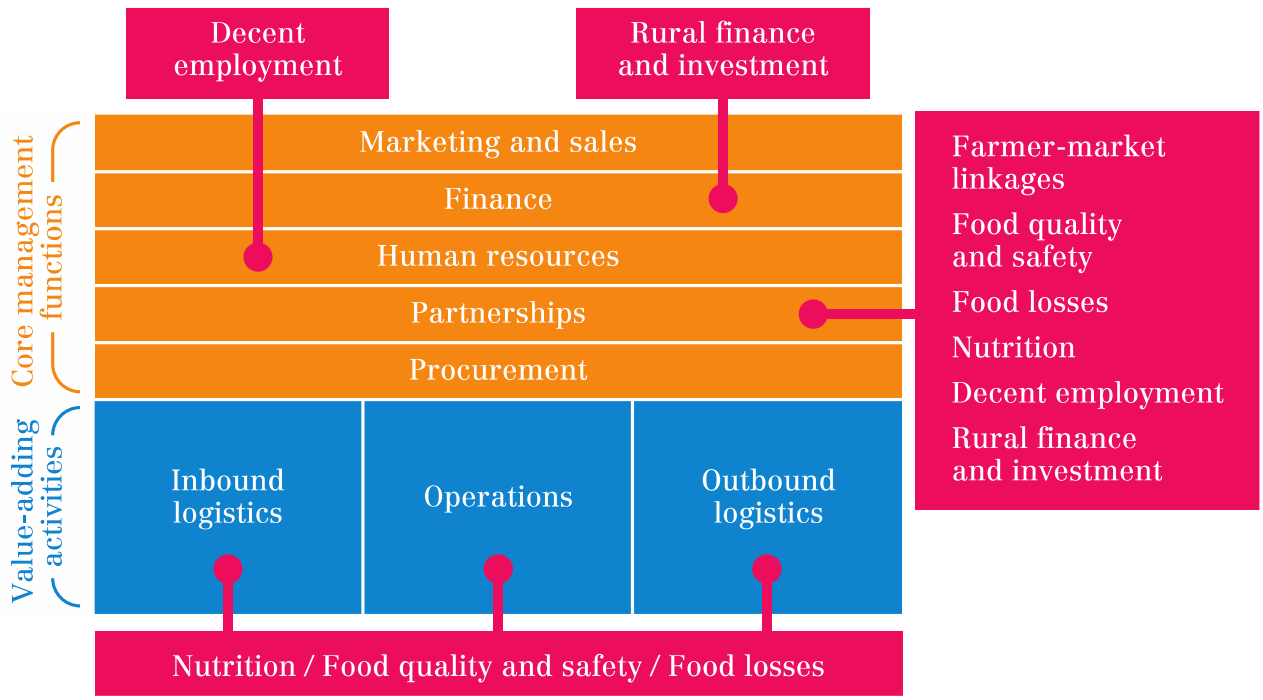
Reducing food losses and waste is a topic of increasing concern on government agendas and is an issue of critical public interest. Food losses can be defined as the "decrease in the quantity or quality of food resulting from decisions and actions by food suppliers in the chain, excluding retailers, food service providers and consumers" while food waste refers to the same problem but it comes about as a result of decisions and actions by retailers, food service providers and consumers (FAO, 2020). Literature points out that countries exhibit patterns of food losses and waste that differ based on their economic levels. In lower and middle-income economies, post-harvest losses are more likely to happen because of inadequate infrastructure and technology. In developed economies, however, waste is higher because large amounts of food are discarded by retailers or consumers due to such factors as cosmetic defects (Parfitt, Barthel and Macnaughton, 2010).

Globally, 17 percent of the food produced is lost during the post-harvest stage of the food system (UNEP, 2021; FAO, 2019e). Both farmers and food processors have a major role to play in ensuring that food is not lost or wasted because of poor practices. It should be noted that food loss does not include food that is discarded but used for something else such as animal feed.

2.4. Adjusted Porter's value chain model and its linkages with policy areas

Taking all the above into account, the value chain framework has been adjusted as depicted in Figure 3. The lower row of boxes depicts the activities that involve physical handling, directly adding value to the product. The upper part of the model depicts the core management functions of the business that indirectly add value to the product.

Figure 3. Adjusted Porter's value chain framework



Source: Author's elaboration based on Porter (1985).

2.5. Limitations of the framework

It is important to mention that the value of the activities mentioned above is not exhaustive, since factors such as brand equity, or R&D are not included, for example. The activities considered in the model represent those that are more pertinent to FAO's Strategic Framework (www.fao.org/3/mg015e/mg015e.pdf[3]). This does not mean, however, that there are no small or medium agrifood enterprises that undertake R&D. Additionally, the policy areas are not exhaustive, and the model should be seen as a work in progress. In particular, there is scope for further developing the model by linking it with other development objectives such as digitalization or environmental impact.

2.6. Topic guide

The conceptual framework described above guided the development of the topic agenda, which allows for the interviews to be conducted in a systematic manner. The relevant issues discussed above in relation to each specific business component and policy topic have been identified by FAO experts in each respective area based on the literature and experience in the field. These are summarized in Table 1. Additionally, the business enabling environment factors impacting on each business model activity are depicted in Table 2. At the end of this report there is a list of recommended publications for the reader to gain deeper insight into the topics and issues identified.

Table 1. Topic agenda

Business component	Topic	Sub-topics
Contextual factors	1. Business enabling environment	1. Policies and institutions affecting the business models of SMAEs (see Table 2)
Business profile	1. General business characteristics 2. Growth-orientation	1. Age 2. Size 3. Location 4. Type of ownership 5. Mission and values 6. Degree of formalization 7. Entrepreneurial characteristics and motivation
Procurement	1. Procurement strategies 2. Safety, quality and nutrition 3. Reliability of SMAEs as buyers of agricultural produce 4. Embeddedness in the rural community	1. Procurement channels (vertical integration, contract farming, etc.) 2. Choice of suppliers (smallholders, cooperatives, commercial farms, traders, importers) 3. Choice of crops 4. Nutritional consideration in choosing ingredients and raw materials 5. Constraints and benefits associated with each procurement channel and supplier 6. Measures to ensure quantity, quality and timely delivery of supply 7. Risk sharing mechanisms between buyers and suppliers

[3] At the time of writing, FAO is currently developing its new Strategic Framework for 2022-2031 (see www.fao.org/pwb).

Business component	Topic	Sub-topics
		8. Provision of inputs and services to suppliers 9. Contract Farming terms and conditions 10. Payment patterns 11. Price negotiation 12. Relationship with suppliers
Logistics (inbound and outbound)	1. Infrastructure 2. Logistics strategy (outsourcing versus internalizing activities) 3. Availability of support services 4. Safety, quality and nutrition 5. Food losses 6. Efficiency	1. Impact of infrastructure quality and provision of services on logistics activities (transportation, storage and product handling) 2. Advantages and disadvantages associated with outsourcing or internalizing activities 3. Efficiency of logistics (costs, economies of scale) 4. Food loss occurrences and measures 5. Food safety and quality awareness and measures 6. Nutrition awareness and measures
Operations	1. Technology (equipment and know-how) 2. Safety, quality and nutrition 3. Food losses 4. Efficiency	1. Capacity utilization 2. Working hours 3. Availability of adequate technology 4. Equipment characteristics (efficiency, age, cost) 5. Equipment maintenance – costs and availability of repair services 6. The processing activities and their influence on nutritional, safety and quality characteristics of the product 7. Food loss occurrences and measures 8. Food safety and quality awareness and measures 9. Fortification measures or other nutritional initiatives
Finance	1. Financial management 2. Access to financial and insurance services	1. Start-up finance (amount and sources) 2. Asset investment and financing growth (amount and sources) 3. Working capital and cash flow 4. Use of commercial loans or microfinance 5. Use of insurance 6. Managing taxation and audits 7. Use of bank accounts 8. Bookkeeping and financial metrics
Marketing and sales	1. Development of competitive advantage 2. Marketing and promotion strategy 3. Role of SMAE in providing an affordable, safe and nutritious product on the local market	1. Level of competition 2. Competitive advantage and underpinning factors 3. Product portfolio 4. Choice of sales channels 5. Choice of revenue-generating activities 6. Product features

Business component	Topic	Sub-topics
		7. Use of marketing tools 8. Market awareness of food safety, quality and nutrition 9. Ownership of certifications (fair trade, organic, safety and quality) and their strategic advantage in the marketplace 10. Business awareness of market demand
Human resources	1. Entrepreneurial characteristics and management style 2. Staff knowledge and know-how 3. Availability of labour 4. Recruitment practices 5. Decent employment aspects including child labour, gender equality and youth inclusion	1. Organizational structure 2. Education and work experience of owner/manager 3. Contractual arrangements (type of contract working hours) 4. Access to sanitary facilities 5. Renumeration (amount, delays, advances) 6. Staff turnover and reasons for leaving 7. Employment benefits (health insurance, over-time compensation, etc.) 8. Employee reward and recognition 9. Employer satisfaction with staff 10. Working hours 11. Recruitment practices 12. Preferences in selecting employees 13. Consideration of child labour issues 14. Use and need of employee training 15. Gender equality looking at the remuneration as well as the number and type of positions occupied by men and women in the enterprise 16. Youth inclusion looking at the age of employees and availability of positions for young people such as internships 17. Remuneration and employee benefits inequalities (such as casual versus permanent, male versus female employees)
Partnerships	1. Networking 2. Business clusters 3. Role of partnerships	1. Links with the government and benefits of participation in government-led schemes 2. Benefits of membership in trade or business associations 3. Type of relationship with competitors 4. Relationship with NGOs or donors and benefits of participating in development programmes

Source: Authors' own elaboration.

Table 2. External factors impacting on the business model of small and medium agrifood processors

Business component	External factors interacting with firm internal dynamics
Procurement	1. Farm-level production • land tenure • access to market information • access to finance • access to inputs: ✓ fertilizer ✓ seeds ✓ pesticides ✓ water • extension services • technology/equipment • storage • environmental issues such as climate change 2. Legislation and supply chain structure • taxation and regulations on imports • contract farming legislation • organization of agricultural produce • presence of intermediaries
Logistics	Infrastructure and access to support services • transportation • storage • cold chain • packaging and traceability Legislation on nutrition and fortification Legislation on food safety and quality Legislation on food losses and waste
Operations	Access to equipment and technology Infrastructure • access to electricity • access to water Environmental compliance Legislation on nutrition and fortification Legislation on food safety and quality Legislation on food losses and waste

Business component	External factors interacting with firm internal dynamics
Finance	Financial management • access to financial skills • access to financial tools and metrics • payment methods • taxation and fees Access to finance • insurance • short-term funding • commercial lending • microfinance • subsidies
Marketing and sales	Marketing • domestic market characteristics • availability and use of marketing tools • presence of marketing boards • government-led promotional initiatives Sales • legislation on exports • pricing and competition • presence of distributors • legislation on labelling and packaging • intellectual property rights
Human resources	Welfare of employees • employment regulations (minimum wage, legislation promoting gender equality) Knowledge and know-how • availability of skills • corporate-level capacity-building initiatives
Partnerships	Intensity of rivalry Presence of donors and NGOs Government-led schemes

Source: Authors' own elaboration.

3. Why qualitative research in relation to small and medium agrifood enterprises?

Before delving into the interview guide, it is important to understand what qualitative research represents, when this approach should be used and why it has been chosen for this specific study.

As opposed to quantitative research, which generally seeks to quantify cause and effect relationships, qualitative research is instead concerned with understanding certain phenomena. As such, while quantitative researchers begin with a theory (also known as a hypothesis) that they later confirm or infirm, qualitative researchers explore and interpret a certain reality in order to develop a theory that explains the phenomenon in question. In relation to SMAEs, for instance, quantitative research might seek to identify the relationship between processor performance (e.g. sales) and supplier characteristics (e.g. size, skills or location of farms). Qualitative research, on the other hand, might inquire about how entrepreneurs make decisions, or how suppliers are identified, recruited and trained on good practices.

The research methods need to be chosen according to the type of questions that are being asked (Stern *et al*., 2012). This specific study calls for a qualitative approach for the following reasons:

1. There is currently little understanding of how SMAEs arrange their business models in order to respond to the external environment or how they can be enabled to contribute to rural development. Qualitative research in this case can help to develop ideas or hypotheses for broader quantitative studies.

2. Some variables are difficult to measure quantitatively. With respect to certain policy areas such as food quality and safety or decent employment, quantitative data cannot capture the whole picture. For instance, while it might be mandatory for enterprises to own mandatory certifications or comply with employment legislation, only premises tours can indicate to what extent *de jure* (formal) standards and rules translate into practice.

