Australian Government

Australian Centre for International Agricultural Research

A GUIDE TO
VALUE-CHAIN ANALYSIS AND DEVELOPMENT FOR OVERSEAS DEVELOPMENT ASSISTANCE PROJECTS

A GUIDE TO VALUE-CHAIN ANALYSIS AND DEVELOPMENT FOR OVERSEAS DEVELOPMENT ASSISTANCE PROJECTS

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FOREWORD

Promoting value-chain development is increasingly being recognized as a promising approach to address not only economic development, job creation and inclusive growth, but a wider range of social and environmental development issues (Stamm and Drachenfels 2011).

The challenges and opportunities of agricultural development typically present themselves as complex problems whose resolution relies on a foundation of research. Researching complex problems that involve people and their livelihoods requires approaches that can draw from many disciplines, are guided by an overarching view of the entirety of a situation, can engage all the critical stakeholders and can provide integrative solutions.

The concept of the 'value-chain' has emerged as providing a framework for guiding research into agricultural development problems. An agrifood value-chain is a complex system that creates and delivers products that consumers value. The agrifood value-chain concept provides researchers with the framework for tackling the technical, marketing, economic, social and institutional dimensions of agricultural development problems, and integrating their results. People make their livelihoods in value-chains, and so a chain-based view also offers a mechanism for achieving development outcomes directly. Further, by adopting a multidisciplinary approach, value-chain research and the identification of interventions draw upon the strengths of particular specialisations. Finally, by building the capacity of individuals and communities, projects that are led by value-chain research have the potential to sustain outcomes long after the interventions themselves are over.

This value-chain research and training manual consolidates experience from ACIAR projects across Asia and Africa. It sets out the practical steps in adopting a value-chain perspective to understand how to increase the profitability of agrifood value-chains collectively, and of smallholder farmers in particular. The manual is designed to evolve as ACIAR's knowledge continues to grow, by incorporating future case studies and training materials to offer new insights. We invite contributions from others who share our aspiration to engage in collaborative value-chain research and to promote the sharing of its results.

Dr Nick Austin

Chief Executive Officer
Australian Centre for International Agricultural Research

CONTENTS

WHO IS THIS MANUAL FOR?

This manual has been designed for a variety of users, primarily:

* value-chain project developers and managers;

* researchers, trainers and extensions officers involved in projects, and undergraduate and postgraduate researchers who want to understand the principles and practice of value-chain thinking and analysis;

* value-chain members and any other project participants; and

* stakeholders in development projects that incorporate value-chain analysis, such as leaders of in-government policymaking and service delivery agencies, and of collaborating non-government organisations.

However, not everyone needs to read everything:

Part 1 provides an introduction to value-chains and so is useful for everyone, with two versions available. The theoretical explanation version will appeal to those who are interested in the underlying theories and principles, which are described using technical terminology. The non-technical version uses everyday language without the depth of theoretical explanation, and may appeal to readers with a mainly practical interest in the topic. For those who only want an overview of value-chain thinking, Parts 1.9 and 1.10, along with Part 3, will provide enough detail.

Part 2 provides a detailed explanation of how to undertake value-chain projects for research, development and extension, and will be useful for anyone involved in the detailed implementation of projects or who are planning projects as part of funding applications or postgraduate studies.

Part 3 offers some practical lessons from the field and gives details of case studies of value-chain thinking in action. It is intended that Part 3 will be supplemented by further examples submitted by other researchers. In illustrating the ideas in the manual with practical examples, this section could be interesting for any reader.

Part 4 provides training in value-chain thinking, and so will be useful to members of project teams who are responsible for delivering such activities to value-chain members. Some exercises, such as walking the chain, are also useful as training for researchers.

ABOUT THE AUTHORS

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Ray Collins is Professor of Agribusiness in the School of Land and Food Sciences at The University of Queensland. His research focuses on improving agribusiness competitiveness through alliances and value-chain strategies, with special interests in new industries, fresh food products, developing countries and the markets of Asia. Research grants exceeding $5 million over the last 10 years have allowed him to examine the application of value-chain management approaches to economic development in Pakistan, Vietnam and the Philippines, while the work of his PhD students has extended these concepts to China, Kenya, Nepal, South Africa, Indonesia, Canada and Australia.

Ray chaired the Federal Government's $35 m Rural Food Processors Innovation and Productivity Program, and for 10 years was an Advisory Board member of the Government's New Industries Development Program and Industry Partnerships Program.

Ray has more than 100 publications and has graduated about 20 PhD and 30 masters students. He has also been the recipient of awards for excellence in teaching, research and international collaboration, and was co-recipient of an Australian Teaching Award for linking education with the needs of industry.

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Dr Lawrence Bonney

Dr Lawrence Bonney is the Associate Professor of Value-Chain Innovation at the Tasmanian Institute of Agriculture (TIA), University of Tasmania. He currently chairs the Global Value-Chain Research Group, a unique collaborative, multidisciplinary research group at the University of Tasmania. He is an agricultural scientist with master's degrees in strategic foresight and change management, and a PhD that developed a multilevel systems model for incentivising value-chain innovation.

Lawrence conducts systems research into how co-innovation can be achieved in value-chains, as well as the development of marketing clusters, innovation platforms and innovative regions. He currently leads several agrifood value-chain projects in Australia including the value-chain component of a national climate change project seeking to identify how three Australian agrifood value-chains can find competitive advantage in climate adaptation. He has also been involved in three international research for development projects in Northwest and Central Vietnam, and others in Lao PDR, Cambodia and Papua New Guinea (PNG). In 2012 he led a strategic NZAid project analysing the PNG fresh produce system, which provided the basis for medium-term development.

In his previous career he was the Managing Director of a successful strategy, foresight and value-chain consultancy operating in China, Indonesia and Malaysia, and earlier built a reputation as an innovative public sector chief executive and private sector COO.

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Dr Benjamin Dent

Benjamin Dent has contributed to value-chain projects with ACIAR in Africa, Australasia, Europe and North America. Currently he is working with the World Vegetable Center in Ethiopia, Tanzania, Malawi and Mozambique, overseeing extension officer and farmer training on translating value-chain management principles into the practicalities of moving smallholders from production-focused self-sufficiency to market-orientated decision-making. Having spent 12 years in the UK Government, he understands how research should contribute to policymaking and delivery.

Ben has direct commercial experience from launching what became one of the top 10 local food markets in the UK. In 2008 he established what has grown into the UK's largest regional association of farmers' markets, increasing the number of stallholders by over 300% in 6 years to more than 700 across a network of over 50 markets.

Ben also specialises in chain-wide sustainability. Since 2005 he has advised the Soil Association on integrating commercial and environmental objectives within its organic standards, and has worked with the Global Food Traceability Center on the role of traceability systems in improving marine conservation.

Ben has master's degrees from Cambridge University and Imperial College London, and a PhD from The University of Queensland.

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INTRODUCTION

'Value-chains' are interactive, collaborative systems that create and deliver products valued by consumers. The flow of products, money and information in value-chains is highly dependent upon the relationships among members. As all businesses belong to chains that deliver products, services or information, this manual is relevant if you need to better understand how some of the chains in which your business is involved can be improved for the benefit of all members.

This manual promotes 'value-chain thinking', which means taking a whole-of-chain perspective, emphasising the importance of understanding markets and consumers, and collaboration among chain members. It highlights how effective partners can align their skills, resources and behaviour to deliver products and services to receptive consumers and to reduce waste, with the resultant financial returns being distributed equitably so as to sustain the partnerships. It helps chain members to recognise their interdependence, and the consequent benefits of building collaborative relationships for solving the shared problems of creating and delivering consumer value.

This interactive research and training manual translates value-chain theory into research practice, and incorporates practitioner experience back into theory, thereby improving research practice in a learning cycle (Senge and Scharmer 2001).

Part 1 Value-chains

This chapter begins with an explanation of the differences between 'supply chains' and 'value-chains'.

Part 1.1 explains how innovation to create consumer value is the global driver of value-chain management.

Part 1.2 describes the systemic nature of value-chains, including improving chain performance, the value perspective of chains as systems, how value-chains work and value-chain thinking.

Part 1.3 provides a literature review of the four theoretical perspectives in value-chain improvement—strategic management, economic, relational and technological. It also summarises the different value-chain research perspectives, and Part 1.4 explains how these have led to diverse methodological approaches across many international development agencies.

Part 1.5 explains the importance of 'value-chain innovation' and what drives and enables this key goal of value-chain projects.

Parts 1.6 and 1.7 address how value-chain relationships are managed or 'governed' to facilitate co-innovation to create consumer value.

Part 1.8 describes how globalisation and the 'supermarket revolution' affect small farmers around the world in waves of development that are reaching every farmer in every nation.

Parts 1.9 and 1.10 set out 'value-chain thinking' in practice, in particular its four components—understanding consumers and customers (market orientation), creating value, reducing waste and building relationships.

Finally, Part 1.11 presents the model of value-chain analysis (VCA) and development used in this manual.

Part 2 Value-chain analysis and development

Part 2.1 introduces VCA in greater detail—its objectives, themes and processes.

Part 2.2 sets out the nature and structure of successful value-chain research teams.

Part 2.3 explains the context of VCA, including its connection with biophysical, economic, social and institutional baseline studies.

Part 2.4 provides an overview of these baseline studies.

Part 2.5 explains the critical role of consumer research in VCA, and some of the methods available.

Part 2.6 addresses how to ensure that gender equity is incorporated in the design and implementation of projects.

Part 2.7 recommends how to select value-chains for research, development and extension (RD&E) projects, including the role of market research.

Part 2.8 explains the processes for project initiation, including creating stakeholder groups and undertaking awareness-raising workshops.

Part 2.9 describes data collection methods, including mapping the chain and conducting semi-structured interviews.

Part 2.10 sets out the subsequent data analysis and interpretation, in particular for material and information flows and relationships.

Part 2.11 provides advice on identifying and implementing interventions.

Part 2.12 explains the monitoring and evaluation of project outcomes.

Part 3 Lessons from the field and case studies

Part 3 provides five case studies of value-chain research drawn from ACIAR research projects and PhDs:

* Case study 3.1: Philippine papayas

* Case study 3.2: Pakistan mangoes

* Case study 3.3: Peri-urban vegetables in Nairobi, Kenya

* Case study 3.4: Nepalese tomatoes

* Case study 3.5: Value-chain thinking training in Eastern and Southern Africa

The intention is that this section will be expanded through contributions from other researchers.

Part 4 Training activities

Part 4 offers some training activities for research and value-chain members. The structure is flexible so that it can be adapted to local circumstances, including the capacity of trainers and trainees. There are nine activities that can be combined to prepare an action plan for participants:

* Activity 4.1: Mapping the chain

* Activity 4.2: Market orientation

* Activity 4.3: Comparing wet markets with supermarkets

* Activity 4.4: Mapping value

* Activity 4.5: Mapping waste

* Activity 4.6: Postharvest opportunities for farmers

* Activity 4.7: Working as partners

* Activity 4.8: Gender equity in value-chains

* Activity 4.9: Walking the chain

* Activity 4.10: Preparing an action plan

PART 1
VALUE-CHAINS

The term 'value-chain' is commonly used but little understood in the agrifood industry and the private and public agencies that support the sector. The term was reputedly coined in 1982 by Keith Oliver of Booz Allen Hamilton (Heckmann, Shorten and Engel 2003; Laseter and Oliver 2003) and became widely used after the publication of Michael Porter's seminal work *Competitive Advantage* (1985). Fuller, O'Connor and Rawlinson (1993) later linked strategy and logistics as a way of creating value for customers. The 1990s saw further conceptual development that identified the elimination of demand amplification, often known as the 'Bullwhip Effect' (Lee, Padmanabhan and Whang 1997) as a means of driving efficiency, as well as global supply chain strategy, decentralised chains, and the influence of environmental awareness on chain management.