3. It is difficult to capture complex issues in figures, such as business decision-making, or a whole business model with all its interconnected components and responses to external cues. For instance, surveys can identify financial challenges but cannot establish clear causal relationships between these constraints and other business operations such as procurement or marketing. In this context, qualitative research can supply a greater depth of information, which would allow for drawing clear relationships among business components or between business activities and external factors. Drawing links between activities is particularly important to understanding how factors interact to generate competitive advantage, which is important for formulating business-oriented (commercially viable) recommendations.

4. Qualitative research in the business field is particularly important as it allows the researcher "to focus on the complexity of business-related phenomena in their **contexts.**" It thus helps gain a better understanding of "how things work in real-life business contexts, why they work in a specific way, and how we can make sense of them in a way that they might be changed" (Eriksson and Kovalainen, 2015).

5. Interviews, in particular, reveal how the attitudes and feelings of an owner or manager drive decision-making processes. This can help to better explain what has triggered a business's shift in perspective and to help adjust their models according to external influences and agrifood system transformations.

Nonetheless, this is not to diminish the value that quantitative work could add on the topic. Integrating micro and macro levels can particularly benefit the study of complex organizations (Bazeley, 2015). Business-oriented conclusions derived from this kind of study, along with quantitative studies teasing value chain dynamics, can better inform policy makers on the support agrifood businesses need to contribute to rural development.

4. Study design

As discussed above, the purpose of this guide is to present a methodology and interview protocol designed for researchers and practitioners to engage with SMAEs in the field and thus to encourage more systematic research on the topic.

Interviews are a data collection method that can be employed by a wide range of qualitative methodologies. As such, many researchers may find our questionnaires useful regardless of their chosen study design or methodology. However, we provide an overview of our methodological framework for the reader to understand our intentions behind the development of the interview questionnaire and protocol.

4.1. Case study research

The overall research conducted by FAO in relation to the objectives described in previous sections is guided by a case study methodology. Many definitions of the case study exist and vary according to whether it is employed as a methodology in itself or as a method that is part of a wider study. The following is the definition for case study with which we concur:

"A case study is a research strategy that can be qualified as holistic in nature, following an iterative-parallel way of proceeding, looking at only a few strategically selected cases, observed in their natural context in an open-ended way, explicitly avoiding (all variants of) tunnel vision, making use of analytical comparison of cases or sub-cases, and aimed at description and explanation of complex and entangled group attributes, patterns, structures or processes" (Verschuren, 2003).[4]

The case study is one of the most popular approaches in business research, particularly because it allows for the inference of both practical and normative findings while also exposing complex business issues in an accessible manner (Eriksson and Kovalainen, 2008). These advantages are also the reasons behind our choice of a case study approach, more specifically because it can provide practical lessons to business or NGO practitioners in a friendly manner while also ultimately allowing for evidence-informed theory.

There are three stages to our research that all contribute to the research objectives defined in previous sections but in different layers as follows:

1. We develop individual business-level case studies that are illustrative in nature. This type of case study is used to describe a phenomenon (the business model and its interactions with external factors), introducing all the relevant contextual elements (business characteristics, history, location, business practices, policies, etc.) in an accessible manner (Hayes, Kyer and Weber, 2015). This stage will largely make use of the primary data collected through the interviews and field visits. Developing individual firm-level case studies also facilitates the emergence of each business's unique attributes and patterns before we seek to identify more general themes that exist across cases (Paterson, 2010).
2. We develop a wider country-specific case study based on the experiences of three agrifood processors operating in the same industry (the same enterprises upon which we elaborated the illustrative individual firm-level case studies described above). This is known as a comparative within-case study, meaning that the few cases are each closely examined at an in-depth level to discover and illustrate similarities, differences and patterns (see section on data analysis) by bringing evidence from multiple sources. As such, this stage makes use not only of the interviews with the three enterprises, fieldwork visits and observations but also of a prior literature review on the policies and institutions that affect SMAEs in the country – see Ilie and Kelly (forthcoming) for an example of a literature review that was conducted to

[4] By holistic, Verschuren (2003) means that the research unit is not split into observational units such as in the case of surveys which, when analysing a business organization, the employees might be taken as sub-units to derive conclusions on the case. We acknowledge that it might look as if we treat the identified business components (procurement, operations, etc.) as observation units. However, the disaggregation of the business model into components is simply to identify the relevant activities of an agrifood enterprises and to provide structure to the research process. The analysis is done holistically, meaning that we aim to generate in-depth knowledge on business configurations and processes.

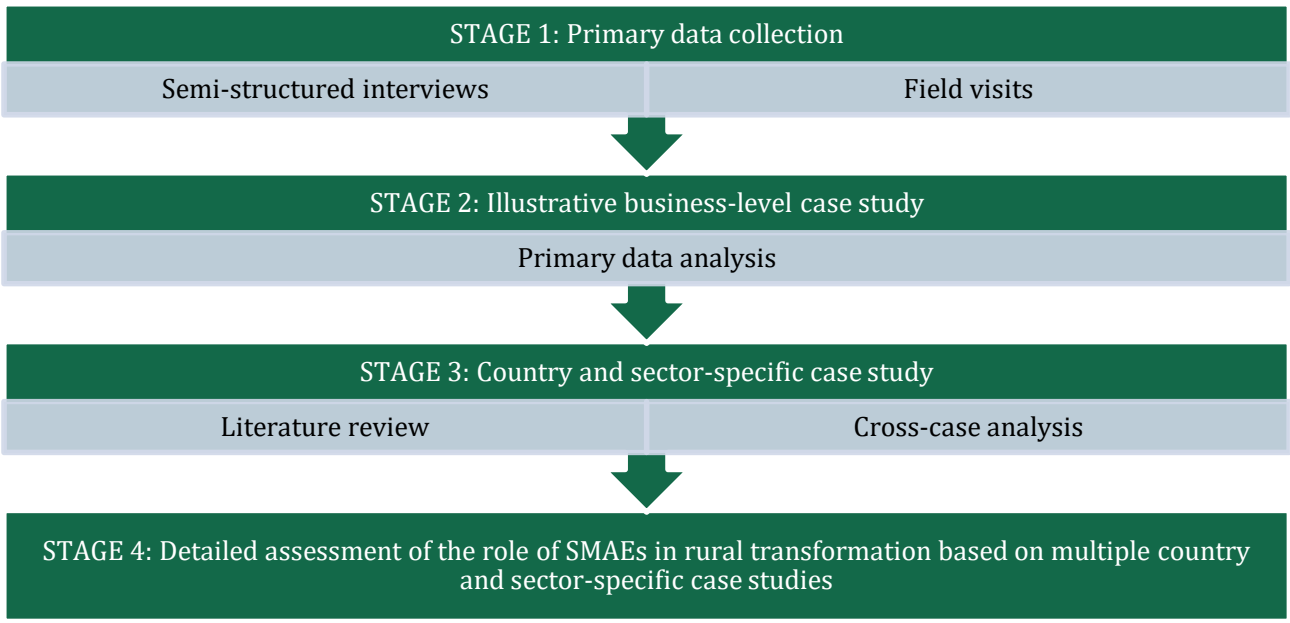
support the development of the Senegal case study. Researchers who are interested in conducting a similar literature review can use Table 2, introduced in a previous section, as a guide.

3. The third stage of the research consists in a cross-case analysis (as opposed to the within-cases analysis developed in the first two stages) where all business cases (21 in total) are compared to identify more generalizable findings in relation to our topic – the role of small and medium agrifood processors in the rural transformation of sub-Saharan African countries.

It is important to note that all three layers of the case studies are practice oriented. This means that rich descriptions will be provided, including details of the contextualized situation of the cases, to allow practitioners – including NGOs and businesses – as well as policy makers to understand to what extent the case applies to their own problems, practices and circumstances (Marshall, 2010). However, we believe that these types of case studies can also bring in evidence to better inform theory. It is for this reason that we also provide elements of theory in the analysis of the data and bridge the findings to existing explanatory theories, particularly in the final cross-case analysis stage.

The research process is depicted in Figure 4.

Figure 4. The research process



Source: Authors' own elaboration.

4.2. Discussion on sample size

In addition to the topic of the study and good research design, appropriate sampling is critical to developing credible and insightful analysis (Marshall *et al.*, 2013). While quantitative researchers have developed rules to sample size to be able to derive statistically significant results, numerical guidelines are less straightforward in qualitative research. Given the complexity of data gathered and also practical constraints such as limited time and resources, qualitative research generally relies on a relatively small sample size.

Sample size is dependent on the research objectives and methodology. For instance, when the goal of the study is to build theory, scholars recommend sampling to cease when informational redundancy or saturation is achieved – the point at which no new themes or information are emerging (Cleary, Horsfall and Hayter, 2014). However, data saturation implies that sample size cannot be estimated prior to data collection, posing practical constraints, especially when time and resources dictate the development of the project.

Boddy (2016) argues that a single unit can also be relevant when conducting case study research as proven by the physical science or management literature. When adhering to good research practices, an individual case can

provide ideas for further research or contribute to a build-up of evidence. Case studies and research in general that is undertaken by practitioners can provide a window into the field for academics or other researchers who are not close to real life practices. One of our main objectives in the pilot phase of the study was to obtain rich information on a single unit of analysis in order to test the adequacy of our model, illustrate the complexity of agrifood processors and provide a wide range of examples of business models that work in various commodity sectors and sub-Saharan African contexts.

Case study research can also facilitate theoretical (as opposed to statistical) generalization[5] when multiple cases are developed. Tsang (2014) finds that case studies have important merits over quantitative methods in terms of empirical generalizations, derivation of hypotheses or testing theory. When the researcher's aim is to build theory from cross-case analysis, Eisenhardt (1989) recommends four and ten cases, a number that facilitates analysis and allows the researcher to obtain insightful information without becoming overwhelmed by the amount of data involved. Many scholars (quantitative-oriented) doubt the validity of such generalizations given the limited number of cases. However, even a low number of cases can produce a representative picture of the population (Verschuren, 2003). This is because complex processes that the case study explores are of significantly lower variability than the separate variables included in quantitative studies such as surveys. In our case, for instance, our "variable" is the business model as a whole (internal firm processes and their interaction with external factors) as opposed to the numerous and highly varied observation units that could be included in a quantitative study such as firm age, size, turnover, salaries, expenditures, etc.

We concur with the view that the quality or usefulness of a case study should not be judged because it cannot be used to generalize. Findings derived from cases that do not fit the general pattern, for instance, are important as they can provide practitioners with ideas for innovation. The development community in particular can benefit from case studies that investigate complex social issues and present them in a friendly, accessible manner. For instance, FAO (2019a) looks at 12 case studies illustrating the diverse demography of entrepreneurship in Africa, which can serve as a source of inspiration and guidance for women and youth aspiring to start a business in a challenging environment.

Another example is a case study commissioned by FAO that examines a small profitable palm oil processor in Ghana, a firm distinguishing itself through its business model, which views farmers and traders as business partners who receive half the profit. An in-depth case study on its business model provides lessons on how transaction costs can be reduced when working with smallholders, or how consumers can be attracted to buy products under a socially-responsible procurement scheme (Kelly and Ilie, 2017). By revealing where the specific case fits within the overall picture and detailing how the firm compares with the others, the analysis can assess to what extent lessons apply more widely (Denscombe, 2014).

In our case, three enterprises for a specific country and commodity sector were deemed a good number given the complexity of the interview and practical matters. We acknowledge that the findings will not be representative of the whole sector in the country but will be relevant to the specific segment to which the firms belong. In Senegal, for instance, the research was conducted on medium-sized rice processors operating in the rice commercial region of the country, which has been subject to the most development and government interventions in the industry. This specific medium-sized segment comprises a total of 26 processors and we consider the three firms' experiences to be relevant to this population, which shares similar characteristics. Additionally, the case can also provide cues for including other segments of SMEs in similar programmes.

For readers wanting to use our questionnaire, the sample size will depend on the methods, objective and scope of their study. For instance, if the researcher's main purpose is to examine a business model that is considered successful in order to provide ideas for practice, then a single case study on an individual agrifood enterprise could hold valuable insights. Additionally, if properly and systematically disseminated, as described above, the case study can complement other findings and allow other researchers to conduct cross-case analyses that can ultimately contribute to theoretical generalizations.

[5] Tsang (2014) defines empirical generalization as "an act of inferring from specific, observed instances, such as those in a case setting, to general statements."

However, the researcher might be interested in identifying best practices with respect to only one policy area such as farmer-market linkages, in which case the scope of the project is reduced to only a couple of business components. The time will be significantly reduced, possibly allowing for a higher number of case units but to the detriment of developing a whole picture on business level interactions.

4.3. Case selection criteria

As discussed in previous sections, the second research stage consists of developing a wider case study on specific commodity sectors in certain countries. The choice of the countries and commodity sectors was made according to the scope of the overarching projects within which the research was conducted.

The interviews conducted as part of the pilot have ranged in length depending on the size and complexity of the business. As such, the interviews lasted from a couple of hours with micro-enterprises to a couple of half-days with medium-sized processors. We acknowledge that business owners and managers are busy and it is difficult to recruit participants who are also willing to provide detailed information and dedicate so much of their time. It is for this reason that our main criteria for recruiting participants in the pilot phase was a demonstrated eagerness to share about their business and experience in order to obtain thick, detailed data.

Our sampling was strategic in nature as we specifically selected those businesses that were able to provide insights into a wide range of experiences and whose trajectory was affected by a multitude of interventions or policies. As mentioned earlier, Senegal's rice sector has benefitted from a wide range of interventions, directly or indirectly targeting processors. By looking at the business models of three rice processors, we were able to better understand how external factors interact with business decisions and how business dynamics interact with policy areas (see Ilie, Kelly and Fall, forthcoming). In Malawi, on the other hand, the cassava processors selected were initiated as part of an FAO project that aimed to develop the market for high quality cassava flour. By targeting subjects in different contexts and identifying those who are affected by a diverse set of policies and interventions, we can better differentiate what works from what does not work when targeting agrifood processors.

Our selection criteria also included formality and a rural setting location; nonetheless, the methodology can also be adjusted to fit the business models of informal enterprises. In addition to the criteria imposed by the project (such as country or commodity-sector), we recommend selecting enterprises that have been operational for at least two years to be able to gauge viability and to allow for sufficient time to be able to understand how the business responds to external influences.

Additionally, any study examining SMEs should have a clear boundary for the size of the enterprises to be included in the study. The definitions of SMEs vary considerably across countries, with no clear trend or rationale behind the choice of criteria. For instance, despite being a wealthier economy, Norway has a cut-off value for SMEs that is three times lower than Viet Nam's. Additionally, most countries use a cut-off value of 250 employees regardless of their income levels (Ayyagari, Beck and Demirguc-Kunt, 2003). It is for this reason that we recommend that researchers consider not only country definitions when selecting SMEs in their study but also the turnover of the enterprises scaled to local economic conditions such as gross national income (GNI) – see Gibson and van der Vaart (2008).

4.4. Study limitations

In addition to the limitations of the conceptual framework described in Section 2.5, the study design brings its own drawbacks. Qualitative research in general, cannot be entirely objective as it involves constantly making judgments about the choice of data and its interpretation. Additionally, the analysis does not include the point of view of stakeholders such as farmers or employees whose issues are explored through the perspective of the company which can bring in bias. In these cases, further interviews with these stakeholders can complement firm-level findings.

The enterprise can also perceive the interviews and the field visits as an audit which might affect the veracity of their responses. Any figures provided should be taken with a grain of salt because they cannot often be verified by

the researchers. Business processes, however, are easier to witness and observe during the field visits, allowing for the validation of certain aspects and thus posing an advantage over other research methods such as surveys.

The quality of qualitative research is also largely reliant on the skills of the researcher and can easily be influenced by the researcher's own personal biases and views. Their presence during the data collection process can also have an effect on the subjects' responses (Anderson, 2010).

And last, the wide scope of the study, which looks at seven business areas and six policy topics along with the interlinkages between them, poses practical challenges including long and intensive interviewing, and a very large dataset to be handled at the analysis stage. This opposes including a higher number of enterprises in the study, which does not allow for the generation of industry or sector wide lessons (see discussion on sample size and case selection above). Thus, to validate results at a wider level, the study can be complemented with focus groups, with a cluster of firms or literature reviews looking at sectoral dynamics. Additionally, other tools can be used to complement the in-depth firm-level insights such as Porter's Diamond Model, which can be particularly useful when analyzing an industry's position in the international market – see, for instance, Kharub and Sharma (2017).

Section 8 further describes the measures that have been taken to enhance the quality and rigor of the research.

5. Ethics in qualitative research

Research ethics "concerns the whole research process, starting from the relationship between researcher and research object and ending up with writing up and publishing the report" (Eriksson and Kovalainen, 2008a). Many research institutions such as universities have developed clear and specific research governance models that define principles of good research practices to ensure that the study is conducted to high scientific and ethical standards (Eriksson and Kovalainen, 2008b). The responsibility of the researcher first and foremost is to respect these guiding principles. Nonetheless, we also summarize here several important aspects in relation to ethics in qualitative and business research.

Guillemin and Gillam (2004) describe two main dimensions of ethics in qualitative research. **Procedural ethics** involve adequately dealing with matters such as confidentiality, informed consent, rights to privacy or deception, issues which are generally addressed in research ethics committee applications. A second dimension is **ethics in practice**, which involves managing the (often unexpected) ethically important moments such as participants discomfort, vulnerabilities, or impulsiveness, in an appropriate manner. It is this dimension that is more difficult to deal with and requires reflexivity from the researcher's side involving: "first, an acknowledgment of microethics, that is, of the ethical dimensions of ordinary, everyday research practice; second, sensitivity to what we call the "ethically important moments" in research practice, in all their particularities; and third, having or being able to develop a means of addressing and responding to ethical concerns if and when they arise in the research" (Guillemin and Gillam, 2004).

Ellis (2007) identifies a third dimension, which refers to **relational ethics**. Managing relational ethics involves mutual respect, dignity and rapport between the researcher and participants. The researchers should be mindful of the fact that it is they who have initiated the research relationship, have authority over the process, and earn the reputation and power from their research.

There are a multitude of factors that can influence the social dynamics between the researcher and participant, which in turn can affect the content and quality of the data. These include structural factors such as age, gender, socioeconomic status, or race/ethnicity, which can produce "particular relations of power between the interviewer and interviewee, creating or inhibiting the possibility of disclosure and shaping the turns that a given interview might take and producing different kinds of text in consequence" (Manderson, Bennett and Andajani-Sutjahjo, 2006). Since harmonious relationships are distinctly defined in each society according to local culture and values, it is difficult to point to specific qualities that can help researchers build rapport. Nonetheless, two pertinent recommendations to build trust are to adopt a non-judgmental attitude and dedicate time towards the exploration of one another (Spradley, 1979 in Connelly and Peltzer, 2015).

In addition to these important ethical considerations and guidelines provided by social researchers, we provide the following points that are relevant to this specific study:

- Participants should be told explicitly that they have the option to remain anonymous, in which case a fictive name will be given to the enterprise – one that cannot be linked to the real name.
- The consent of the participants should be required for any records taken including business documents, photos or recordings, and they should also be fully informed about how these materials will be used. If the participants opt for anonymity, all these materials should be stripped of any identifying information.
- Basic background information should be provided to the participants including the objectives of the study and the methods used. The researcher, however, should also keep in mind that too much information provided before the interview takes place can bring in bias. For instance, sending the questions before the interview can induce the participants to prepare "appealing" responses in advance that might not reflect the reality.
- Some questions, as well as taking a tour of the premises could give the impression of an audit, which can make participants uncomfortable and reluctant to share information about such things as finance matters or food safety issues. It is for this reason that the interviewer should clarify, even before the participants agree to take part in the research, that the objective of the study is to investigate their challenges to inform

better policy. We have found that offering participants the opportunity to review the study before it is published is reassuring. This can also facilitate the validation of the findings (see Chapter 8).

- The researcher should not correct a participant's understanding of business regulations and laws or make any personal remarks with regard to their business practices, which might not always be in line with national legislation.
- The researcher should keep in mind that the enterprises interviewed may be in competition with each other and might inquire about each other's business practices. No information of any kind should be given to a participant about any other participant in the study.
- The researcher should take into consideration that the people interviewed have busy schedules and should always be mindful of the time they take up. We have offered, for instance, to conduct the interview over two days so as not to take up a whole day in the participant's schedule. We have also made it clear that different sections of the interview can be conducted with different people in the organization (managers that oversee the respective areas, etc.).
- The researcher should disclose any associations with sponsors or beneficiaries in advance.

6. Data collection

There are a wide range of methods used by qualitative researchers to collect data including focus groups, ethnographies or textual analyses. This methodology employs semi-structured interviews, field observations, graphic elicitation exercises as well as a post-interview questionnaire. The latter is aimed at providing an assessment of costs along the firm value chain. While the questionnaire can be sent before the interview takes place, it is better to share it after the interviews to allow the researcher to first establish trust with the respondent. However, given the sensitive nature of some information being sought, particularly financial figures, the respondent should be made aware that answering it is entirely optional.

An example of such questionnaires that can be adapted based on the interview responses and objectives of the study is presented under Annex 1. This section will look at the other three data collection methods that we have made use of, namely the semi-structured interviews, field observations and graphic elicitation exercises.

6.1. Interview guide

One of the most popular tools in social research is the interview, which can be unstructured, semi-structured or structured. Structured interviews generally imply a set of standardized questions that do not allow the researcher to probe beyond the answers received, hence a limited level of detail. Unstructured interviews are more of a discussion on a broad topic with questions being adapted according to the participant's answers. Semi-structured interviews are the chosen method of our research investigation as it allows for a guided discussion, while also prompting questions to elicit more information and encouraging the interviewees to introduce issues they feel are important. The major advantage of structured interviews is that they provide standardization and comprehensiveness while also permitting a conversational tone (Eriksson and Kovalainen, 2008c).

An FAO multidisciplinary team had determined the specific data needed to achieve the study's objectives, based on the literature and on their own experience in the field (as laid out in the topic guide – see Table 1). This process has allowed for the formulation of questions that elicit the needed information from the respondents. As previously mentioned, the interview has been tested in several countries and commodity sectors, which has allowed for a reformulation of questions based on the feedback received from researchers and interviewees.

It is important to note here that the questionnaire is extensive as it covers seven business areas and six policy elements, each of them imposing specific inquiries. While the interviews lasted only a couple of hours with micro-enterprises, as many questions were not relevant to them, the medium-sized businesses required significantly more time to be covered in-depth. In these cases, the interviews were split over a couple of half-days. As the size of the business increases, so too does its complexity, which will require not only more time but also the inclusion of more people as respondents. This is because different business areas will be overseen by different people who are specialists in the respective field and are more able to answer technical questions such as with respect to food safety, nutrition, accounting, etc.

The following section introduces the questionnaire in all its comprehensiveness; however, this should be adapted, and questions should be prioritized according to the study's objectives, the businesses' profile and the commodity sector in which they operate, and the researchers' resources including time and budget.

6.2. Interview protocol

The interview guide below is structured according to broader questions (first column on the left), which narrow down into a more focused set of questions (second column) that encourage the participant to say more. These types of follow-up questions are also known as probes or prompts and often cover sub-topics or issues discovered in the literature in relation to the main topic under investigation. It should be noted, however, that equally important are also unscripted, spontaneous prompts including interjections to show active listening "Yes", "Uh-huh", clarifying prompts such as "How" or "Why", general elaborations such as "Could you explain further" or detail-oriented follow-up such as "Who" or "When" (Leech, 2002; van de Wiel, 2017). Reflective questions are also important and can be used by the interviewer to check their understanding about the response or allow the participant to correct details when responses do not seem to add up. In short, the interviewer introduces the broad

question, lets the participant talk in any direction, and then use prompts or probes to guide the discussion towards pre-planned specifics (Jacob and Furgerson, 2012). Superficial interviewing, without focus on in-depth prompts and probes to elicit deeper understanding, will result in one-dimensional data that will not have the depth needed to provide accurate and elaborated findings (Connelly and Peltzer, 2015).

The third column of the interview protocol provides some additional guidance to researchers who might want to employ our data collection method. However, these are only condensed guidelines that highlight the rationale behind the questions and do not replace the knowledge the researcher should have to properly analyse the data. The last few pages of this paper provide a list of recommended readings that could help the reader gain a better understanding of the various issues that were introduced in the topic guide. A set of good interviewing practices is provided in Box 1.

Box 1. Good interviewing practices

A set of good interviewing practices that the interviewer might find useful:

- While most interviewers will be experts in their area, a good interview practice is for the interviewer to seem less knowledgeable than the interviewee in order to put the responded at ease (Leech, 2002).
- Interviewers should not present their own opinions or suggest answers by providing examples as this can introduce bias (van de Wiel, 2017).
- The interviewer should be flexible about question order to allow for a smooth, organic discussion. However, an ability to tactfully change the direction of the conversation is also needed in order to not derail from the purpose of the study.
- The interview should be ended on a positive note and the interviewer should reiterate the value of the participant's contribution to the study. Additionally, at the end of the interview the researcher should check for unexpressed issues (i.e. "Is there anything we have not covered that you might consider important to add?").