Most of the concepts referred to in this manual apply to all value-chains, regardless of whether they are traditional marketing chains involving small, poor farmers in isolated places in developing countries or sophisticated chains involving large-scale farmers and corporate executives in a developed country. Much of the underpinning theoretical research explained in this section about value-chain dynamics was conducted in the developed world in a corporate context, but more recently there have been many publications about how to conduct value-chain research and development (R&D) in developing countries, and the most relevant of that literature has been incorporated into this manual. However, the social and economic principles apply in very similar ways to both developed and developing contexts so long as they take into account the scale and local context of each case.

For example, in this manual you will read about business terms such as 'strategy', 'innovation' and 'culture management'. Your first reaction might be that these things don't apply to poor, traditional smallholders; however, a young Cambodian farmer with just 160 square metres of land to support his extended family recently told visiting Australian researchers, 'Just tell me how I can produce more from my land so that I can make enough money to buy more land'. Now that's a strategy! Similarly, in Mt Hagen, a large town in the Papua New Guinea (PNG) Highlands region that can grow excellent cool-temperate vegetables, there are several examples of farmers' wives who previously had only collected vegetables from relatives in their tribal villages but saw an opportunity to supply the produce to Port Moresby, the national capital. They quickly grew their collecting activities into regional wholesaling businesses, renting facilities, employing people, packing produce into special boxes and using freight aircraft to fly high-value produce one hour to Port Moresby. Each of these women also had a vision and strategy of how they could further develop their businesses.

Examples of innovation are also common in the developing world where people collaborate to solve shared problems and make more profit for themselves and those who work with them. Recently, beef cattle farmers in Phú Yên and Bình Định provinces on the Central Coast of Vietnam have developed chains that specialise in cow/calf raising or cattle fattening enterprises to supply the market in nearby Đà Nẵng, one of Vietnam's largest cities. Elsewhere in Vietnam, small Phú Yên farmers and operators of small- and medium-sized slaughterhouses have collaborated to import cheap Australian northern yearling cattle to fatten for the Hồ Chí Minh City market. In both these examples, farmers have significantly grown their businesses and improved their standard of living. These examples are as innovative as those of large Western farmers and corporate food processors developing new processed products or introducing new technology. Hence, Western business concepts such as strategy, innovation and culture management can apply equally to the strategic plans of corporations as well as to the aspirations and activities of small farmers, communes, village leaders or entrepreneurial collectors.

We encourage you to adapt the research principles referred to in this section and apply them to your context. Definitions of key management concepts are provided either in the text or as footnotes to assist you in this process. The first important point of clarification relates to the concepts of 'supply chains' and 'value-chains'.

The Global Supply Chain Forum defines supply chains as:

> *… the integration of key business processes from end user through original suppliers that provide products, services, and information that add value for customers and other stakeholders (cited by Lambert, Cooper and Pagh (1998), p. 1).*

Supply chains are a natural phenomenon of business and exist whether they are managed or not (Mentzer et al. 2001). It is the purposeful collaborative management of chains to deliver the value attributes demanded by consumers that distinguishes value-chains from supply chains (Boehlje 1999). Other researchers have suggested that the value-chain concept integrates characteristics of both supply and demand, and provides a more holistic view. They argue that value-chains enable improvements in product and information flows via the strategic alliances and networks, relationship management and governance structures that are necessary for promoting innovation in product development, production and marketing to satisfy consumer demand (Boehlje 1999; Feller, Shunk and Callarman 2006; Kaplinsky and Morris 2003).

Every business is in one or more supply chains that *supply* goods and services to their customers and eventually to the final consumer. Businesses in supply chains may have little knowledge or interest in what goes on in the chain beyond their immediate suppliers and customers. This is why problems in supply chains that are addressed through piecemeal approaches often fail when unresolved problems elsewhere in the chain prevent them from delivering the expected outcomes. As a result, chain members disengage and revert to trading on lowest prices rather than focusing on creating value.

On the other hand, once the members of a chain begin to work together to more-efficiently deliver what consumers demand, the focus turns from what can be *supplied* to what is *valued*. A value-chain involves collaboration; knowledge of what is happening upstream and downstream of each business, and of what consumers value and will pay for; and a willingness to share ideas and resources across the boundaries between businesses. This is how value-chains can integrate both supply and demand perspectives, but they also involve additional challenges of managing relationships, ensuring information flows, governing the chain as a whole rather than a series of independent businesses, and keeping up with changing consumer demands.

There is not yet a unified theory that explains the value-chain approach to business, perhaps because a value-chain can be seen from many different disciplinary perspectives, such as economics, sociology, business, marketing, production science, systems engineering or information technology. Each perspective has something to contribute yet none is sufficient on its own (Altenburg 2006). Hence, one of the aims of this manual is to show how these multiple perspectives can be integrated to provide ways of thinking about, and researching, agrifood value-chains in developing-country settings.

1.1 Innovation to create consumer value—the global driver of value-chain management

The globalisation of agrifood markets and the liberalisation of world trade are creating a new competitive environment for primary producers, food manufacturers and retailers in every country. The supplier dominance of the past is giving way to retail control of the agrifood value-chain and a focus on consumer choice. This has driven supermarkets to move from predominantly price-based competition to emphasise innovation-based competition focused on creating value in the eyes of the consumer (Wright and Lund 2003). The growth of supermarkets in the developing world has been called the 'supermarket revolution' (Callison 1987), and analysts have identified three or four 'waves of development' (Reardon et al. 2009, p. 8) that are generating an annual increase in the share of the food trade in Asia by 1.5–2.0% (Humphrey 2007; The Nielsen Company 2012). Thus, the global drivers of supermarket development are highly relevant to developing countries, as explained in more detail in Section 1.8.

In this hypercompetitive business environment, innovation[1] is regarded as the modern agrifood firm's strategic response to the uncertainty, low margins and poor financial performance that lead to loss of competitiveness. It is a means of adapting an organisation in response to changes in the internal or external environment, or taking pre-emptive action to maintain competitive advantage (Marshall et al. 2006). Innovation is strongly positively associated with superior whole-of-chain performance, and a number of researchers have linked collaboration, innovation, organisational performance and competitive advantage (Chapman and Corso 2005; Hult, Hurley and Knight 2004; Vincent, Bharadwaj and Challagalla 2005).

The scale and intensity of continuous innovation to solve the problems of creating and delivering consumer value in global markets has resulted in firms developing collaborative forms of innovation either along the chain at the interface between individuals or sections within firms, or between different firms/individuals in a chain (Bonney et al. 2007). Collaborative innovation involves firms increasingly integrating their systems, processes, assets and governance to 'co-innovate' to optimise their efficiency, effectiveness and consumer value creation. Chain-based co-innovation is more than just the sum of the innovations within firms in a chain (Maqsood, Walker and Finegan 2007; Powell, Koput and Smith-Doerr 1996; Sporleder and Peterson 2003). In value-chains it can strengthen alliances between partners so that the chain operates as a system or almost as a single entity (Bäckstrand 2007; Chroneer and Mirijamdotter 2009; Collins and Dunne 2008; Jain, Nagar and Srivastava 2006; Knoppen and Christiaanse 2007).

1.2 Value-chains as systems

The systems approach is an application of principles from animal anatomy and biology to the broader biological (e.g. landscapes, agriculture) and organisational (e.g. cybernetics or the science of control and communication) world. Its core concept is the idea that a complex whole may have properties related to the whole that are meaningless if viewed only in terms of the component parts. Systems thinking is based on three main ideas: the emergence of new properties or conditions, the hierarchy of component parts, and the communication and control of those parts.

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1   Innovation is regarded as a change in an existing product; the creation of a new product, process, market or source of raw materials; or a form of governance (management) that is new to an industry, for the purpose of delivering benefits including increased profit.

Self-interest: necessary but not sufficient in agrifood chains

All agrifood products reach the end consumers of those products through chains of individual businesses that link primary producers, through various intermediaries, with retailers. These chains, which are commonly referred to as supply chains, may be very simple (Figure 1) or very complex.

| INPUT SUPPLIER | → | FARM | → | MARKETER | → | WHOLE-SALER | → | RETAILER | → | CONSUMER |

Figure 1: A typical simple agrifood supply chain

Nevertheless, each business in a chain is a customer of the business immediately upstream of it and a supplier to the business immediately downstream of it (Figure 2). For example, a farmer is the customer of a fertiliser supplier or a bank, and the supplier to a processor or a wholesaler.

| | CUSTOMER INPUT SUPPLIER SUPPLIER | CUSTOMER FARM SUPPLIER | CUSTOMER MARKETER SUPPLIER | |
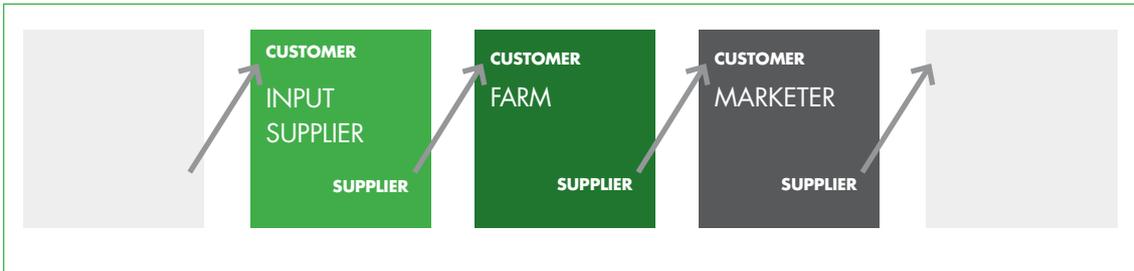
Figure 2: Every chain participant is both a supplier and a customer

The farmer as a customer of the fertiliser supplier wants the right type of fertiliser to be always available, and at the lowest price. At the same time the farmer as a supplier wants to be able to sell the processor or wholesaler as much as possible, at the highest price. In this way every business in a supply chain aims to maximise their individual benefit by competing for cheaper inputs and higher prices. While this kind of self-interest may appear to be rational economic behaviour for individual businesses, there can be negative consequences for the chain as a whole, as the following examples illustrate:

* Consumers may not get what they want because signals from consumers are not transmitted clearly, or at all, back up the chain.

* Waste and inefficiency can go undetected.

* Weaker members of the chain can be exploited by more-powerful members.

* Chain-wide responsibilities such as meeting environmental or food safety standards may be ignored by some members of the chain.

Why focus on chains as systems?

The examples above of the consequences of individual self-interested behaviour by businesses in chains are typical problems encountered in developing countries. For example, a common development goal is to link poor smallholder farmers with their markets, yet it is not possible to address such a challenge without looking beyond the performance of individual farmers and

individual markets (i.e. without addressing the performance of whole chains).

Thinking about the chain as a whole having to 'perform' requires thinking about the chain as a system, because its performance is a function of the interactions among its parts. For example, if the problem is that food is not safe for consumers, the answer lies in the interactions not only between members at each level of the chain, but also among the many safety-related processes and practices that are necessary. Solving chain-wide problems such as this involves systems-thinking.

Features of chains as systems

Thinking about producer-to-consumer chains as systems does not detract from the need for individual businesses in a chain to be profitable. On the contrary, it brings an additional focus to the performance of the entire chain and how improved chain performance as a whole can contribute to the profitability of individual businesses. The following six systems principles can be applied to agrifood chains (Ashby 1957; Beer 1981, 1984; von Bertalanffy 1968), helping to explain how individual businesses profit from improved chain-wide performance:

1. Systems are made up of subsystems that interact with each other (i.e. agrifood chains involve interactions among farmers, wholesalers, retailers and consumers).

2. Elements of subsystems have common properties and behaviours (i.e. farmers share common properties and behaviours).

3. Systems cannot be described from the perspective of a single discipline (i.e. a technical description of an agrifood chain would not capture its economic, marketing, management or social dimensions).