Before beginning the interview, the researcher should present the scope and objectives of the project and indicate that the interview is structured according to different aspect of the business, namely procurement, finance, marketing and sales, partnerships, logistics and operations.

1. PRELIMINARY INFORMATION ABOUT THE ENTREPRENEUR AND THEIR BUSINESS

The interview will begin with a "warm-up" discussion, which helps to reassure the participant and engage their interest. The interview will then delve into each business area, exploring key issues of interest.

Table 3. Interview questionnaire – setting the background

Interview question	Probes/prompts	Guidelines
Setting the background		
1.1. Tell us about why and how you started your business.	What activities did you engage in before starting the business? Why did you set up the business? How did the idea for your business come about? How has the idea evolved over time?	These introductory questions allow the researcher and participant to become familiar with each other and to become comfortable. Generally, entrepreneurs are passionate talking about their business and ideas so these answers will come easy to them. Some owners or managers will even go beyond the scope of this question and will start talking about the evolution of their business and touch on many aspects that will be covered later. It is important for the researcher to take note of any issue they might want to return to.
1.2. Tell us about the impact your company has on the community.	Does your business have an official mission? What is it? What do you think are the ways that your business contributes to the local community?	This question reveals whether the company's strategy is dictated by a philanthropic mission and whether this is an official one or a personal view/desire of the owner. In our experience, a frequent response concerns the creation of employment in the community. The businesses that have official missions will also have formal business plans in place (often due to external training in business management and planning) with specific well-articulated objectives.
1.3. How has your business changed since it started?	Have there been any major changes to business operations? Has your company grown since it was founded? Have there been any major changes in the direction of the company? What has prompted this? If the company made a transition from informal to formal, what are the reasons behind this decision (why, why at that moment, the process and costs associated with formalization, and the adaptations the company had to make in its management and operations).	

Interview question	Probes/prompts	Guidelines
1.4. Do you have a business plan? Please describe.	Is it written or unwritten? Looking to the future, what is your company growth strategy?	These types of questions can reveal whether the business is driven by a carefully formulated strategy or by day-to-day spontaneous decisions. It will contribute to a better understanding of the business, growth-orientation and level of formalization. They will also help to provide an overview of the companywide strategy (e.g. integration in the value chain), and understand whether products are a response to market demand. Some managers will prefer sharing a formal business plan with the researcher, which can be later used in the analysis.
1.5. Please list all the activities the business carries out to create value in the same commodity sector.	For instance: Farming Trading - at what level of processing are goods sold? Nursery/cold storage	
1.6. Please list your products in order of importance by sales. Why did you choose these specific products?	Is there any logic behind your product portfolio?	

Source: Authors' own elaboration.

Many of the questions that follow are product-specific and should be tailored to the commodity prior to the interview. As such, the next sections are to be completed with respect to the main revenue-generating product or the product that is under the scope of the research.

2. PROCUREMENT

Table 4. Interview questionnaire – procurement

Interview question	Probes/prompts	Guidelines
Suppliers and procurement preferences		
2.1. Tell us about what inputs go into the making of your product.	What are the raw materials and ingredients? What packaging materials do you use? What is the share in volume for all raw materials used in the main product?	This is to solicit an overview of the product and the supply needs of the business. Some managers will know the specific share in volume of each input, others will provide estimations. For instance, for crisps, we have obtained the following figures: 40 percent potatoes, 15 percent oil, 13 percent electricity, 10 percent cartons, 10 percent seasoning, 6 percent packaging, 6 percent workforce.
2.2. What characteristics do you look for in your raw materials or ingredients?	What type of crop varieties do you prefer and why? What characteristics do you consider when selecting the ingredients? Why these specific ones?	This is not only to determine how procurement strategies contribute to the company's competitive advantage (such as selecting cheaper ingredients to make products more affordable) but also whether the enterprise is aware of the nutritional content of crop varieties or ingredients (e.g. oil), and if they are purposefully providing nutritious food to the market (nutritional content refers to the nourishing substances in the product such as proteins, minerals, vitamins, etc.).

Interview question	Probes/prompts	Guidelines
2.3. From whom do you source your inputs?	What is the source of each input? (raw materials, ingredients, packaging materials, other inputs). What share of total raw materials for the main product was procured from: small farmers, traders, cooperatives, commercial farms, own farm, imported?	These questions aim to gauge the firm's procurement strategy and satisfaction with different suppliers. In our experience, many enterprises have undergone changes in their supply base for various reasons: dissatisfaction with farm practices, "bad episodes" (e.g. low-quality supply and failure of supplier to make up for the loss), interventions by the government or development agencies setting up various procurement schemes (e.g. warehouse receipt systems). It is important to understand what has triggered these changes and how the overall business was impacted as result. These questions can also reveal whether the firm is motivated by any labour/environmental/quality and safety concerns when selecting their suppliers. For instance, some interviewees revealed that they prefer procuring from cooperatives because they provide better quality supply due to peer pressure. Questions 2.7 to 2.9 will look in more detail at the specific arrangements that the enterprise has with farmers.
2.4. Have your supply sources changed since you started your business? Why?	What were your supply sources when you started your business? Mid-operations? Now? What has prompted these changes? How did you get to this specific combination of suppliers?	
2.5. Who is your main supplier and why?	What are your criteria when choosing suppliers? Which source do you prefer the most and why? Are there any risks involved when procuring from these suppliers? How did you identify your suppliers? Have they ever let you down? Why? How did you deal with this?	
2.6. How is the price for your supply decided?	Who decides it? What are the factors that influence the price? Do you pay a premium for quality?	This question helps to gauge the bargaining power that the two parties involved in the transaction have, and whether good practices are rewarded by the enterprise.
Procuring from farmers		
2.7. If procuring directly from farmers (confirmed in previous section), what are the procurement arrangements? How do these arrangements differ when procuring from smallholders and large farms?	How often and how many units of produce do you buy directly from smallholders? From commercial farms? Are you engaged in a contract with these suppliers? Is it written or verbal? What are the terms of the contract? What services or inputs do you provide directly to your suppliers? Are these provided for a fee? On credit? What are the conditions?	While the questions above looked at the supply base in general, these questions look at the specific arrangements the firm has with farmers; in this case, the distinction between commercial farms and smallholders is important. These questions can also help understand whether the SME represents a reliable market for farmers in general (and for smallholders in particular) and identify the factors that shape the firm's decision to buy from them. Participants might not understand the difference between question 2.5 and

Interview question	Probes/prompts	Guidelines
2.8. Have your farmers ever let you down with respect to quality and quantity delivered or timing of delivery? What happened?	What went wrong? Have you taken any measures to ensure that this does not happen again?	question 2.9. It should be made clear by the interviewer that the former refers to the suppliers in general (e.g. preference for traders over farmers), and the latter strictly refers to farmers (e.g. preference of certain farm characteristics such as size or location).
2.9. How do you choose your farmers? Are there any criteria that you consider?	Do you prefer working with smallholders, large farms or cooperatives in particular? Are any of your suppliers part of a cooperative? Does that make any difference to you when working with smallholders?	
Payment patterns		
2.10. When do you pay your suppliers? In advance? On delivery? After delivery?	What share of the total amount? Is this required by the suppliers? Have you ever delayed payment? Why?	

Source: Authors' own elaboration.

3. INBOUND LOGISTICS

The following questions are to be completed with respect to the most recent high season. If time allows, then the same questions can be asked with respect to the low season so inferences can be made on seasonal patterns.

Table 5. Interview questionnaire – inbound logistics

Interview question	Probes/prompts	Guidelines
Transportation		
3.1. Where are your suppliers located?	For instance, rural or urban setting. What is the distance from your base to the purchase site?	This interview section can provide a better understanding of the strategy the firm undertakes with respect to logistics (internalization of activities versus outsourcing) and the factors that shape such strategy. For instance, the status of infrastructure or the presence (or absence) of support services in rural markets are frequent reasons cited by the firm when explaining the choice behind their inbound logistics strategy.

Interview question	Probes/prompts	Guidelines
3.2. Did your enterprise travel to the site of the purchase to complete the procurement? (If not, jump to question 3.4.)		This main question and its follow-up questions below reveal to what extent the company internalizes its inbound logistics activities, which are divided here into transportation and storage.
3.3. How does your company ship the raw materials from the supplier to the factory?	How much time (in hours) took to travel? Did you use your own transport? If not, what kind of transport? E.g. rented. What type of vehicle did you use? Is there any reason behind this specific choice of vehicle? Is the driver one of your permanent employees? Did your company pack the raw materials for transport? Did your company load and unload the supply into and out of the transport vehicle? Did your company supply barrels or boxes or bags to transport the raw materials? Are there any other activities that your company undertakes that were not mentioned?	This section mainly asks for descriptive elements in order for the researcher to assess the efficiency behind inbound logistics activities. These questions are also relevant to food and safety objectives. For instance, we want to understand whether storage is done in such a way that air can circulate (distance from walls, pallets) and in such a way that everything is visible (necessary to detect pest infestation and to ensure first-in/first-out).
Pre-processing storage (of raw materials)		
3.4. How do you store your raw materials?	Where? For how long? What is the size of the storage space? Is this sufficient for your needs?	
Infrastructure and input/service support markets		This is an important section as the responses to the questions below often reveal why the activities described above are being done the way they are.
3.5. Do you outsource any activities?	What are the arrangements? Why did you choose to outsource them?	As previously mentioned, infrastructure and the availability of support services often influence the inbound logistics strategy of SMAEs, which in turn affect their potential to contribute to rural development.
3.6. Are your inbound logistics (storage, transportation) affected in any way by local/regional infrastructure?	If so, what are the issues? How do you deal with them?	

Interview question	Probes/prompts	Guidelines
3.7. Have you ever had supply losses? Why did it happen?	At what stage did these happen? During transportation? Storage? How many of the purchased load was lost? What happened to it? Did you manage to address this issue? How?	With respect to food losses, it is important to understand whether the entrepreneur (or relevant person/ manager) distinguishes between spoilage and contamination. These questions can also determine the company's awareness with regard to food losses, safety and quality. These responses can also be further examined when conducting the premise tour through notes and photo documentation. Packaging is mostly relevant to food safety, quality and loss issues. A frequent problem identified is that suitable packaging materials are too expensive or cannot be found close to rural areas. This poses not only cost-related challenges but also hinders the ability of firms to offer a safe product since packaging is often a determinant of safety and quality.
3.8. How do you protect your raw materials?	Do you take any specific measures during transportation? During storage? Do they incur any costs? How much?	
3.9. What kind of packaging do you use for your raw materials? What has determined this choice?	Did you choose the material yourself? Why this specific one? Is it possible to buy it in adequate volumes? Is there another material you would prefer? Why are you not using your preferred one?	
3.10. Do you return any of the raw materials, ingredients, materials or packaging to your suppliers? What are the arrangements for this?	How do you return them? Are there any conditions involved?	This tests the company's concern with respect to material circularity. In addition to issues related to waste, the response can also indicate whether economic efficiency is fully exploited.
3.11. Describe the main problems or challenges related to your inbound logistics activities. What impact do they have on your business?	Have they always been in place? Have they ever become better or worse? How? What happened? How have you dealt with these constraints?	This question can provide a greater understanding of why the above activities are done the way they are.

Source: Authors' own elaboration.

4. OUTBOUND LOGISTICS

Table 6. Interview questionnaire – outbound logistics

Interview question	Probes/prompts	Guidelines
Post-processing storage (of final products)		
4.1. How are goods stored after processing?	On average how long do they sit in storage? What is the size of the storage space? Is this sufficient for your needs?	Outbound logistics concern the same aspects covered under inbound logistics but in relation to the post-processing stage of the product.
Distribution		
4.2. Where are your buyers located?		
4.3. Do you ship directly to your customers? If not, jump to question 4.5.		
4.4. How does your company ship the products from the factory to the buyers?	What is the distance from your premises to the sale site? How much time (in hours) does it take to travel? Did you use your own transport? If not, what kind of transport? E.g. rented. What type of vehicle did you use? Is there any reason behind this specific choice of vehicle? Is the driver one of your permanent employees? Did your company pack the products for transport? Did your company load and unload the products into and out of the transport vehicle? Did your company supply barrels or boxes or bags to transport the products? Do you undertake any other activities related to your outbound logistics that were not mentioned?	
Infrastructure and input/service support markets		
4.5. Do you outsource any activity? If yes, what are the arrangements?		
4.6. Are your outbound logistics (storage, transportation) affected in any way by local/regional infrastructure? If so, what are the issues and how do you deal with them?		