4. The behaviour of a system reflects the underlying dynamics of its subsystems interacting with each other (i.e. there are properties of the system, such as food safety, that are attributable to the interactions among its parts).

5. Systems are self-maintaining and tend to return to their present state if disturbed (i.e. changing agrifood chains is difficult because the power of the status quo tends to resist change).

6. Systems are capable of learning and adapting (i.e. despite the power of the status quo, agrifood chains can learn to change behaviour for their own benefit).

Improving chain performance

If agrifood chains can be seen as systems, then improving their performance can be approached through the same perspective, because the systems properties that chains exhibit provide windows into performance improvement opportunities. For example, performance might be improved by enhancing interactions among particular subsystems, investigating why a chain resists change, or identifying how common behaviours among one group of chain members can be used to learn new practices.

The value perspective of chains as systems

Agrifood chains aim to satisfy consumer demand while making profits for members of the chain. Knowing what consumers want and how to profitably satisfy those requirements are therefore key questions in improving the performance of chains. These questions revolve around the concept of consumer *value* because consumers attach value to products and services they are willing to pay for, and chain members are able to profit from creating and delivering consumer value. When an agrifood chain is viewed as a system whose aim is to profitably create and deliver value to consumers, it is called a *value-chain*.

How value-chains work

As interactive systems, effective value-chains involve flows of products, money and information enabled by relationships among chain members (Figure 3).
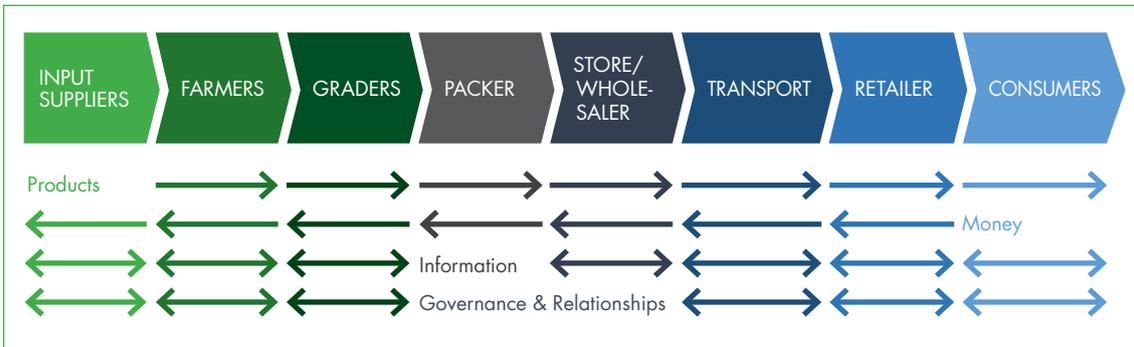
Figure 3: Factors involved in the management of value-chains

The source of value in a value-chain (other than credit, subsidies or aid) comes from consumers when they decide to purchase a product. While a farmer may be paid by a trader, a processor by a wholesaler and a retailer by a consumer, the ultimate source of funds that are passed back down the chain is the amount the consumer paid for the product. Thus, an agrifood value-chain's economic success depends on its ability to deliver a product from seed, through production, processing and transport, and its appeal to those consumers being served by the retailer. This success is enabled by the effective flow and use of information along the chain, which usually depends on the extent of trust and commitment between trading partners.

Note that in agrifood value-chains, individuals or businesses can undertake more than one function, and information does not have to flow linearly—seed suppliers can conduct their own consumer research, farmers can speak directly to retailers, or a single business may process wholesale and retail products. However, if each actor only knows about their own direct suppliers and customers, because of chain-wide interdependence in the flows of product and money, they become vulnerable

to lower returns because of unknown problems and opportunities in other parts of chain. For farmers, this highlights the importance of making decisions based on an understanding of market opportunities and the whole chain, rather than looking at their own part of the chain in isolation.

Example: Pakistan mangoes

Smallholder mango growers in Pakistan are required by middlemen to pack 12–14 kg of mangoes into wooden boxes designed to hold 10 kg of fruit. Overfilling boxes until their sides and top are bulging means that boxes stacked on top of each other during transport, sometimes 18 boxes high, create significant damage to fruit. Unbeknown to most farmers, up to 25% of fruit can be lost through this practice, losses that are factored into the prices they are paid.

1.3 Different value-chain research perspectives

A review of the use of value-chain approaches in seven United Nations organisations observed that there is a wide variety of conceptions and methodological approaches (Stamm and Drachenfels 2011). Halldorsson et al. (2007) observed that the supply-chain literature relies on a wide array of theories, and at least 34 theories employed by researchers in the focal disciplines have been identified (Bonney 2011). The problem therefore arises as to how to coherently review their influence on value-chain management. Bonney et al. (2007) provide some guidance in their 'value-chain co-innovation roadmap' (the roadmap), showing the relational or affective elements (i.e. vision, goals and leadership) represented, along with strategic management (i.e. structure, ability and motivation), economic (i.e. resources and material flows) and technological (i.e. processes and open communication) elements. In summary, the following four broad theoretical management perspectives underlie value-chain improvement:

1. strategic—collaboration to manage uncertainties about the supply of resources

2. economic—achieving efficiency in material flows, process innovation and 'added value' based on consumer value attributes as well as cost

3. relational—providing the principles of formal and informal governance for chain coordination

4. technological—incorporating production (biotechnical), communications, demand and performance management functions.

The strategic management perspective contributes to understanding that firms collaborate in chains to manage their uncertainties about the supply of resources and competencies necessary to develop a competitive advantage that is inimitable and non-substitutable. In the roadmap model (Bonney et. al. 2007) strategic management underpins each organisation and its relationship with its suppliers and customers, its strategic posture and direction (i.e. vision, culture and leadership), and its structure and processes. Thus, it underlies the concepts of shared vision and compatible structures and processes between the chain partners, as well as other organisational characteristics critical to co-innovation such as policies regarding mutual benefits and open communication.

The economic perspective is fundamental because it underpins the concepts of efficiency in material flows or process innovation, as well as 'added value' based on consumer value attributes and cost. Economics has implications for resource management by highlighting the importance of economic incentives, broadening the notion of assets and the pre-eminence of new product development as a source of innovation. Its recognition of intangible resources also enables a broader analysis of the value of relationships, knowledge (both tacit and explicit), and non-economic incentives and their relationships with broader forms of innovation outside of product and service innovation.

The relational perspective, as illustrated in the roadmap model, captures the principles of formal and informal governance of chains as collaborative systems, and the notion of the capacity to use relational interactions with chain partners to develop informal, idiosyncratic processes that improve value-adding and sustainable competitive advantage. The relational perspective explains how vision, culture and leadership, in combination with cultural alignment and strategic leadership, are critical for successful co-innovation. Likewise, the roadmap model suggests that shared learning and the aggregation of knowledge and intellectual property across the chain, combined with extrinsic and intrinsic motivation, are necessary to encourage individual employees to exhibit co-innovative behaviour, and firms to act in the chain's interests, because ultimately it benefits their own interest (self-interest). This is consistent with Jensen's (1994, p. 14) view that the '… central proposition of agency theory [which] is that rational self-interested people always have incentives to reduce or control conflicts of interest so as to reduce losses …'.

The technological perspective posits that in order to control a complex system such as a value-chain, the governance system must generate at least as much complexity as the system that it is trying to control (Ashby 1957; Beer 1984, 2004). This perspective regards technological solutions as the key enabler of value-chain management and innovation. It provides the essential underpinning theory for the communications, forecasting, demand management and performance management functions. Technological perspectives can be used to analyse structural mechanisms and asymmetries of power, control and communication processes, as well as relationships with the external environment.

1.4 Different perspectives lead to diverse methodological approaches

These four theoretical perspectives have led to many different methodological approaches. While it is not the intention to review those here, it is helpful to briefly describe some of these approaches in order to position and demonstrate the inclusiveness of the approach adopted in this manual.

* **Linkage and chain concepts** are often used in community development studies that are concerned with explaining the whole process of delivering products to consumers and the effects of linkages and spillover effects from the entry of transnational corporations and local businesses (Altenburg 2006).

* The **filière-approach** emphasises the measurement of input–output relationships, prices and value-adding at different stages of production to identify strategic points that affect the ability or need of other actors to influence the entire production and distribution chain (Raikes, Friis Jensen and Ponte 2000).

* The **global value-chain approach** emphasises the governance structure of value-chains. Certain key actors—the lead firms—have the capability and power to determine how the other actors behave by, for example, setting chain-wide product and process standards, quantities and conditions of delivery using brand ownership, proprietary technology, or exclusive

information (Gereffi, Humphrey and Sturgeon 2003).

* **The global production network approach** builds upon Gereffi's global value-chain concept, arguing that the chain metaphor is inadequate to conceptualise how inter-firm networks are embedded in societies that display considerable social and institutional variation in how firms and individuals behave in a chain (Ernst and Kim 2002).

* **The subsector, agrifood system or industry-level approach** largely overlaps with VCA. Some subsector work, however, seems to adopt a slightly broader industrial system perspective, looking at a commodity subsector or industry as a whole and investigating issues not at the centre of VCA (e.g. policy, land tenure, regulation, food consumption patterns) as well as the links between food production and rural livelihoods (Ernst and Kim 2002).

* **The national innovation systems approach** focuses on information and knowledge that is created and transferred outside of individual chains—that is, nation-specific factors such as market conditions, managerial and technological competences of enterprises, public infrastructure and regulations, norms and values, and how knowledge is produced and used.

* The **systemic competitiveness approach** developed in the 1990s by the German Development Institute argues that competitiveness of firms is dependent on the quality of inter-firm relations and national systems of norms, rules and institutions that define economic incentives. It proposes a heuristic framework to analyse the political and economic determinants of successful industrial development (Ekboir and Rajalahti 2012; Esser et al. 2013).

* **The value-chain cluster approach** analyses sector specialisation and geographic concentration because it facilitates 'collective efficiency' (Schmitz 1995).

1.5 The drivers and enablers of value-chain innovation

In terms of inter-firm relationships, value-chains consist of non-equity strategic alliances (Barney and Hesterly 2011) in which partners are stakeholders not shareholders, and where there is weak vertical control, obligations extend beyond contractual requirements and inter-firm relationships add value beyond that which the firms could achieve acting individually (Sporleder 2006). As a result, firms acting as a value-chain increase their interdependency (Boehlje 1999) and collaboration.

Collaboration is both a precursor and an integral, ongoing condition for co-innovation to occur (Blomqvist et al. 2007; Davis 2006) and '… has become a necessary but not sufficient condition' (Spekman, Kamauff Jr. and Myhr 1998; p. 634) in improving chain performance. There are four internal chain conditions that facilitate the development of collaboration (Bonney 2011):

1. *Relational competence* is built on the development of trust, communication and commitment. Of these, trust is the most important to the formation, development and continuation of relationships because the other factors are predicated on the existence of sufficient trust (Hammer 2006; Seppänen 2008; Zaheer and Harris 2006).

2. *Compatible co-innovative culture* is an essential facilitator of collaboration because it helps to build relational capital, manage partnership relationships (Campbell and Sankaran 2005), and create relational alignment in the partner selection process that involves the prior steps of technological and strategic alignment (Emden, Calantone and Droge 2006).

3. *Co-innovation architecture* incorporates the mechanisms that enable the governance of collaborative relationships (Jaatinen et al. 2006).

4. *Innovation competence* is the 'corporate-wide technologies and production skills … that empower individual businesses to adapt quickly to changing opportunities' (Prahalad and Hamel 1990, p. 81). It is a purposeful, continuous, pro-active selection of opportunities, making choices and orchestrating resources (Bruch and Ghoshal 2004) to achieve efficiencies and broad-based innovation cognisant with the multifaceted model of innovation of Schumpeter (1934; p. 66).

As Part 2 of this manual explains, VCA and development should involve the assessment and subsequent nurturing of all four of these conditions among participants.

There are also many factors that can inhibit collaboration at the strategic, tactical and operational levels (Barratt 2004), including the lack of a collaborative culture, barriers to information and knowledge flows, design and governance of the value-chain, poor chain relationships and poor management (Bonney 2011).

1.6 The management or governance of value-chain relationships

The governance of chain collaboration involves the coordination or management of exchange relationships between the buyers, sellers, service providers and regulatory institutions in a chain to enable the creation and delivery of the value demanded by consumers (and chain customers). This includes the ability of one or more of them to coordinate or control the activities of the other chain participants in producing a product or service from inception by determining market access, the acquisition of productive capabilities and the distribution of benefit across the chain (Heide 1994; Vlaar 2006).

Contracting and incentives (i.e. rewards and punishments) are the main mechanisms for governing value-chains (Grzeskowiak 2006). However, it is recognised that, because of bounded rationality[2], formal contracting will always be insufficient in complex situations requiring adaptivity; and that hybrid models of governance have evolved to safeguard against bounded rationality and opportunism (Williamson 1985, 1986, 2008). Macneil introduced the notion of 'relational' contracting, which regards contracts as relationships rather than discrete transactions, being fundamentally based on trust and 'relational norms' (Macneil 1974a, 1974b, 1978, 1985, 2000). The types of contracts and

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2   'Bounded rationality' is an idea from the field of decision-making that the rationality of individuals is limited by the information they have, the limitations of their minds and the finite time they have to make a decision (Simon 1957). In this case, buyers of agrifood produce have limited understanding of their suppliers and use contracts to specify what they supply. However, contracts are not sufficient to control supplier behaviour.

incentives employed, along with the administrative controls and the levels of adaptability generated, are a means of distinguishing the type of governance and the position on the governance continuum.

The form of governance operating in agrifood chains has significant ramifications for the nature of the chain, and its capacity to solve shared problems and achieve environmental change through collaborative innovation. There is a continuum of five types of governance:

1. spot markets based on independent sellers with no ongoing relationships;

2. specifications-based formal contracts;

3. relational value-chains or relationship-based alliances focused on a hybrid of formal and relational contracts and incentives;

4. equity-based alliances where there is cross-ownership; and

5. vertically integrated chains where a part or the whole of the chain is owned by one company or person (Gereffi, Humphrey and Sturgeon 2005; Wysocki, Peterson and Harsh 2003).

Traditionally in developing countries there is a reliance on relational contracts. However, as product supply becomes more complex with demands for higher quality food, better food safety standards and consistently larger volumes over longer periods, there are many examples of more-formal contracts being used. This is a trend away from the traditional spot markets common in the developing world towards a hybrid form involving relationship-based and formal contracts (i.e. the third type of governance in the above list). Even in Western countries it is rare that relationships between firms/individuals in a value-chain are entirely controlled by formal contracts, so to a greater or lesser degree 'informal' or 'relational' contracting also operates or, indeed, may substitute altogether for a formal contract (Hendrikse 2003). Relational contracts in supply chains are informal, non-codified, often long-term and incomplete agreements that are sustained by trust, reciprocity and the perceived future value of that relationship, which provide the flexibility to cope with uncertainty and complexity (Baker, Gibbons and Murphy 2002; Hendrikse 2003; Jeffries 2000; Makadok and Coff 2009). Grzeskowiak (2006, p. 52) defines 'relational exchange' as 'ongoing cooperative exchange that is based on relational norms, trust, commitment and long-term orientation', and contrasts this to 'transactional exchanges' with no element of commitment to future exchange.

By definition, the relational contracting concept is fundamental to the understanding of incentivising of collaborative innovation as it contains the notion of informal or implicit incentives—subjective, unspecified, non-enforceable, reciprocity-based factors that motivate firms towards non-specified behaviours.

1.7 Value-chain management for co-innovation to create consumer value

The nature or style of governance is determined by the values, attitudes and mental models of the CEO and senior management of the 'lead firm', usually the most powerful business in the chain, and the organisational culture created within the lead firm and the chain (Bonney 2011).

Generally, the agrifood industry has low levels of collaboration, lacks broadly based forms of innovation and has been slow to adopt modern value-chain management practices including vertical collaborative innovation or 'co-innovation' (Nasiruddin, Islam and Quaddus 2011; Pitt

2007). This has affected its ability to adapt to the changes brought about by globalisation, and farmers in many countries have struggled to maintain market access and competitiveness.

In broad terms there are two types of chains based on two types of products—highly responsive innovative chains that supply high-value, niche products; and efficient, less-responsive commodity chains supplying low-margin, high-volume undifferentiated products. This leads to two business models that deliver these different forms of value but require very different approaches to managing production and marketing. However, both models require collaborative innovation to solve the shared production and marketing problems of their chain (Albers, Gehring and Heurmann 2003), and both are applicable to developing- as well as developed-country contexts.

1.8 Globalisation, the supermarket revolution and the effect on small farmers

Globalisation has driven major changes in agrifood procurement practices from traditional marketing systems to meet the emerging trends of consumer demand in the last three decades. This has involved a shift from public to private standards; from spot market relations to vertical coordination of supply chains; and from local sourcing to national, regional and global networks to reduce costs and increase quality as a means of improving competitive positioning. To achieve this, companies tend to source from larger farmers to avoid the complexities and supply risk of dealing with a larger number of smaller farmers. However, companies may source from small farmers where they dominate a specific agrifood industry. When this occurs they tend to source from those possessing essential non-land assets (e.g. irrigation, farmer associations, farm equipment and adequate roads). In some instances companies will use resource-provision contracts to address those constraints. Generally, however, it appears that the inclusion of smallholder farmers in the modernisation of procurement is very mixed. Unless traditional markets adapt to facilitate supply to modernised procurement systems, smallholders may be excluded, which could lock them into poverty. It also appears that inclusion in modern marketing channels has positive effects on the incomes and assets of small farmers as well as on local labour markets (Reardon et al. 2009).

The development of modern retailing practices is affecting all countries around the world, and four time-based waves of development have been identified (Reardon, Timmer and Minten 2012; The Nielsen Company 2012). Developing countries are on the most recent (third and fourth) waves and are, in broad terms, following the development of the earlier waves of retail development in developed countries.

Crowded, hypercompetitive retail markets in developed countries are encouraging some transnational companies to look to less-competitive markets in the developing world for their growth. The easing of foreign direct investment conditions facilitates their entry into developing-country markets. This frequently changes the dynamics of these markets and the practices of the local retailers as well as the infrastructure of the local markets (Independent Consumer & Competition Commission 2009; Reardon and Berdegué 2008). For example, the modern retailing system's market share of the total food market in most countries across Asia is growing at about 1.5–2.0% per year (The Nielsen Company 2012).

As standards of living rise in developing countries, the population engage in more-specialised work but become increasingly time poor and broaden the diversity of their palates. The production of food gradually becomes 'outsourced'—consumers have a greater ability to purchase these more-diverse goods but do so less frequently at more distant outlets because of increased mobility and the existence of home refrigerators. To meet these needs, modern retail marketing focuses on supplying

low-price, high-quality, safe and convenient food in environments that are more secure, convenient and pleasant than traditional wet markets. These are the supermarkets, hypermarkets and other specialist convenience stores that have been rapidly making inroads (1.5–2.0% per year) into traditional markets in Asia over the last three decades (The Nielsen Company 2012).

Thus, the 'supermarket revolution' in developing countries, just as it has in developed countries, requires the consistent supply of high volumes of standardised, high-quality, low-margin food products over extended periods. This encourages retailers to seek farmers with access to large-scale, technologically based, resource-intensive production techniques (Bourlakis and Weightman 2004). Smallholder farmers often lack the resources, knowledge and skills to produce food products that meet these necessary requirements to access the formal market system. As a consequence, large processors, wholesalers and retailers increasingly seek large-scale producers in the formal markets who offer consistent quality, volume and supplier behaviour in order to reduce supply risk , management complexity and hence costs. This often excludes smallholder farmers, thus locking them into local, informal markets and increasingly into poverty (Gulati et al. 2007; Louw et al. 2009).

Value-chain R&D seeks to identify ways to facilitate collaboration between smallholder farmers to coordinate supply, achieve scale of production and reduce supply risk, thus improving opportunities to access formal markets, sustainably increase the returns for their produce and improve family livelihoods. This R&D is increasingly becoming a focus for development agencies because it identifies and prioritises the systems-based biophysical, economic and social interventions required to improve market access and livelihoods.

Strengths and weaknesses of the value-chain approach (Altenburg 2006)

Strengths

1. It refocuses from production factors and arms-length relationships to the role of lead firms in coordinating production and trade.

2. It recognises the key role of relationships in addressing chain and business performance constraints.

3. It enables the focus of policymakers and donor agencies to be on the key change agents that affect market competitiveness and inclusiveness of value-chains.

4. It recognises the influence on value-chains of the most powerful chain participants in governing chain behaviour, performance and the sharing of economic rents.

5. It identifies where value is created and diminished along the chain and in doing so highlights the biophysical, economic and social priorities for intervention.

6. It identifies how knowledge is created, transferred and appropriated.

7. It enables the understanding of chain operation in the broader context of its physical, socioeconomic and institutional context.

Weaknesses

1. Many approaches fail to focus on delivering products that are valued by consumers.

2. While there is a broad recognition of the need to position chains in their context, some studies assume simple linear flows rather than bifurcated or networked flows and relationships.

3. There are often dichotomous conceptions of power when it is often more complex, with different degrees of power or dynamic power relationships depending on the business environment.

4. Institutional factors are often neglected.

5. Some development projects are biased towards global chains when local or traditional chains may be far more relevant for the development of policies and support mechanisms.

1.9 Value-chain thinking

Value-chain thinking provides a mental model for understanding how value-chain principles apply to development research problems. One way of characterising value-chain thinking is to contrast supply chains and value-chains. Begin by thinking of the amount of money paid by consumers in both chains as represented by a pie. Consumers determine the size of the pie because they decide whether they are going to buy the product and how much they are willing to pay for it.

Supply chains push products towards consumers, with farmers adopting a production-focused attitude of 'I'll sell whatever I produce'. Their products may or may not meet the demand of particular market opportunities, consumers may or may not demand everything that is produced, and consumers may or may not pay prices that return profits to everyone in the supply chain. As a result, to increase their incomes, chain members fight each other to try to make their slice of the pie bigger by making someone else's slice smaller (Figure 4). In these supply chains behaviour becomes opportunistic—customers switch suppliers if they can get what they need elsewhere at a cheaper price, and suppliers let down customers if they get a better offer from someone else. These are transaction-by-transaction relationships; there is neither trust nor commitment, and so information flow is impeded or distorted.