Interview question	Probes/prompts	Guidelines
4.7. Have there been any product losses during your outbound logistics? What happened?	At what stage did these happen? During distribution? Storage? How much of the load was lost? How did you deal with the situation?	
4.8. How do you protect the products?	Do you take any specific measures during transportation? During storage? What are these measures? Do they incur any costs? How much?	
4.9. Tell us about the packaging you use in your final product.	Did you choose the material yourself? Why this specific one? Is it possible to buy it in appropriate volumes? Is there another material you would prefer? Why are you not using your preferred one?	
4.10. Are reverse logistics systems in place for collecting raw materials, ingredients, packaging and labelling materials, returning your, the buyers' or consumers' containers or pallets? What are the arrangements for this?		
4.11. Describe your main problems or challenges related to outbound logistics activities.	Have they always been in place? How are they affecting your business? Have they ever become better or worse? How? What happened? How have you dealt with these constraints?	

Source: Authors' own elaboration.

5. OPERATIONS

Table 7. Interview questionnaire – operations

Interview question	Probes/prompts	Guidelines
Process description		
5.1. Please lead us through the value-adding activities your business performs once the raw materials reach the premises. What machinery is employed for these activities?	What are the activities the mill performs beyond processing? (e.g. washing, packaging, tagging, labelling, stacking on pallets). What is the capacity of the machinery? What is your average throughput? How does this differ across seasons (high/low)? Is there a particular activity which brings more value (i.e. profit)?	This section in particular can be undertaken during the tour of the premises, moving along the factory according to the flow of the product.
Infrastructure and support services		
5.2. How do you maintain your equipment?	How frequent does it need repairs (if ever)? How often do you carry out maintenance? Who does it? How much do you pay for it? Do you have to shut down operations during maintenance? How often and for how long? Do you incur any losses?	Consistent access to supply of energy, clean water and repair services is the foundation for food safety and quality, as well as a necessity for the business. This section can also help us identify structural restraints imposed by the environment and identify any innovative solution the business may have put in place to deal with them.
5.3. How is water sourced?	Who is the supplier? Do you pay to access it? How reliable is your access to clean water? Do you have any emergency plans in case of outages? Do you have any water-saving strategies?	
5.4. How do you power the premises?	Who is the supplier? How reliable is your access to energy? Are there any outages? How frequent? How does this impact your business operations? What losses are incurred during a typical outage? Do you have any emergency plans in place for outages? Please describe. Do you use any energy-saving strategies?	
5.5. Is your ability to produce affected by any factors?	Do you produce less than what you want to? Why? Areas to probe: • demand from customers • availability of raw materials • capacity of processing equipment • capacity of storage facilities • liquidity or cash flow issues • lack of capacity in human resources • problems with electricity or water	

Interview question	Probes/prompts	Guidelines
Food safety and quality		
5.6. Describe the contact you have with food safety authorities.	Have they ever visited your premises? How often? Did they provide guidance? Did they inspect your premises? If yes, what were their conclusions?	Ensuring food safety often imposes additional costs that the business might not be willing to undertake if the related commercial returns are not apparent. The authorities' involvement is essential to make sure the business complied with basic food safety and quality regulation.
5.7. What are the main risks your product is subject to that could alter its characteristics in terms of quality and safety?		These questions also test the knowledge of the business with respect to ensuring a safe and good quality product. Since many SMAEs do not have a dedicated person for food safety and quality, such measures fall under the responsibility of the general or production manager. Examples of answers to question 5.8 can include sorting, controlling temperature, timing or maintenance.
5.8. What are the critical points in your processing that must be carefully managed to ensure a safe, good quality product?		
5.9. Do you have food safety expertise within your company, or do you access it as required?	From where? Have you ever received technical support from an agency on any health, safety or labour practices? From whom and why?	
5.10. Do you have any voluntary standard certification?	National or international? Which one?	Certifications can include: • Global Good Agricultural Practice (GAP) • International Organization for Standardization (ISO) • Hazard Analysis and Critical Control Points (HACCP) • national standards • organic certifiers • Fair Trade • Rainforest Alliance Consumers in developing countries are generally cost-sensitive and might not be willing to pay the premium imposed by certified products. This is why food SMAEs in these countries will not pursue voluntary certifications that involve cost extensive processes, unless targeting specific niche or exports markets.
5.11. Describe the process that you undertook in order to obtain it.	Did you have to make changes to your practices or premises? What changes? Did you receive any support? What kind and from whom? How much did it cost and how long did it take to obtain it?	

Interview question	Probes/prompts	Guidelines
5.12. Have you ever had any product rejections from your buyers? Why were your products rejected?	How many times, and what were the reasons given? How did you deal with the situation?	Product rejections can be an indication of poor safety and quality measures. How the enterprise deals with rejected, damaged produce or by products can also have safety and economic efficiency implications.
5.13. Are there any by-products resulting from the processing of your main products? How are they used?	If selling, for how much? If re-using, for what purpose? If disposing, where?	
5.14. What percentage of your production is diverted away before packaging?		
5.15. Do you have a market outlet for damaged produce, or any way to reuse it? If yes, please describe.	Who buys it and for what price? If re-using, for what purpose? If disposing, where?	
Nutrition		
5.16. Do you fortify your products? If yes, describe the process and the reasons behind the decision.	Is this a response to market demand? If not, why do you fortify them? What nutrients do you use? Why? Do you receive any subsidies for this? Have you ever received any technical advice? From whom? What is the market for this product? Who benefits from the products? Is anyone measuring the impact of these products? Is it profitable?	As in the case of the food safety and quality aspects explored above, this section examines the firm's concern with nutrition and incentives to invest in nutrition.
5.17. Are your products tested for nutritional content?	Are they labelled with this information? Why/why not? Who assesses the nutrient content of your product? Why/ For which purpose?	
5.18. Do you consider your product to be nutritious? Why/why not?	Are any of your products a response to consumer demand for nutritious products? Do consumers pay a higher price for more nutritious products?	

Source: Authors' own elaboration.

6. MARKETING AND SALES

Table 8. Interview questionnaire – marketing and sales

Interview question	Probes/prompts	Guidelines
Industry collaboration and competition		
6.1. What is your market share (if known)?		This section aims to determine the level of competitiveness in the industry. This in turn will have implications for business strategy and profitability.
6.2. Who are your main competitors?	For instance, imports, local processors, international brands.	
6.3. How many firms selling the same product are there in the same district/region?	Do you know who has the largest share of the market? How much?	
6.4. How has competition changed since you started the business? What has been the impact of changing competition on your business?	How are you responding to changing competition? Has the growth of others affected your company? Have you been affected by imports? How?	
6.5. Do you ever coordinate or share material goods, information or labour with competitors?	If so, why? Is this helping your business? How?	
6.6. Have you ever referred extra orders to fellow processors?		
Buyers		
6.7. What are the categories that your buyers belong to?	For instance, retailers, wholesalers, exporters, small shops/kiosks.	This is to examine the reliability of the buyers, their bargaining power, any pricing strategies that the firm might employ and solutions with respect to fluctuating demand. Developing countries are characterized by traditional retail markets such as small, informal kiosks, corner shops or open markets. Increasing internationalization, however, translates into these traditional channels being increasingly replaced by modern retailers such as large, mostly foreign supermarkets. These retailers often impose standards on their suppliers that are more stringent than national ones, making it difficult for domestic food processors to adapt and remain competitive.
6.8. Where are these buyers located?		
6.9. What is average selling price of your product for each of these buyers?		
6.10. How were the deals made?	How did you find these buyers? Do you have a contract with any of your buyers? Written or verbal? What are the terms?	

Interview question	Probes/prompts	Guidelines
6.11. Do you experience fluctuating demand from any of these buyers? How do you deal with this?		
Payment patterns		
6.12. Have these buyers ever paid in advance?	How often? What share of total amount?	
6.13. Have you ever experienced payment delays from these buyers?	Has it affected your business? How? How did you deal with this?	
6.14. How is the price of your products decided?	Who decides it? Is there room for negotiation? What factors were taken into consideration when you or the buyer set up the price?	
6.15. Do you use a broker/agent to arrange the purchase? If yes, please describe the arrangements.		
Sales strategy		
6.16. Tell us about the characteristics of your (main) product.		This section can help identify the firm's competitive advantage and its source.
6.17. Why do you think your clients prefer your product over your competitors?		
6.18. How is your product priced compared to your competitors?		
6.19. If prices are lower, what is the source of your cost advantage?	How did you acquire these sources?	
6.20. If prices are higher, how do you help your customers understand why your prices are higher than those of competitors?		Do they communicate information about safety, quality or nutrition to sway consumers?

Interview question	Probes/prompts	Guidelines
6.21. Do you think that you have sufficient information about the market?	What sources of market information do you use? Are there other sources available that you do not use, and why do you not use them (for instance costs, irrelevant or non-timely information)? What other information or services would you like to have access to?	Having information about the market provides the basis for decision making processes. Market information can be generated by various activities, including marketing research. However, most SMAEs in developing countries often do not possess the resources needed to undertake such activities.
6.22. With respect to the voluntary certifications discussed earlier (if any), how have these certifications have helped you, or posed challenges to your business?	Are these certifications incorporated into your brand? What is the impact on sales? Were there any changes to the product characteristics or price as a result of the changes brought by the certification requirements? What changes? How were these received by consumers? What is the cost of compliance?	While the questions under Operations covered the technical aspects in relation to certifications, this section aims to understand the impact these certifications have for the overall brand and sales strategy.
6.23. Do you think the market rewards these certifications?	Was there a market for certified products in place from the beginning or did it take time for buyers to perceive the benefits of certified products?	
Marketing activities and tools		
6.24. How do you create an awareness of your product?	What tools are you using to reach your customers? Possible answers might be: TV, magazines/newspaper, radio, company website, social media (Facebook, Twitter, etc.), other web platforms, word of mouth, billboards or sponsoring events. Are you reaching out to different customers in different ways? How? Why did you choose these specific marketing activities and tools?	This is to analyse the SME's ability to engage in marketing; identify any innovations, best practices, solutions to the low budget dedicated to marketing; examine use of information and communications technology (ICT). Reasons for choosing specific tools can include low costs, reaching target segment, lack of knowledge on other marketing tools, lack of resources for more extensive marketing, etc.
6.25. Who consumes your product?	What kind of people are they?	

Interview question	Probes/prompts	Guidelines
6.26. Do you conduct market surveys to identify and gather information about your buyers or final consumers?		
6.27. What has been your most successful form of marketing?	Who was this directed at? Why do you think it was the most successful?	
6.28. Have you experienced any challenges when implementing these promotional activities? What are they and how do you deal with them?		
6.29. How much of your budget do you dedicate to these activities? Does this meet your needs for marketing?		

Source: Authors' own elaboration.

7. HUMAN RESOURCES AND MANAGEMENT

Table 9. Interview questionnaire – human resources and management

Interview question	Probes/prompts	Guidelines
Entrepreneurial characteristics		
7.1. Does the owner have any previous entrepreneurial experience?	What industry? What was the nature of the business?	Entrepreneurial characteristics, particularly in the case of SMEs, often shape the business model of the enterprise and direct its growth-orientation.
7.2. Does the owner have any previous professional or educational experience in the industry?		
Recruitment policy		
7.3. How do you recruit for skilled positions?	Do you advertise? Do you use word of mouth? Are you satisfied with the candidates?	Does recruitment strategy impact the profile of employees? Is there any connection between recruitment strategy and the capacity of employees? High turnover is costly to the business and may be indicative of other problems in employment policies, compensation, etc.
7.4. What is the turnover in these roles?	How many previous occupants of these positions since you have been in business? Did the previous employees in the same positions leave or were they fired? Why?	