Figure 4: Supply-chain strategy: grow your slice of the pie at someone else's expense

In contrast, value-chains focus on efficiently meeting consumers' needs. Here, products are pulled by consumers, and farmers adopt a market-orientated attitude of 'I'll produce what I can sell'. Chain members share the same market opportunity, avoiding competition solely on price. As they capitalise on the market opportunity, they grow the size of the pie. This means that everyone's slice grows without taking part of someone else's (Figure 5). In these chains, relationships are more stable and stronger, with greater collaboration and sharing of information because people along the chain want to work together as preferred suppliers and customers.
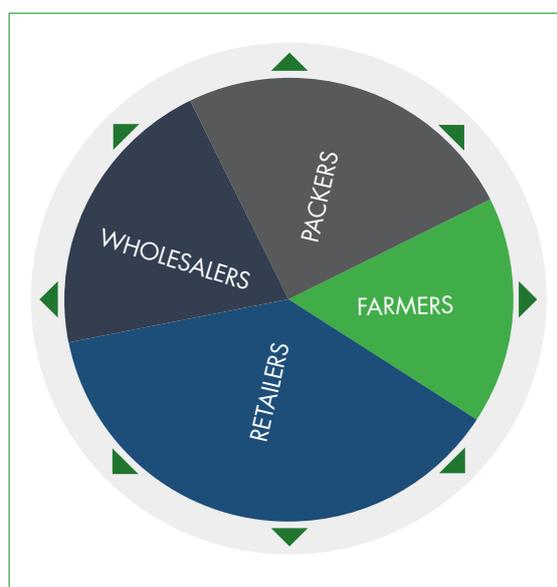
Figure 5: Value-chain strategy: cooperate to grow the pie

'Growing the pie' relies on value-chain thinking. This involves collective decisions among chain members to work together to grow, process and deliver products that meet the expectations of specific consumers. This means that retailers can attract more shoppers—and if the product meets their particular consumers' needs, they might even be willing to pay more. When products move efficiently through a chain that produces what consumers want and when they want it, there is also less wastage, so revenue increases. When the benefits of this are shared across the chain, suppliers and customers become partners rather than adversaries. Figure 6 contrasts supply-chain thinking with value-chain thinking.

SUPPLY-CHAIN THINKING "Growing your slice"	VALUE-CHAIN THINKING "Growing the pie"
Compete on price Independence and self-interest Flexible, transactional relationships Short-term trading Suppliers chosen on quality and cost Suppliers are price takers Opportunism Limited information sharing	Compete on value Interdependence and mutual interest Stable, collaborative relationships Longer term trading Suppliers selected for quality, skills, service and partnerships Prices are negotiated Commitment Open communication

Figure 6: Contrasting supply-chain and value-chain thinking

Value-chain thinking increases farmers' incomes when they:

* understand market opportunities and focus on producing what consumers in those markets want; and

* become preferred suppliers by providing superior service to their customers, for example in terms of reliability.

In this way value-chain thinking reduces the intensity of competition. When a farmer produces the same product as many other farmers and does not offer better service to customers, the only way customers and consumers choose between suppliers is on price. In contrast, value-chain thinking differentiates those farmers who grow crops suited to particular markets and, by offering better services to their customers, gain access to those markets. These farmers become more attractive suppliers, thereby reducing competition, since customers choose them as suppliers based on factors other than just price. As a result, farmers' potential incomes rise.

1.10 Value-chain thinking in practice

Value-chain thinking in practice explores how to improve the value-chain's resources and capabilities[3], thus improving its market orientation and collaboration, and ultimately its profitability. This can be shown as a four-piece puzzle, with every piece needed to complete it (Figure 7). Showing value-chain thinking in this way reflects the view that value-chains are made up of interacting subsystems—building partnerships based on understanding consumers and customers, and using these partnerships to create value and reduce waste. Each piece is explained below in turn.

UNDERSTAND CONSUMERS AND CUSTOMERS

REDUCE WASTE

CREATE VALUE

BUILD PARTNERSHIPS

Figure 7: The four-piece puzzle of value-chain thinking

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3   This conceptual framework is derived from applying the resource-based view of the firm (Barney 1991; Wernerfelt 1984).

UNDERSTAND CONSUMERS AND CUSTOMERS

TO GROW THE PIE, VALUE-CHAINS NEED TO UNDERSTAND WHAT CONSUMERS AND CUSTOMERS WANT
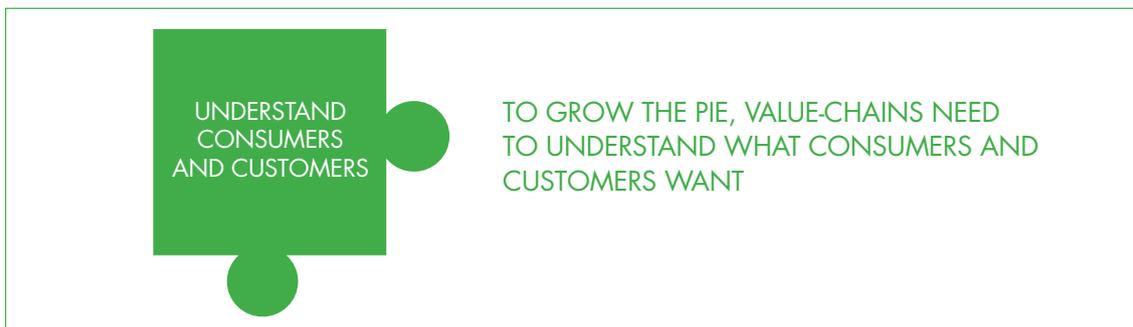
Since consumers are the only source of a chain's income and thus determine the 'size of the pie', understanding what drives their behaviour is critical to encouraging shoppers to buy the product for the first time; buy it more frequently; establish deeper loyalty to the product, brand or shop; or be willing to pay more for the product. To be able to achieve this by improving the product, as opposed to reducing its price, a value-chain must understand collectively how to enhance the desirable attributes of the product at a lower cost than the additional value generated. In considering this approach, it is important to recognise that consumers are not all the same and individuals assess a product's attributes differently, for example reflecting culture, gender, income and ethics.

When chain members understand these differences and work together to deliver attributes that similar groups of consumers value, they 'grow the pie', for example by selling more, selling more often or selling at higher prices. Two case studies based on vegetable production and marketing (see below) demonstrate how value-chain thinking delivers benefits to smallholders.

The 'understanding consumers' part of the first piece of the value-chain thinking puzzle should lead farmers to ask:

* Which products, and what characteristics of those products, are shoppers looking for?

* Which crops should I grow, and which varieties? Which livestock should I raise, and of which breed?

* How much should I grow, and how should I grow it?

* Can I process the product to make it more attractive/valuable to consumers?

While understanding consumers is essential, the needs of customers are also important. The requirements of final customers in the value-chain (i.e. those who directly serve consumers such as shops, stallholders, restaurants and hotels) are also important because they are the gatekeepers to the marketplace. As well as ensuring the quality of product sought by their shoppers or clients, priorities for customers may also include frequency and reliability of delivery, willingness to plan ahead, and treatments that ensure shelf life. As a consequence, meeting customers' requirements requires cooperation among farmers; coordination of production, delivery and demand across the whole chain; acquisition of new skills in postharvest processing; and investment in different inputs.

The 'understanding customers' part of the first piece of the value-chain thinking puzzle should lead farmers to ask:

* Which potential customers can best serve the consumers being targeted?

* What are these customers' priorities?

* How can I contribute to meeting these requirements?

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Case study: Harvest of Hope Vegetable Box Scheme, Cape Flats Township, Cape Town, South Africa

Market opportunity: A group of consumers wanting healthier vegetables grown with fewer/ safer chemicals.

Product: Organically grown vegetables delivered directly to shoppers via pick-up points at primary schools. The approach helps to offset the unavoidable variability in yield, timing and quality of different crops, since the vegetable boxes' content can be adjusted to reflect availability.

Participants: 118 farmers, organised by Abalimi Bezekhaya (Farmers of Home), as part of Harvest of Hope, established in 2008.

Benefits to farmers:

* access to markets outside their local community

* secure contracts / monthly income

* reduction of costs due to bulk purchase of inputs

* additional income earned from working in the packing shed, helping to build farmers' understanding of downstream activities, which feeds back into how they farm.

As a further example of value-chain thinking, the organisers responded to feedback from their consumers, some of whom criticised the lack of variety and out-of-season produce caused by reliance on locally grown fresh produce. As a result, the organisers introduced supplementary products from other sources, and so attracted more consumers.

Further details: <*harvestofhope.co.za/*>.

Case study: Iraq Al Amir Women's Association, Amman, Jordan

Market opportunity: Vegetables that guarantee safer production systems and better returns for farmers

Product: A brand of low/safe-pesticide-produced spring/green onions, with 75% of final price paid to farmers. The farmers also used a new variety of onion, which does not flower as early and so could be harvested later when prices were higher, and which also has a longer shelf life.

Participants: 63 families working within a women's cooperative.

Benefits to farmers: On average, households improved their income by 20%.

The project required improved production skills in soil fertility and pest and disease management, as well as extending activities into postharvest processing by cleaning the onions in-field, grading at the household level and then packing at the cooperative level. The association developed its own brand to emphasise origin and responsible/healthy produce, and so improved consumer recognition and aided repeat purchasing. Farmers also planted seedlings rather than seed to shorten crop cycles and reduce losses from seeds not germinating. Participants are charged a fee of 8% of their gross revenue from sales towards the costs of marketing, packaging and transport.

The Association's own 'responsible production' brand logo

Further details: *Urban Agriculture* magazine, 25 September 2011, p. 54 <*www.ruaf.org/sites/default/files/BDU-11031-UAM%2025_0.pdf*> and <*www.ruaf.org/sites/default/files/UAM%2025-Developing%20Value%20Chains%2054-56.pdf*>

REDUCE WASTE

REDUCING WASTE ALSO INCREASES THE 'SIZE OF THE PIE'

Waste reduces the size of the pie through lost income and increased costs. Waste means more than just any product that does not reach a consumer; it also includes:

* any product that sells for a lower price than it could sell for elsewhere;

* making a product better than it needs to be; and

* unnecessary activities or applying unnecessary/excessive inputs.

Waste reduction might involve: matching the timing, volume and quality of supply with demand to prevent losses downstream, especially of more-perishable products; reducing postharvest deterioration; or improving transport, packaging and storage.

The 'reduce waste' piece of the value-chain thinking puzzle should lead farmers to ask:

* Where does waste occur on-farm and downstream in the chain?

* What can I do differently to reduce waste on-farm and downstream?

CREATE VALUE
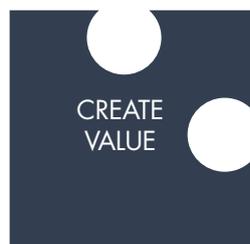
CREATING VALUE REQUIRES THE CHAIN TO COLLABORATE TO IMPROVE ITS MARKET ORIENTATION

Clearly there is value in meeting the needs of consumers and customers, but value-chain thinking raises the question of what chain-wide behaviours are needed to create and deliver that value. These behaviours are fundamentally based on understanding what is required to create each critical attribute of value. Consider the example of how to ensure freshness to consumers of a perishable product like seafood. In this case, freshness is created not only by the technical and physical systems that rapidly cool and store the product, but also by the information and logistical systems that get it to the consumer as quickly as possible. Adding other quality dimensions to this seafood example, such as food safety, taste and availability, demonstrates how creating and delivering a bundle of attributes that a targeted group of consumers value and will pay for becomes a complex technical, physical, logistical, financial, marketing and social challenge. The multidisciplinary nature of this challenge is a strength of the value-chain's systemic approach, made possible by members in the chain not only understanding consumer value, but also being committed to meeting the needs of their customers.

BUILD
PARTNERSHIPS

STRONG PARTNERSHIPS, ALTHOUGH
HARD TO COPY, ENSURE THAT THE
PIE IS DIVIDED INTO LARGER SLICES

Value-chains consist of partnerships that create, realise and distribute value more effectively than the individuals and firms could achieve acting individually (Sporleder 2006). One of the chief competitive strengths of value-chain thinking is that it involves people working together. This takes time and effort, and four stages of development have been identified (Figure 8).

STAGE 1:
FRAGMENTED CHAIN

BUSINESS A

BUSINESS B

BUSINESS C

STAGE 2:
COOPERATIVE VALUE-CHAIN

BUSINESS A

BUSINESS B

BUSINESS C

STAGE 3:
COORDINATED VALUE-CHAIN

BUSINESS A

BUSINESS B

BUSINESS C

STAGE 4:
COLLABORATIVE VALUE-CHAIN

BUSINESS A

BUSINESS C

BUSINESS B

Figure 8: Evolution of a collaborative value-chain. Source: adapted from Value-Chain Management Centre (2012).

Collaborative value-chains represent the highest level of development, a level that may be difficult to achieve but is the hardest for competitors to imitate, so the payoff is less competition and opportunities for greater profitability. Partnerships begin when suppliers and customers are willing to work cooperatively—not all will be. Successful partners are those with whom it is possible to align abilities, assets and resources (Barney and Hesterly 2010). Then, as trust and commitment grows, there will be greater willingness to:

* focus on consumers and service, not just price and volume;

* learn about each other's businesses, and so see how to work better together to create value and reduce waste;

* identify and solve problems together; and

* reward commitment, quality and reliability.

* The example below illustrates what this means in practice.

Example: White haricot bean production, Shashemene, Ethiopia

Participants: Burka Gudina, a farmers' marketing organisation, with nearly 900 members

Value-chain thinking in practice: The group interviewed farmers, small local collectors, large urban merchants and an export trader, and so identified the key problems as impurities, high moisture content and small beans. Then, as part of solving problems together, the farmers committed to:

* keeping their stores clean;

* improving quality;

* allowing buying price adjustment based on market price; and

* ensuring that members paid back 'seed loans' to the exporter.

* Similarly, the exporter committed to:

* giving technical advice on store management;

* checking produce before being loaded onto trucks, and providing sacks for produce;

* helping finance access to improved seeds; and

* providing information on export prices received for products.

Further details: Burka Gudina, *Urban Agriculture* magazine, 24 September 2010

Building partnerships can also improve the distribution of value. If upstream members have become preferred suppliers by offering the enhanced products and services that consumers require, downstream partners are more likely to want to sustain partnerships by sharing the additional value created.

Example: Southern Philippines papaya

Papaya grown in the southern Philippines can be harvested at a later stage of maturity so that it is sweeter. This costs farmers more, but the fruit is sold at higher prices in supermarkets because consumers will pay more for sweet papaya.

Unless growers receive a share of that increased consumer value, there is no motivation for them to spend the extra time and money associated with later harvest.

Collaboration with existing or potential suppliers and customers provides businesses and individuals with the means to supplement their own capabilities and resources to innovate as well as sustain and strengthen their competitive position. Thus, collaboration is a central function for achieving co-innovation in value-chains. Simatupang and Sridharan (2002, 2007) have described chain collaboration as '… the act of properly coordinating joint decisions, information, incentives and learning for the achievement of the chain's goal' (p. 306). This often develops with the growth of trust and commitment between partners as small activities in working together achieve success and lead to new and larger collaborative projects.

This final 'build partnerships' piece of the puzzle should lead farmers to ask:

* Which traders and retailers best serve my target shoppers/consumers and will give me a fair return?

* How do I become one of their preferred suppliers?

* Additionally, do I need to cooperate with other farmers?

Common mistakes in value-chain thinking

There are five common mistakes when people engage in value-chain thinking. The first is to think, 'It's too hard'. For chain members, stakeholders and those assisting them, to achieve value-chain thinking usually takes time and persistence because for most people this is a new mental model.

The second mistake is to make assumptions. These might include assuming that those downstream understand what consumers value about a product. Retailers, for example, sell a large number of products, so they cannot give much attention to every one, sometimes to the detriment of the individual value-chains that supply them. Farmers also often assume that they know what affects consumer behaviour when in fact they do not. They can be a long way from the market, not have access to reliable or up-to-date information, and not be aware of the form or condition in which their product reaches the market. Perhaps farmers understand commodity markets, where products are standard, but they rarely have much experience of smaller, niche markets where higher returns can be generated. In addition, farmers may be men, whereas shoppers are often women, who will make decisions on a different basis.

The third mistake is thinking that any member of the chain can go it alone. Value-chain thinking works through collaboration, both to ensure that the right product reaches the right market opportunity, and that the resulting higher returns are shared. No individual in a chain can achieve these outcomes in isolation.

The fourth mistake is selecting the wrong partners. Not everyone is a potential partner, since some suppliers and customers will not be willing and able to go through the changes in behaviour required to 'grow the pie', as set out in Figure 5.

The final mistake is giving up. Value-chain thinking is challenging, but the alternative is to return to acting as a supply chain and competing in commodity markets based on price. Giving up value-chain thinking may mean lost opportunities to profit from the higher value segments of markets.

Further reading on the experience of researchers in international development value-chain projects can be found in Part 3.

1.11 What is value-chain analysis?

VCA is a tool used in the process of achieving collaborative allocation and management of resources within and between businesses in a chain, the purpose of which is to improve the competitiveness of the chain as a whole. Fundamentally, VCA identifies what consumers value and will pay for in a product or service (i.e. its value attributes), and where that value is created or destroyed in the chain. It involves two basic analytical processes:

1. process improvement for existing products/services within and between the businesses in the chain; these can be thought of as inputs, or 'how we do things'; and

2. improving existing or developing new (value-added) propositions for customers and targeted consumers; these can be thought of as outputs, or 'the things we do'.

VCA focuses on a chain's ability to do the right things and do things right.

VCA involves a multidimensional diagnosis, in the eyes of the consumer, of the current state of:

* material flow (i.e. whether it is wasteful, necessary or value-adding) in the chain;

* communication and information flows (both strategic and operational) in the chain; and

* the governance of the chain, which involves examining how the relationships within and between people and businesses in the chain are managed.

VCA examines these dimensions against a backdrop of any significant factors in the chain's external environment, such as the marketing, biophysical, economic, socioeconomic, or cultural and institutional influences on chain structure, behaviour and processes. VCA highlights where these influences may need to be examined in more depth through discipline-based research (Figure 9).
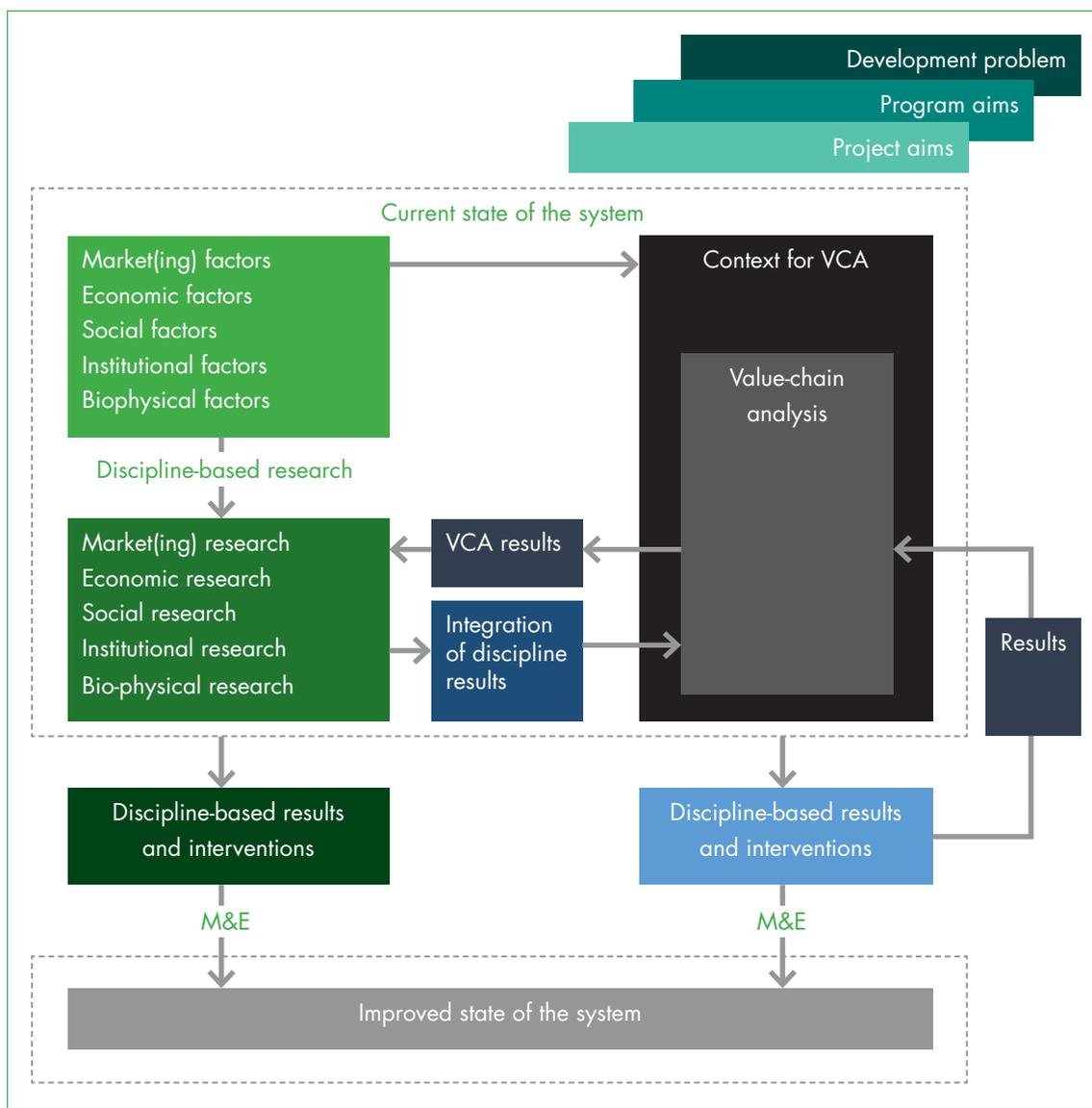
Figure 9: The process of value-chain analysis and development

These inquiries are conducted as part of a VCA. Sometimes interview data may be collected during the VCA interviews, or separate inquiries may need to be made by the discipline specialists on the VCA team. They will provide a better understanding of the magnitude of these influences, how and why they occur, and therefore how they might be changed to reduce or enhance their effects on the chain. The discipline-based research results are incorporated into the VCA as findings substantiated by specific, in-depth discipline research, and so are part of the validation of the VCA through triangulation. They then influence the design of appropriate interventions to improve or establish a new value-chain. For example:

1. In a horticulture project to establish new cool-temperate vegetable marketing chains, it appeared that the vegetable seeds being planted by smallholder farmers were inappropriate for their tropical climate. Therefore, variety trials were conducted in the first year of the project, which substantiated this finding and identified potential new varieties for further research in subsequent years.

2. In a beef project to increase beef production and marketing, it appeared that institutional factors such as policies and regulations were influencing the beef marketing process. Research confirmed that:

   a. policies for access to public pastoral lands, providing micro-loans, and establishing marketing infrastructure (e.g. slaughterhouses);

   b. extension strategies (e.g. free distribution of live animals for poor farmers and a free vaccination program); and

   c. approaches to contract farming

were all institutional factors that negatively affected the ability to improve local chains and establish new chains to a distant large market. This same project also identified the local minority tribal culture as having significant constraints on the changing of farmer cattle-keeping practices.

3. Another beef project aiming to increase beef production and marketing employed market research of a distant major market to identify the absolute inability of smallholder chains to compete with foreign imports, and institutional analysis to identify ineffective current farmer support policies, suggesting the need for change in government extension and support strategies.

Thus, comprehensive, multidisciplinary VCA incorporating a range of discipline-based research provides a basis for identifying chain improvement/establishment projects, focusing on collective opportunities for increasing chain efficiencies and creating new value for consumers, with more-equitable sharing of the costs and benefits from creating the new form of value. When this occurs a 'value-chain' is created. 'Silo' solutions (i.e. within businesses and often at the expense of others in the chain) will always be suboptimal and do not deliver sustainable competitive advantage (Bonney et al. 2007; Taylor 2005).

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PART 2
VALUE-CHAIN ANALYSIS AND DEVELOPMENT

Overview

Figure 10 provides a roadmap through value-chain research projects. The sections are as follows:

Part 2.1   introduces value-chain analysis (VCA) and its objectives, themes and processes.