Interview question	Probes/prompts	Guidelines
7.5. What do you consider to be your greatest challenges in recruiting staff?	How have you attempted to address them? Areas to probe: rural location posing challenges to attracting skilled employees, salary, competition from bigger companies, lack of skills and qualifications.	
Decent employment aspects		
7.6. Did any of the managers require training? Was this provided and how?		This is to understand the firm's investment in capacity building and how they leverage relationships to provide training opportunities. Food safety training on basic hygiene behaviour is particularly important in a food business, and the enterprise should confirm that all staff has been given basic hygiene training (e.g. washing hands).
7.7. Does the company provide training to its employees?	Is training offered to both non-managerial staff and casual staff? Is the company directly providing the training or is training assistance received? From whom?	
7.8. What employee benefits are in place at your company? Are these available to all employees? If not, who benefits from them?	Areas to probe: • employee contracts • health checks and sick days • overtime compensation • health insurance • annual performance reviews • a set pay scale (does it begin at the national minimum wage?)	To understand what measures, if any, are being provided to improve the conditions of vulnerable rural groups (casual labour, women, young people), it is necessary to understand the current standard of labour practices in the operating environment, and to connect those practices to possible improvements in the performance of labour.
7.9. What are the salary arrangements?	How often do you pay your employees? Casuals? Seasonal? Full-time? Do you ever advance salary to employees? Under what terms? Have you ever had to delay salaries for your employees? What was this due to?	
7.10. Are there any facilities that employees can use when on premises?	Do you have a place for personal belongings? Is it safeguarded? Are there any changing and eating spaces? What does the place look like (e.g. tables, outside/inside)? Is food provided by the company? Are there toilets on the premises?	This is to gauge how the company thinks about health and safety, whether this represents a concern and what investments they are willing to make and why (are they responding to regulations or do they have other motivations?).
7.11. What measures has the company taken to provide a healthy and safe work environment?	Would the company like to take other measures for which it does not have the means? Is there any support from government services on this issue? Are there any written health and safety policies?	
7.12. How do you motivate your workers?	Do you provide any incentives to increase productivity? What are these and how have employees responded to them?	

Interview question	Probes/prompts	Guidelines
7.13. Do you have a policy on child labour for your own business or suppliers? How do you assess age?		
7.14. Have you initiated any activity, training or other form of support to improve working conditions in the supply chain? Please describe.	Have you partnered with any other organizations? For instance, cooperatives, women or youth groups or NGOs. Do you monitor working conditions among your suppliers, such as contract farmers? Why?	

Source: Authors' own elaboration.

8. FINANCE

Table 10. Interview questionnaire – finance

Interview question	Probes/prompts	Guidelines
Start-up		
8.1. Tell us how you financed the start-up of your enterprise.	What were the sources of funds? What were the amounts from every source?	A typical scenario for African SMAEs is to finance start-ups with support from family or friends.
Cash flow and working capital		
8.2. How do you finance the everyday expenses of your business?		Working capital is often a challenge for SMEs in sub-Saharan Africa and the reason behind many business closures.
Growth		
8.3. What was your annual turnover in the last financial year?		The growth orientation of the enterprise is an important aspect to be analysed; high-growth companies (also known as "gazelles") benefit from certain characteristics that might enable them to contribute to economic and sustainable development objectives. SMAEs operating in developing countries suffer from a lack of financial products tailored to their needs, a scenario that has
8.4. What are the major investments you have made and how were these financed (e.g. physical capital, information systems, computers, productive equipment, facilities, transportation, warehouses).	Areas to probe: • type of investment • reason for investment • year of investment or business stage (start of operations, mid-operations, recently) • amount • source of financing • expected useful life of investment.	

Interview question	Probes/prompts	Guidelines
8.5. Please identify whether any of the following are reasons why you have not used credit to finance your business activities. You may select as many responses as necessary: a) Because the nearest financial institution is too far away. b) Because the financial services are too expensive. c) Because the products don't suit the needs of my business. d) Because I don't have the necessary documentation. e) Because I don't trust financial institutions. f) Because I don't have any collateral to pledge for a loan. g) Because I have no need for credit. h) Because I prefer to not have any financial obligations to a third party. i) Because I have other informal sources.		come to be known as the "missing middle" in financing. This means that micro-finance institutions provide loans that are too small for this segment of enterprises, while commercial banks or investors deem them as too risky.
8.6. Have you ever been denied a loan? What was the reason?		
8.7. If you obtained a loan, were you able to pay it back according to the loan terms?	Were you satisfied with the terms of the loan and why? What was the interest rate?	
8.8. What are your investment plans for the next five to ten years?	What do you consider to be your urgent investment needs? What are the important but not urgent investments that you would like to make?	
Financial management and bookkeeping		
8.9. How do you know that your business is doing well?		This is to understand the depth, consistency and formality of financial management protocols, their impact on business sustainability and other firm activities.
8.10. Do you know what tools and metrics your company (or accountant) uses in its financial planning?	How often are these figures calculated and by whom? An external or internal person?	

Interview question	Probes/prompts	Guidelines
Formalization		
8.11. Is the company's banking done on its own private account? What kind of account is it?		
8.12. How do you pay suppliers and employees?	For instance, cash, cheque, bank transfer, in-kind (company product or food goods).	
8.13. Do you have insurance? What is it for and have you ever used it?		
8.14. Does your company go through an official tax audit? What does it look like?		

Source: Authors' own elaboration.

9. PARTNERSHIPS

Table 11. Interview questionnaire – partnerships

Interview question	Probes/prompts	Guidelines
9.1. Does your company belong to any trade associations?	Are there any fees associated? Has it changed your business? How? Does it bring any benefits?	If the previous sections are adequately and comprehensively covered, this part of the interview will not bring much additional information in terms of partners' support to the business. It can nonetheless bring to the surface important details such as the circumstances under which the partnerships were initiated or benefits that were overlooked. Examples of advantages of partnerships can include: • reduction in costs of raw materials; • better access to markets; • financial support; • reduction in costs of accessing equipment; • knowledge sharing; • development of new products/processes; and • collective action to solve problems faced by the industry at large.
9.2. Does your company capitalize on any national or public sector support programmes? Please describe.	Who initiated the collaboration? Why? Has it changed your business? How? Does it bring any benefits?	
9.3. Does your company partner with any private sector actor or NGO? How were the partnerships established and how does it help your business?	What is the history of your collaboration? Has it changed your business? Does it bring any benefits? How?	

Source: Authors' own elaboration.

6.3. Graphic elicitation exercises

In addition to the list of set questions, we also employ graphic elicitation as a research tool. These can be requested either at the beginning of the interview or before each relevant section. The interviewer can either draw the illustrations described below themselves, based on inputs from the respondent, or allow the participant to draw them if comfortable.

1. Diagram a "year in the life" of the company, showing seasonal changes in raw material procurement, volume of production, and labour needs. Figure 5 shows an example of such a diagram.

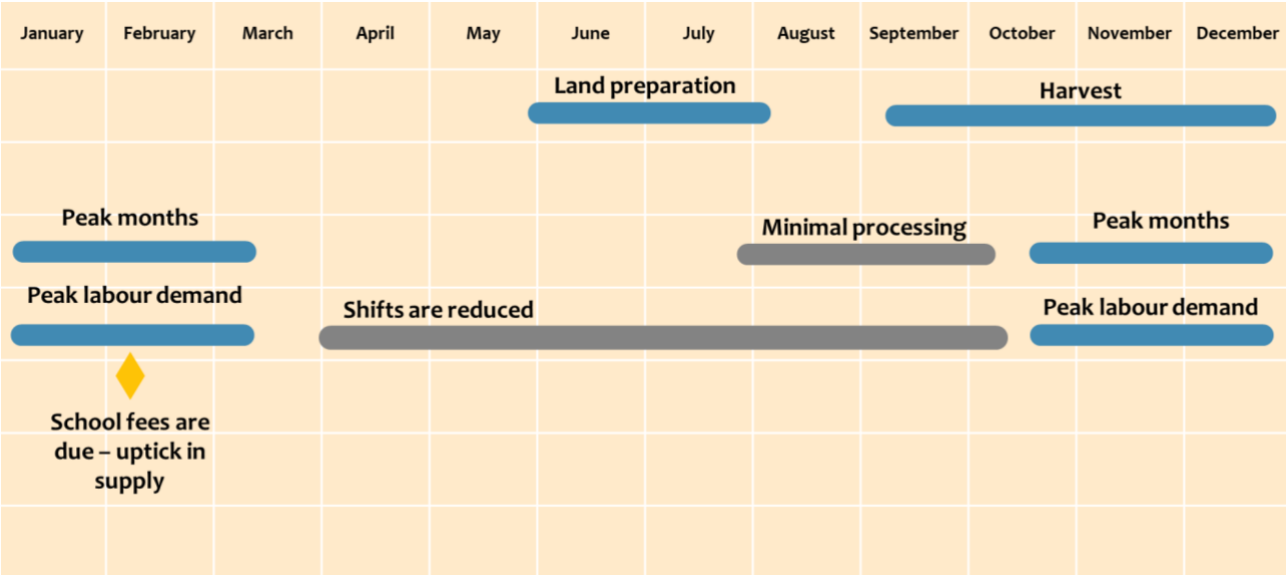
2. Organigramme with the following information:

   - position and type of employment (full or part time/casual/seasonal/interns/apprentices); and
   - gender, age of the employee and the level of education of the employees.

However, this type of data inquiry will be quite extensive when interviewing larger enterprises. In these cases, an indication such as an estimated percentage of women, young people and people with tertiary education in the company, should suffice when analysed in relation to the other responses.

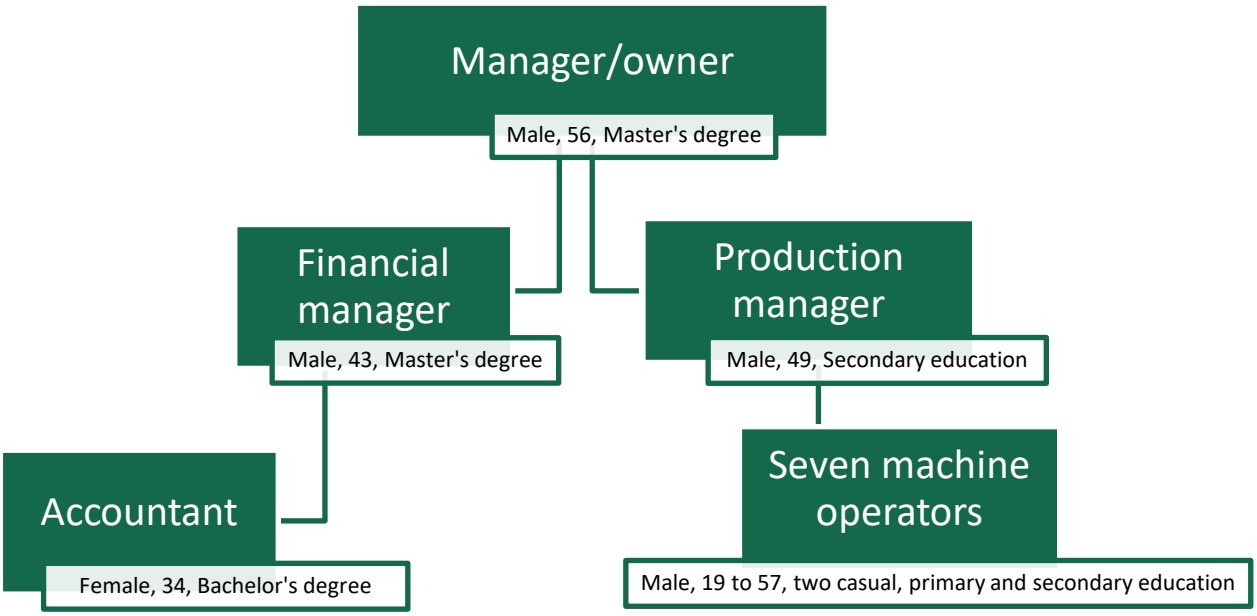
For an example of a complete organigramme, see Figure 6.

Figure 5. Year in the life of an agrifood processor



Source: Authors' own elaboration.

Figure 6. Example of organigramme



Source: Authors' own elaboration.

6.4. Site visit guide

In line with most policy research studies (Ritchie and Spencer, 2002), we introduce an observational component in addition to the collection of data through the semi-structured interviews.

After interviews with the entrepreneur and/or top managers of relevant departments, a manager familiar with the production process should guide the researcher through a tour of the premises. During the tour, the researcher should photo document the following aspects of the business (upon approval) and ask follow-up questions to coordinate what they learned during the interview with what they are seeing in the facilities. Please note that for printing quality the images must have a minimum pixel density of 150 pixels per inch (ppi), preferably higher.

INBOUND LOGISTICS

ASK: Where is the raw material unloaded? How is it weighed, and how is the quality inspected? Where is it stored?

- Photo document the area where raw materials are unloaded, how the material is inspected and sorted.
- Identify the equipment used to do this - scales, tarps, containers, etc.
- Thoroughly document, with photos and notes, the storage area – how secure is the raw material from the elements, general cleanliness, how are raw materials organized and labelled, what systems are in place for this process? Is there a general order or are the materials crammed? Are food and non-food items separated? Are packaging/packaging materials re-used (look out for containers/bags that were previously used for chemicals, for example).