Part 2.2   shows how value-chain research teams in development settings need to have multidisciplinary capabilities and include local membership.

Part 2.3   explains the context for VCA, including the connection with baseline economic analysis and the need to collect data for market, biophysical, economic, social and institutional analyses.

Part 2.4   provides an overview of conducting these baseline studies.

Part 2.5   explains the critical role of consumer research in VCA, and some of the methods available.

Part 2.6   addresses gender issues during project design and implementation.

Part 2.7   explains the process and criteria for selecting value-chains for research, development and extension (RD&E) projects, including the role of market research.

Part 2.8   addresses project initiation including creating a stakeholder group and undertaking awareness-raising workshops.

Part 2.9   describes data collection methods, covering mapping the current state of the chain, rapid mapping methods, and conducting consumer research designed for value-chain analysis.

Part 2.10 sets out the subsequent data analysis and interpretation, in particular the facilitators and constraints of efficiency and effectiveness in the value-chain, with particular emphasis on the extent of consumer orientation, scope for more-collaborative relationships and improved information flow.

Part 2.11 identifies priorities for change from analysis of the 'current state', and hence the basis for developing interventions that will deliver improvements (the 'future state') through implementation, monitoring, collaborative review and modification by chain participants in reflective cycles.

Part 2.12 evaluates changes that have occurred as a result of the initial research investment, benchmarked against the initial studies of the current state of biophysical, economic, social and institutional factors influencing the chain.

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┌─────────────────────────────────────────────────┐
│              PROJECT TEAM                         │
│               Part 2.2                            │
└─────────────────────────────────────────────────┘
                       ▼

┌──────────────┬──────────────┬──────────────┬──────────────┐
│ UNDERSTANDING│   BASELINE   │  CONSUMER    │ GENDER EQUITY│
│   CONTEXT    │   STUDIES    │  RESEARCH    │  Part 2.6    │
│  Part 2.3    │   Part 2.4   │  Part 2.5    │              │
└──────────────┴──────────────┴──────────────┴──────────────┘
                       ▼

            CHAIN SELECTION
               Part 2.7
                  ▼
           PROJECT INITIATION
               Part 2.8
                  ▼
            DATA COLLECTION
               Part 2.9
                  ▼
       ANALYSIS AND INTERPRETATION
               Part 2.10
                  ▼
  IDENTIFYING AND IMPLEMETING INTERVENTIONS
               Part 2.11
                  ▼
       MONITORING AND EVALUATION
               Part 2.12
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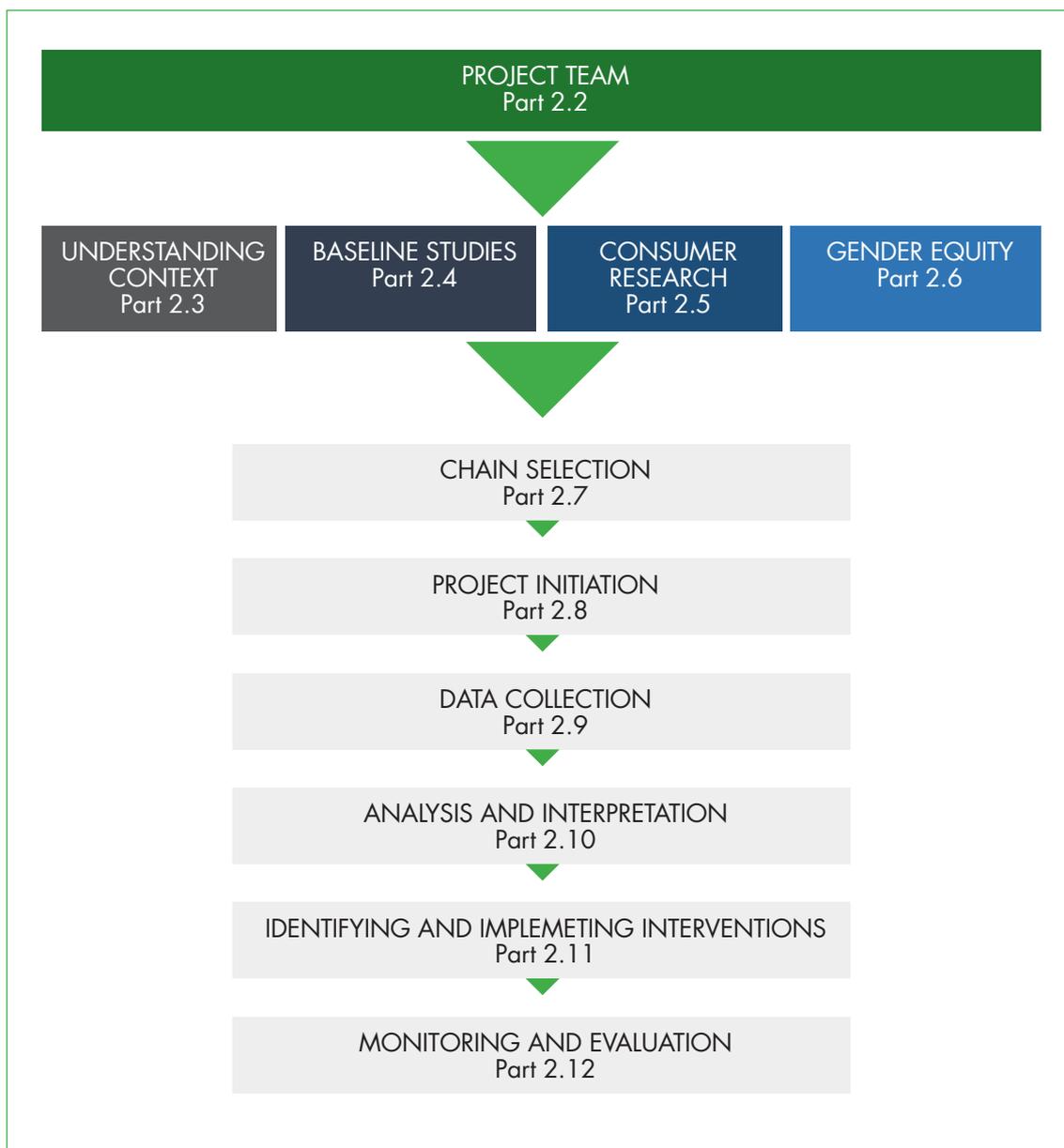
Figure 10: Roadmap to value-chain research

Part 2.1 Value-chain analysis

2.1.1 What is value-chain analysis?

Value-chain analysis (VCA) is a research method. In agrifood applications its purpose is to identify opportunities to improve the performance of chains of businesses that produce food and deliver it to consumers. VCA can be thought of as an overarching method, as it involves the application of individual research methods drawn from different disciplines, for example marketing, economics, physical sciences and sociology.

VCA:

* defines the creation of value in terms of the product and service attributes that affect consumer behaviour through their willingness to pay and frequency of purchase;

* identifies which activities add this value, whether from input supplies, production, postharvest processing, packaging, retailing or food service;

* evaluates the preparedness of a chain to create, realise and distribute value effectively and efficiently; and

* assesses the scope and/or potential interventions to help a chain better understand customers and consumers, create more value, reduce waste and build stronger partnerships.

2.1.2 Objectives of value-chain analysis

VCA examines whether a chain is both effective (i.e. doing the right things) and efficient (i.e. doing things in the right way). For a value-chain to be competitive, it must do both. Accordingly, VCA assesses whether the chain is:

* effective at maximising opportunities for creating and delivering value in the eyes of the consumer; and

* efficient in adding value, producing, processing and distributing products at the least cost and with minimal waste.

* This requires that the value-chain:

* understands what consumers value in the product, and focuses on creating and delivering this value throughout the chain;

* develops strategic collaboration and operational cooperation throughout the chain; and

* strives for continuous improvement.

UNDERSTANDING WHAT CONSUMERS VALUE

Value-chains orient themselves to the market by focusing on what it is that consumers value in the product, as well as what the final supplier, such as a retailer or food service operator, requires so as to gain access to the market. In some chains the requirements of the processor/retailer and consumers differ and may even conflict. VCA can identify these inconsistencies and provide a framework for resolving them.

Example: Research showed that consumers wanted to buy ready-to-eat soft fruit, but for retailers this involved greater in-store waste resulting from consumers handling the fruit. The chain-based solution to this problem was to:

* package soft fruit so that it is less prone to damage;

* educate consumers about how to choose and handle soft fruit; and

* change the retail display to minimise point-of-purchase handling.

The added costs of packaging, education and retailing were shared among chain members, who also shared the added value from sales and benefited from less waste.

DEVELOPING STRATEGIC COLLABORATION

Members in an effective value-chain do not act in isolation—they share information, ideas, opportunities, problems and even business systems. Collaboration is made possible when there is a shared vision between businesses, the presence of trust and commitment, compatible processes between businesses, open communication, cooperation and opportunities for mutual benefits. Chains that collaborate are able to develop products and services that are hard for competitors to imitate. This is one way that value-chains deliver competitive advantage.

Example: Consumers in a developing country wanted, and were willing to pay for, fresh milk that was safer for their children. A modern processor provided local collection points to which smallholder farmers delivered surplus milk, which was cooled and transported daily for processing. Better technology combined with economies of scale meant that processed milk was safe and affordable for consumers. At the same time local collection reduced the time and effort farmers spent finding markets for surplus milk. Such a chain-wide solution was sustainable only so long as farmers and the processor shared a common view of how this opportunity could be captured, and for whom it was mutually beneficial to work in this way. Once implemented, this solution was very difficult for local competitors to imitate.

STRIVING FOR CONTINUOUS IMPROVEMENT

To remain competitive, value-chains must have a focus on continuous improvement in their processes (production, logistics, marketing and management) and the development of products and services that create consumer value.

Example: A group of beef cattle farmers in a developing country, in partnership with a processor, aimed to improve the quality of their beef so that it could be marketed under a brand name. This was a long-term goal, enabled by their continuous focus on getting access to better genetics, benchmarking farmers' performance against each other and against best practice, and handling and processing cattle so as to minimise stresses that reduce the tenderness of cuts sold to the consumer. Continuously improving systems and practices along the whole chain was the only way they could reach their goal of collectively marketing high-quality beef to consumers.

2.1.3 The four themes of value-chain analysis

VCA focuses research questions on four key dimensions of the chain: *consumer value, material flow, information* and *relationships.*

1. What characteristics of the product and service do *consumers value*?

2. How does the chain's *material flow* create and deliver value, and what are the sources of waste?

3. How is *information* generated, shared and used, from final consumption of the product / disposal of waste, upstream to primary production and inputs, and back again? To what extent are decisions about what, when and how to produce pulled by the consumer?

4. Do the *relationships* in the chain encourage collaboration? How much trust and commitment exists? Do the relationships foster the distribution of value, reflecting where it was created and the risks taken by different chain partners?

As Parts 2.9 and 2.10 explain, addressing these questions from a research perspective involves mapping and analysing material flows, information flows and relationships within and between businesses, from agricultural inputs through to consumption of the product and disposal of waste. Data for this process are gathered as follows:

*   The first step is to identify the businesses that are involved in each stage of the chain to be analysed, selecting those that are relevant to the objectives, resources and limitations of the particular VCA. For example, it may not be possible or relevant to involve every farmer in the VCA for a product; or there may be too many retailers in a wet market to gather data from each one.

*   A survey of each selected business in the chain is carried out, ensuring that both managerial and operational levels are included, followed by in-depth interviews with key informants, focusing on priorities identified through the survey. If time and resources are limited, in-depth interviews with key informants may be all that is possible.

*   Consumer research is conducted, typically involving focus groups and surveys.

This combination of quantitative and qualitative data forms the basis for an assessment of where opportunities exist to improve a chain's performance. It is important to recognise that VCA is a diagnosis, not a cure. While it systematically identifies (diagnoses) opportunities for improvement, these will only deliver higher returns through interventions that are supported by chain members' commitment to implementing them.