ASK: What vehicles were used in delivering and unloading raw materials belonging to the company? How old are these vehicles? How are they fixed (and maintained) should issues arise?

- Is food stored so that it is protected from contamination (e.g. covered) and from environmental conditions (such as humidity), and are other inputs or materials kept in storage?

PROCESSING

ASK: How do you move raw materials into the first stage of processing?

ASK: What are the machines and equipment the company uses in the production process? When were they purchased and from where (how old are they, if not purchased first-hand)? What are they designed to do and what are you using them for? Are there any safety risks associated with them and how are they managed? How are they cleaned? Is there a cleaning plan and cleaning monitoring system?

- Photo document all machinery in the plant. Capture the manufacturer's label and model information, if possible.
- Document the general conditions of the facility – the floor and ceiling, lighting, etc.
- Are chemical inputs well labelled?

ASK: How are the machines maintained? Can you access maintenance support, replacement parts, servicing, etc. (particularly for imported machinery)?

ASK: Are these assets owned or rented (to understand role/availability of services)?

ASK: How is the material moved through different phases of processing?

- Document the above with notes and photos.

HUMAN RESOURCES

** note: always ask permission for photographs with human subjects.*

ASK: Are there any requirements for employee attire? Does the company provide any special equipment such as hair nets, gloves, footwear, etc.?

- Photograph any safety and protective equipment worn by employees on the production floor.

ASK: Where are the bathroom facilities for employees? Is there an area where employees go to eat lunch or take a break? Are toilets and handwashing facilities available and are they clearly designated for the sole purpose of washing hands: check for running water, soap and single-use paper towels or other means of effectively drying hands, a bin for used towels (if applicable).

- Document the above with photos and notes.

ASK: Are any of the areas climate controlled? How?

Is there sufficient light and ventilation where the food handling activities take place (i.e. can you read easily in the premises)?

FOOD SAFETY AND NUTRITION

ASK: How is the product kept free of impurities and contaminants during processing? What are the critical control points in your processing?

- Document with photos and notes how this is achieved.
- Document conditions and procedures used to establish critical control points.

ASK: Can you show me your product at different stages of processing? What semi-finished and finished products are sold to customers?

- Take photos of storage containers and packaging.
- Photograph or note down hand washing stations for employees.
- If an external lab is used for safety or nutrition testing purposes, note the company's procedures for engaging these services.

OUTBOUND LOGISTICS

ASK: What logistic mechanisms are used to trace and document each batch of product?

ASK: What are product expiration dates, how long does product sit at the facility before shipping?

- Document product storage.
- Photograph where and how it is loaded for shipping to clients and consumers.
- Are there facilities for storing garbage and recyclable matter and do they adequately contain the volume and type of garbage and recyclable receptacles for food on the premises? Is this kept away from food storage areas (both raw and finished goods)?

7. Data analysis

The wide scope of our interview questions makes data analysis a complex task. Factors posing challenges to qualitative analysis include "varied reporting styles, misrepresentation of data and analytic procedures as findings, misuse of quotes and theory, and lack of clarity concerning pattern and theme" (Sandelowski and Barroso, 2002). It is of the utmost importance that the researcher is well-versed in the relevant firm theories, agrifood sector trends, SME characteristics, developing-country-specific issues, etc., before starting the analysis. The last pages of this publication provide a list of recommended readings that are relevant to the topics and issues explored in this kind of study.

This section aims to provide detailed guidance for researchers who want to pursue similar research questions to allow for the replication of the analysis process. This is also to ensure that studies in relation to agrifood enterprises have comparable and replicable meanings, which ultimately can contribute to new, evidence-based and grounded theory.

Data transcription and the data analysis processes described below can be completed using computer-assisted qualitative data analysis software (CAQDAS) such as Nvivo or ATLAS.ti, which have numerous advantages over manual work including increased flexibility in dealing with the data, time-saving tools and the ability to improve the validity of the research. It is outside the scope of this paper to acquaint the readers with these software tools – for more information on the topic see, for instance, Bazeley and Jackson (2013) or Bazeley (2018). We illustrate our analysis process here using the Excel software, but CAQDAS remains the recommended option for analysing qualitative data.

Box 2 lays out several definitions of terms used in relation to qualitative research that are important for the reader to digest before moving further.

Box 2. Definitions of terms

Codes represent a single idea or action, most often captured by a word or short phrase. Similarly to the way a title captures the content and essence of a book or movie, a code captures the meaning of the data gathered. Thus, **coding** represents the process by which the researcher deciphers and labels the meaning behind the data, and it can be regarded as a transitional process between collecting data and analysing it (Saldaña, 2015).

A **theme** is a widely used concept in qualitative research and analysis, though there are two competing ideas about the meaning of the concept. As such, some researchers define it as a "**pattern** of shared meaning, organized around a core concept or idea," while others view it as a **domain summary** – a concept that does not convey the meaning behind the data but rather summarizes a part of the data (Braun *et al.*, 2018). We concur with the former view and see **domain summaries** as **categories of data** that can support the development of a **theme**.

Thematic analysis is an umbrella term encompassing three distinct qualitative analysis approaches: 1) the "coding reliability" approach, 2) the "codebook" approach, and 3) the "reflexive" approach. Each is based on different theme conceptualizations, coding processes, and methods employed for theme identification and development (Braun *et al.*, 2018). What these approaches have in common is that they aim to capture themes through various tactics "for reducing and managing large volumes of data without losing the context, for getting close to or immersing oneself in the data, for organizing and summarizing, and for focusing the interpretation" (Lapadat, 2010).

A **codebook** is an instrument that helps researchers to make sense of large qualitative data sets (Roberts, Dowell and Nie, 2019) by tracking and categorizing codes in a book (i.e. spreadsheet or word processor document). The **codebook approach** is "in-between" the more rigid coding 'reliability' thematic analysis, which seeks accuracy under the form of a numerical score, and the more organic 'reflexive' approach, which embraces the subjectivity of the researcher (Braun and Clarke, 2019).

A **deductive** approach to qualitative research refers to data being collected and analysed based on aspects prescribed by existing theoretical frameworks and concepts. An **inductive** approach, on the other hand, means arriving at a general statement (i.e. theme, theory) solely based on the collected data and without prior consideration of patterns, concepts or theories. A third mode of reasoning is **abduction**, which allows for the use of pre-existing theories or concepts as a source of inspiration for identifying **patterns** (Kennedy, 2018).

Our chosen approach to thematic analysis is codebook-based because we advocate for a process that is meaning oriented (rather than measurement oriented) and informed by the researcher's own experience, but it is also structured enough to allow for inferences to be made around common core concepts that have been found to be relevant to SMAEs. A pre-determined structure and a systematic analytic process can make the study replicable and allow findings to be compared. We acknowledge, however, that regardless of the level of structuring and standardization of the process, qualitative analysis involves a great deal of imagination and intuition (Ritchie and Spencer, 2002).

The most popular methods using a codebook approach to identifying themes are the Framework (e.g. Ritchie and Spencer, 1994), Matrix (Miles and Huberman, 1994) and Template (e.g. King and Brooks, 2017) analysis tools. The approach we use in our study does not rely on a specific method but makes use of a combination of processes used in all three chosen according to our objectives and needs.

We propose an abductive approach, making use of both inductive and deductive reasoning. Combining both types is appropriate when specific issues to explore are pre-determined (as laid out in our conceptual framework and topic guide – see Table 1) and also when it is important to allow for the discovery of new meanings behind phenomena (Gale *et al.*, 2013).

As such, we begin with deductive coding based on the topic guide described in Table 2. The list of codes and categories are predetermined according to the key issues that concern SMAEs and their role in rural development. Nonetheless, the codebook can be later modified through iterations of data analysis.

Codes are the smallest unit of analysis and, in our case, they are the sub-topics/variables outlined in the topic guide. The codes revolving around the same idea or concept are then grouped into groups or clusters – these are

the topics identified. Consequently, each main topic is contained under an umbrella category, which is represented by a specific business component. For instance, the procurement category can include a contract farming sub-category (in addition to the other topics identified), which in turn will consist of several codes such as quality enforcement mechanisms, price negotiation or type of contracted farmers.

We also found it useful to add a category containing the challenges identified in relation to each business component and another containing any innovations or solutions to specific challenges that the business has developed.

The data can be indexed in a matrix in which individual companies are sorted by rows, while codes and categories occupy the columns. Each business component with its relevant topics and sub-topics should have a dedicated sheet (e.g. one tab in Excel). We have also included an extra matrix sheet containing participant attribute codes such as country and location of operation, year of incorporation, number of permanent and casual employees, turnover, main activity, commodity sector, type of ownership (i.e. domestic/foreign), and legal status. Figure 7 provides an example of how demographic data can be recorded. Before delving into more in-depth analysis, it is important to provide a description of the units of analysis as it allows both the researcher and the reader to become familiar with the cases.

Figure 7. Recording firm demographic data

	A	B	C	D	E	F	G	H	I
1		Inception	Turnover ($)	Owner gender	Age of owner	Legal status	Type of ownership	No of employees	Percentage of women employees
2	Company A	2005	300 000	M	54	Sole proprietorship	Domestic	35	50%
3	Company B	2010	90 000	M	27	Sole proprietorship	Domestic	12	30%
4	Company C	2012	150 000	F	50	Economic Interest Grouping (GIE)	Domestic	21	100%
5									
6									

Source: Authors' own elaboration.

The level of detail coded will naturally vary among projects and on whether researchers choose to record lengthy descriptions or condensed ideas derived from the participants' responses (Ritchie and Spencer, 2002). Given the large amount of data that our type of study requires, we have chosen to only index condensed data in the matrix. Nonetheless, after the interview is transcribed, the original text is recorded in a separate interview questionnaire file for an easy and quick trace of the data. See Table 12 for an example of a filled in questionnaire inspired by our own research data.

Table 12. Filling in the data

Procurement	
1. What inputs – raw materials and ingredients -do you use in your main product?	Potatoes, oil, seasoning, salt, packaging, cartons.
2. What is the share in volume for all raw materials used in the main product?	40 percent potatoes, 15 percent oil, 13 percent electricity, 10 percent cartons, 10 percent seasoning, 6 percent packaging and workforce.
3. What is the source of each input?	The potatoes are always from Rwanda but we are also considering buying from Uganda. The packaging is Rwandan but the company that produces it is Kenyan, the cartons are from Rwanda, the oil is bought from a local market but imported from South East Asia.
4. How do you source your raw materials now? How has this changed from the beginning of operations?	We tried contract farming in the beginning, but the farmer delivered three weeks late, so we gave up; then we bought from the local market, or from Musanze. Now we either buy at the local market in Kimironko or directly from a farmer we have been working with lately. We don't buy from collection centres because we need to test the starch level when buying and collection centres mix everything. When buying from the market, we can talk to the traders, test it and buy if the starch level is ok for processing. Our last transaction was from the market because the farmer we work with produces only nine months per year.
5. With respect to your first ranked supplier, why is this your main one?	We heard about our main farmer from others, that he sells better potatoes at a school, so we went to his farm, did some tests on his potatoes and they were indeed better. About 50 percent of our potatoes come from him.
6. Are there any risks involved when procuring from the suppliers you procure from? Have they ever let you down? Why? How did you deal with this?	A potato like Kinigi – it takes 120 days to mature but its weight is highest at 100 days; between the days 100 and 120, the water transforms into starch so the quality improves. Most potatoes at the market are older than 100 days because it is to the farmer's benefit to sell it if it weighs more. But the potatoes are full of water, which is not good for processing. Fertilizer and pesticide usage also needs to be improved – farmers do not know how to use them.
7. What is the average price you pay per unit of produce – if not harvested on own farms (price for each source)?	Last price paid was 320 for Kinigi at the market and 350 for the better variety from the farmer, which also included transportation. This is very high, normally it should be 280. M. reports that he used to buy them for 160–180.

Source: Authors' own elaboration.

Matrix displays are a very useful tool for detecting patterns in the data (Bazeley, 2009), especially in the case of large volumes of information and/or where multiple cases need to be compared and contrasted. More specifically, the use of a matrix makes it easier to identify interdependences and connections, both within and across cases, by allowing the data to be categorized according to different units of analysis (Burton and Galvin, 2018). There is no established formula for constructing a matrix; its "correctness" is assessed by its ability to facilitate the identification of the links among sections of the data and between the data and the research question (Miles, Huberman and Saldaña, 2013).

Box 3. Building a matrix

Miles, Huberman and Saldaña (2013), pioneers of the Matrix approach, offer the following valuable recommendations when building a matrix display:

- Even a dense matrix displays only a very small percentage of the available data. There is always a great deal of selection and condensation from the mass of field notes. Be aware of how you make that selection and how you boil the data down. You are not throwing away your field notes – you can always refer back to the full material.
- More information is better than less: Too thin cell entries that are too thin keep you away from the meaning of the data.
- Be clear about the forms and types of data you want to enter: direct quotes, paraphrases, general summary judgments, ratings, and so on.
- Use codes and software search functions to locate key material. Entering these data is much easier with text-based software, database management, or a CAQDAS program having multiple screens; they permit you to retrieve coded chunks to one screen or region and to select/edit/condense them on another.
- Keep an explicit record of the "decision rules" you followed in selecting data chunks for entry (e.g., the extent of agreement among respondents or data types, the intensity of respondents' feelings, the basis for making judgments or ratings). Otherwise, you may delude yourself retrospectively, forget how you did it, or shift your decision rules during the process.
- When data are missing, ambiguous, or were not asked for from certain respondents, show this explicitly in the display.
- Do not lock up your format until later in the process. Entering data tests the adequacy, realism, and helpfulness of the display format. Keep revising it as needed.
- Be open to using numbers, direct quantities, or judgments in the form of ratings, scales, or magnitude codes, when applicable to the study.
- Get a colleague to review your display, along with your decision rules and written-up field notes, to check the procedural adequacy of your work. Such audits are time-consuming, but used selectively, they are an important check on the "confirmability" of the procedures you used.

Source: Miles, Huberman and Saldaña (2013).

After the data has been indexed in this type of matrix, the actual analysis process begins. This involves looking for patterns and associations, and developing explanations by using the data. A pattern can take various forms:

- similarity (things happen the same way)
- difference (they happen in predictably different ways)
- frequency (they happen often or seldom)
- sequence (they happen in a certain order)
- correspondence (they happen in relation to other activities or events)
- causation (one appears to cause another) (Hatch, 2002).

Identifying patterns is the most difficult part in the analytical process to describe since, regardless of the level of standardization, finding associations requires a great deal of intuition from the researcher. As such, in a similar fashion to Ritchie and Spencer (2002),[6] we provide some examples to better convey the logic behind this stage of the process. As MacPhail *et al*. (2016) noted, we encourage allocating same ideas to multiple codes to ensure the complexity of the data gathered is accounted for; this is because responses to an individual question are open-ended and can cover more than one topic particularly with respect to policy areas.

Figure 8 represents a fictive example of how data can be coded under the procurement category using Excel.

Figure 8. Coding the data

	A	B	C	D	E	F	G
1			**Strategy**			**Farmer-market linkages**	
2		Procurement sources	Supplier preferences	Challenges	Major changes	Price paid to farmers	Payment patterns
3	**Company A**	9 months contract farming with commercial farmer Local market the rest of the year when the farmer stops producing.	The commercial farmer: the only farmer they trust now after trying contract farming with many others that could not deliver the right quality and quantity. The local market: they can test the starch level of potatoes and decide on the spot if they want to buy.	Farmers harvest the potatoes earlier than they should because they are heavier and the payment is usually made based on the weight.	Tried contract farming with smallholders in the beginning but they were never able to deliver the needed quality. A personal contact of the owner put them in touch with a well-known commercial farmer and have not had problems with this supplier since.	Price at the market is decided on the spot according to quality that is given by the starch level. Price with commercial farmer is negotiated each season.	Payment is always made on delivery.
4	**Company B**	Only farmers cooperative.	Cooperatives because individual farmers have not been able to offer the quantity and quality they need.	Contract farming with individual farmers: delays, inconsistent quality and quantity. Owner was never fully satisfied with supply. Farmers do not use the right fertilizer, do not harvest the potatoes at the right time.	Tried contract farming with many individual farmers but were never satisfied. In 2014, an NGO came to organize farmers into a cooperative. The NGO put the processor in contact with the cooperative and has never had problems with supply since.	Price is negotiated each season with the cooperative based on the market price.	Payment is made on delivery after they test the starch level to make sure the quality is right for processing.
5							
6							

Source: Authors' own elaboration.

There are several patterns we can detect by examining the data sheet. First, both companies began with a **similar** procurement strategy – contract farming with individual farmers – but were unsuccessful because the suppliers could not deliver the quality and quantity needed by processors.

We can also see that in both cases the contracted farmers did not use the proper practices needed for potatoes to be suitable for processing, which means poor farming practices might be a more general problem in the region rather than a one-time occurrence. A **causation** pattern can also be identified; in the case of Company B, the intervention of the NGO, which organized farmers into a cooperative, has allowed the processor to obtain a better quality supply. Another **similarity between cases**, perhaps less noticeable than other patterns, is that both companies made use of contacts to redesign their strategy towards new procurement channels. As such, this is an aspect that deserves to be explored further by looking at the data coded under partnerships. In terms of contribution to policy areas and more specifically, farmer-market linkages, we can see both firms have the potential to be a reliable market for smallholders (i.e. payment on delivery, premium paid for quality) but poor farming practices do not allow them to fulfil this role yet within a contract farming scheme with individual farmers.

[6] The framework method is a codebook type of analysis, developed by qualitative researchers Ritchie and Spencer (2002) for use in large-scale policy research, later adopted by many other disciplines due to its flexible nature. The method is based on structuring the data in a way that allows for identifying commonalities or differences in qualitative data as well as links among different categories of data in order to derive descriptive and/or exploratory conclusions according to specific themes.

Overall, when the unit of analysis is an individual business model, three main types of associations can be made in relation to our topic:

- among business components;
- between external factors (i.e. policies, interventions and the overall enabling environment) and business decisions (i.e. the design of a business component as response to external factors); and
- between business components (including decisions and shifts) and policy areas (i.e. development outcomes).

For instance, cash flow constraints (finance) might limit the amount of raw materials procured (procurement), leading to underutilized operational capacity (operations). The government might intervene (partnerships) by facilitating the provision of raw materials on credit (procurement). This will not only allow the company to increase supply (procurement) and reach full capacity (operations) but also to take advantage of economies of scale (finance) which eventually leads to business growth and to the ability to recruit new farmers and offer contracts (farmer-market linkages). We can observe how a procurement-oriented intervention by the government has led to improvements in operations and finance, ultimately allowing the firm to better contribute to farmer-market linkages.

When the unit of analysis is a set of enterprises, an additional layer is added to the data analysis and patterns will be identified not only within a single firm but across firms. In the situation described above, for instance, the researcher will be interested in whether or not the other firms who benefitted from the same government intervention experienced a similar trajectory. Before delving into cross-case patterns, the researcher should have a very good descriptive understanding of the individual or within-case level (Miles, Huberman and Saldaña, 2013).

Nonetheless, assembling the overall picture is not solely a matter of aggregating patterns but of recognizing the prominence and dynamics of the issues investigated and looking for a structure rather than a heap of evidence (Ritchie and Spencer, 2002).

8. Ensuring rigour in qualitative research

There are several concepts used to evaluate the quality of qualitative research, namely credibility, transferability, dependability, confirmability and reflexivity (Korstjens and Moser, 2018). We encourage researchers to follow these guidelines to ensure the study developed is rigorous and of high quality.

Credibility refers to the plausibility of the data gathered and the accuracy of the researchers' interpretation. Strategies to improve credibility include long-lasting engagement with participants in the field to test for misinformation and establish trust, triangulation (i.e. using multiple data sources, researchers or methods of collection) or feeding back the data or interpretations to participants to correct or challenge any wrong views of the researchers.

To address credibility, we have recruited data collectors who are familiar with the industry and the participants' trajectory. During both the data collection and data analysis processes, at least two researchers have been involved in order to facilitate the validation of the data and findings through cross verification. Additionally, the analyses have been fed back to experts on the specific industry and country for their input and final corroboration.

Focus groups are also a particularly useful way to validate findings; for instance, these can be organized with a cluster of SMEs, which would ensure that results apply to a broader level such as sector or industry-wide. Literature reviews can also be a method of triangulation – as discussed under Section 4.1, we have assessed policies and institutions to complement the country and sector-level case studies.

Transferability relates to the researcher's responsibility to provide an in-depth and detailed description of the participants and research process in order to allow the reader to understand whether findings are applicable to their own context and setting. To ensure transferability, all case studies provide a background analysis on the commodity sector and the business enabling environment in which firms under study operate. Detailed information is also provided in relation to each firm (e.g. age, history, size, location, etc.) to allow readers to understand how the participants fit in the overall picture. Reports or assessments developed by NGOs or development agencies can also be an important tool for capturing sectoral or industry dynamics.

While dependability refers to adhering to the standards of the chosen research design and being consistent across the process, confirmability concerns the neutrality of the researcher. To ensure dependability and confirmability, the researcher should maintain an audit trail and transparently record each step in the process. It is for this reason that we have followed the guidelines elaborated by social researchers in relation to qualitative research and case study design. Both data and analyses have been recorded and scrutinized by a second or even third person.

Last, reflexivity is concerned with the researcher's self-awareness of their role in the research process and their own pre-conceived assumptions, which might affect research decisions. Keeping track of one's own subjective responses to the setting or participants might help improve objectivity. In our case, this has also been achieved by involving multiple data collectors and researchers both familiar and unfamiliar with the industry, country and participants.

9. Conclusions

International development discourse has increasingly highlighted the need for SMAEs to become more competitive in order to keep up with changing food systems and trends, including globalization. Supporting the growth of food processors in particular can bring important benefits to developing countries and their rural communities such as by increasing employment opportunities and providing more affordable and nutritious food.

This makes it imperative for more research to be conducted in relation to SMAE processors business models, challenges and interactions with external factors including the business enabling environment in which they operate. While quantitative studies, particularly surveys, are increasingly being conducted on specific value chains to tease changing dynamics, only qualitative research can allow for in-depth analysis with respect to managerial attitudes and decisions that drive business model design.

It is for this reason that FAO has formulated a qualitative research methodology and conducted studies on food processors operating in staple sectors in sub-Saharan Africa. This experience has generated lessons which are brought together in this publication in the form of practical guidance for conducting qualitative research in relation to the business models of food manufacturers. The conceptual framework guiding the FAO study is based on Porter's value chain model, which is linked to rural development objectives, namely farmer-market linkages, food losses and waste, nutrition, food safety and quality, rural finance and investment, as well as decent employment. The conceptual framework led the development of the topic agenda, which has been formulated based on the literature and FAO's multidisciplinary expertise. The topic agenda has facilitated the formulation of the interview questionnaire and the consequent development of firm and sector-level case studies.

As conducting qualitative research is not as straightforward as running quantitative analyses, we describe our investigation in detail. The conceptual framework, the topic agenda, the data collection methods, including the interview questionnaire, and guidance for developing the case studies are all presented in this paper in order to provide a common analytical treatment of research on SMAEs. This in turn, can provide a basis for comparison, ultimately allowing for more pertinent policy lessons that could apply to wider segments of SMAEs. We thus hope that these guidelines will prove useful to any practitioners and researchers working towards expanding knowledge on food processors in a developing country context.

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Annexes

Annex 1. Cost assessment questionnaires

Table A1. Questionnaire on costs along the value chain

Procurement	
Average price per unit of produce	
Fee paid to traders or middlemen	
Marketing and sales	
Fee charged by brokers to arrange the purchase	
Costs of marketing activities	
Human resources	
Wages of permanent employees	
Wages of casual employees	
Finance	
Costs of insurance	
Taxes and fees charged by authorities	
Inbound logistics	
Fuel costs	
Driver fee	
Vehicle rental fee	
Road fees or taxes	
Costs of packing materials (boxes, bags, barrels, etc.)	
Labour fee to pack produce	
Labour fee to load/offload supply	
Costs of storing the raw materials	
Costs of outsourced inbound activities	
Outbound logistics	
Fuel costs	
Driver fee	
Vehicle rental fee	
Road fees or taxes	
Costs of packing materials (boxes, bags, barrels, etc.)	
Labour fee to pack the final product	
Labour fee to load/offload the final product	
Costs of storing the final product	
Costs of outsourced outbound activities	

Source: Authors' own elaboration.

Table A2. Questionnaire on operational costs

Operations									
High/low season									
Months	Number of casual employees	Number of harvesters on own farm	Number of hours worked in a day	Number of days worked per week	Water costs	Energy costs	Equipment maintenance costs	Volume of supply processed	Total amount of wages paid to casual labour and harvesters

Source: Authors' own elaboration.

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