2.1.4 Choosing between full and rapid value-chain analysis methods

As Taylor (2005) and Collins and Dunne (2008) point out, conducting a detailed VCA can be resource intensive in terms of time, funding and human resources, and requires the collection of large amounts of data. On some occasions these resources may not be available or the aim is to conduct a much more limited analysis for the purposes of defining or 'scoping' a project. There are many reasons why the resources necessary for conducting VCA may be limited, and constraints of budget and time are frequently the case. In developing countries it is also common for there to be constraints on access to informants, inadequate or absent contextual data (e.g. government statistics or business records), or restrictions on physical access to some stages of supply chains.

In response to these limitations, Collins and Dunne (2008 p. 74) adapted rapid rural appraisal techniques (Chambers 1981) to rapidly analyse supply-chain systems in Pakistan, entitling the new method 'rapid supply-chain analysis'. To adapt to the changing use of terminology, the method is now called 'rapid value-chain analysis'. Figure 11 explains the basic criteria for deciding when, and the context in which, to use each method.
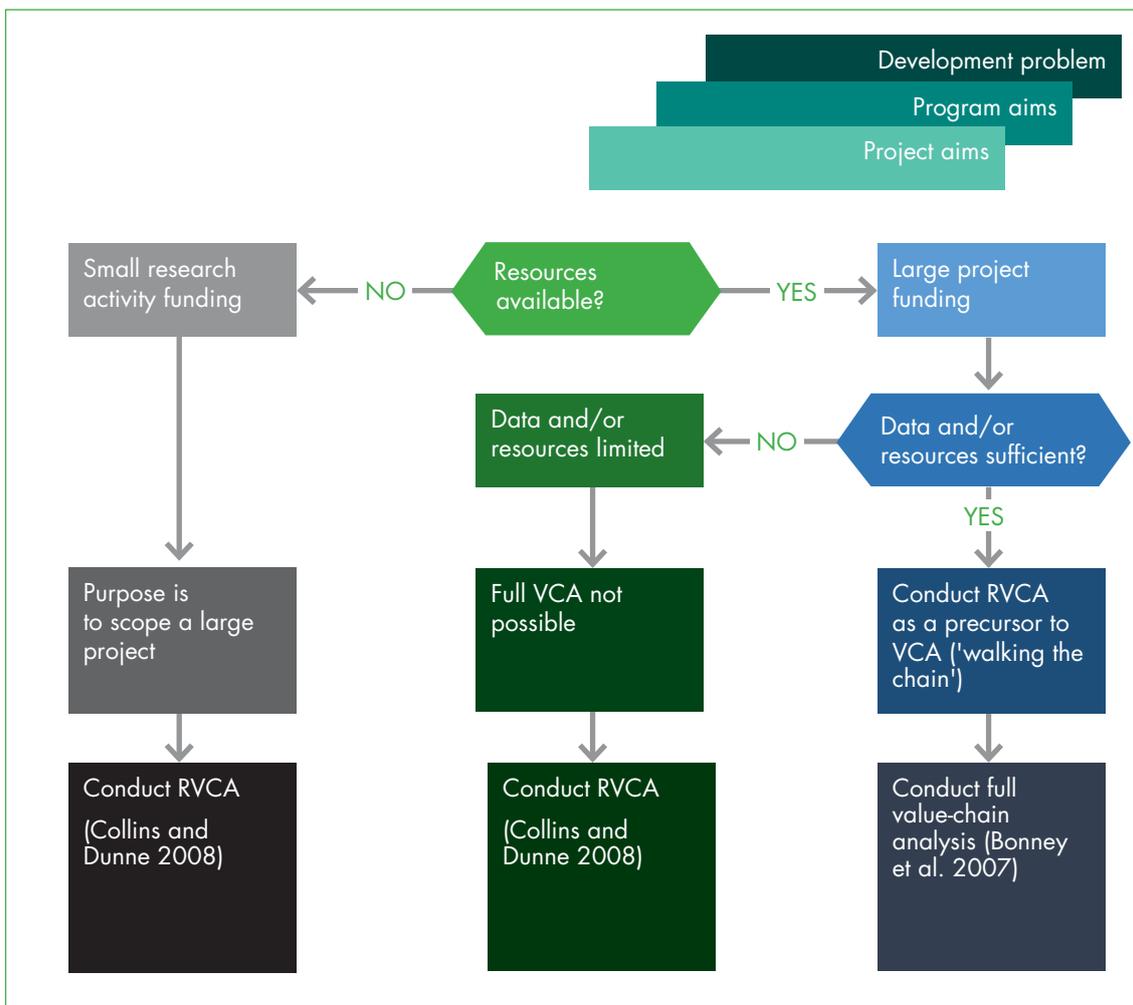
Figure 11: Decision tree for conducting a full value-chain analysis (VCA) or rapid value-chain analysis (RVCA)

In a rapid VCA, consumer research can be completed before investigating the chain itself. Analysis and reporting all take place intensively, with a suggested 10-day timetable given in Table 1. The chain can be mapped by the project team by starting with a generic agrifood chain map, and then validating it with chain members during the interview process.

DAY 1	Project team briefing on value-chain thinking and RVCA
DAYS 2–4	Interviews with members of the value-chains; 3–4 interviews per day per team (target up to 15 interviews per chain depending on its complexity and the diversity of members), with the interview teams meeting each evening to share findings
DAY 5	Review of interviews to date
DAYS 6–7	Final interviews chosen and undertaken to further investigate/validate emerging findings
DAY 8	Complete analysis of results
DAY 9	Preparation for feedback workshop
DAY 10	Feedback workshop to validate findings and discuss potential interventions

Table 1: Illustrative timetable for rapid value-chain analysis

References

Chambers R. 1981. Rapid rural appraisal: rationale and repertoire. Public Administration and Development (pre-1986) 1(2), 95–106.

Collins R.J. and Dunne A.J. 2008. A rapid supply chain appraisal approach for agribusiness development projects. Pp. 73–79 in 'Proceedings of the Second International Symposium on Improving the Performance of Supply Chains in the Transitional Economies', ed. by P.J. Batt. Hanoi, Vietnam, 23–27 September 2007.

Taylor D.H. 2005. Value-chain analysis: an approach to supply chain improvement in agri-food chains. International Journal of Physical Distribution and Logistics Management 35(9/10), 744.

Part 2.2 The project team

As explained in Part 1.2, a value-chain is a system, so understanding and improving value-chains requires systems thinking. Applying this logic to research-based value-chain projects raises the question, 'What kind of researchers best make up a project team?' There are two perspectives from which to answer this question:

1. The team must be multidisciplinary, usually with a mix of biophysical, economics, marketing, systems and social science skills. Multidisciplinarity ensures that the systems elements of the problem are understood, while systems thinking guards against the risk of dealing only with the elements of the system rather than the interactions among those elements that give the whole system its particular characteristics.

2. In developing countries where value-chain projects are usually funded by international donor agencies, the research team must include a balance of local and international members. This ensures that, over time, local capacity is built and local researchers can take more responsibility and leadership.

The size of a value-chain research team depends on the project budget, the scope and scale of the problem, and the availability of people with the required skill sets. It is not uncommon that value-chain teams have more biophysical scientists than economists or marketers, or lack researchers with formal systems training. These need not be limitations. Local researchers with science, economics or marketing training should be encouraged to join the team based on their enthusiasm to learn and become involved. Their cultural, political and socioeconomic knowledge, skills and insights are invaluable at every stage of a value-chain project.

> **Example:** The research team for a small 2-year value-chain research project in the southern Philippines consisted of two Australian researchers with marketing and systems skills, and two Filipino researchers with biophysical and economics skills. The two Filipino team members trained three others in value-chain research and brought them onto the team.
>
> **Example:** A large 10-year Pakistan value-chain project involved five Australian researchers with biophysical, marketing, consumer behaviour, economics and systems skills and, eventually, 11 Pakistanis with biophysical, marketing, strategy/policy, extension and project management skills. Over the 10 years the Pakistani team grew from 4 to 11 as they gradually took more responsibility for the project.

While a value-chain research team needs a project leader who can take oversight of the research processes and maintain a systems focus, it is equally important that the team has individual members familiar with the elements of a VCA. For example, the team must have the skills to map the physical activities along a chain and understand how material is produced, processed, stored and distributed. An agronomist, postharvest scientist, food technologist or agricultural engineer may be able to lead this part of the analysis. Capturing information flows and relationships through chain mapping and conducting interviews with managers might be done by small teams of two or three researchers with some combination of marketing, economics, sociology or information technology skills. The analysis of consumer value attributes may be led by a marketer or a consumer behaviour specialist. Finally, systems skills are applied to the process of weaving together the individual elements so as to capture attributes of the value-chain system as a whole, such as its adaptability, innovativeness or competitiveness. In all data-gathering processes it is preferable wherever possible to partner international and local researchers who have complementary skills.

By its very nature, VCA generates both qualitative and quantitative data. Consumer behaviour, chain efficiencies, waste, production processes and inventory management can all be expressed quantitatively. On the other hand, the strength of relationships, reliability of information, attitudes towards suppliers and customers, and levels of trust and commitment are explored through interview processes and expressed qualitatively. The ability to analyse within each of these datasets comes with the disciplinary training of specialist team members: consumer behaviourists analyse response data; engineers and agronomists analyse production processes; economists analyse costs and returns; sociologists analyse relationships; and so on. However, integrating quantitative and qualitative results so as to make sense of the value-chain's performance as a whole requires a combination of systems thinking and local knowledge.

The need to have local knowledge on the research team extends well beyond the analysis and interpretation of results and the identification of improvement projects. Local knowledge is critical in engaging with both commercial stakeholders to establish the credibility of the research, and with key policy and extension staff from government departments, NGOs and other agencies.

Some development research (collaborative) approaches promote the involvement of chain participants in all stages from project inception through to monitoring and evaluation (M&E). In value-chain research projects this kind of collaboration can be very beneficial in areas such as project design, team building, chain mapping and the implementation of improvement projects. However, it also raises practical difficulties in collecting data from managers of businesses along the chain. Because of the need in VCA to understand information flows, relationships and individual business performance, much of the really valuable data is often commercially sensitive at the time of collection (although it may later be shared as part of chain-improvement processes). Having a member of the chain on the data-gathering team can limit the willingness of business managers and others to divulge such information, potentially impacting negatively on the quality and usefulness of the VCA. In practice the goal should be to encourage interviewees to be frank, which typically means that research team members involved in this stage of data gathering need to be independent. VCA teams that involve chain members need to make this limitation on their involvement clear from the outset.

Typical VCA project team structure

Project director/leader

The project director or leader takes overall responsibility for project finances, work schedules and outputs. In all but the biggest projects, he/she will also be an expert team member, ideally being the systems specialist or having a systems orientation.

Project experts

VCA project experts are responsible for the design and execution of research, including the criteria for selecting value-chains; assisting in designing consumer research; leading the smaller in-country teams during VCA data gathering, analysis, interpretation and feedback; and providing support for subsequent improvement projects.

Production and postharvest experts are responsible for providing technical advice on how the chain can improve its agronomic and downstream performance, waste reduction and value-addition. Social science experts, for example in economics, marketing, consumer behaviour and sociology, provide advice on how the chain can improve its information systems, relationships, response to consumers and financial performance.

Project manager

The project manager is responsible for the day-to-day operation of the project, for example by identifying potential value-chains to study; planning and overseeing consumer research; arranging interviews with members of the selected chains; and contributing to interviews, analysis, interpretation and presentation of results. It is essential that he/she has experience in qualitative data gathering and analysis, preferably to graduate level.

Project researchers

Project researchers contribute to consumer research and participate in VCA data collection, analysis, interpretation and reporting, depending on their area of expertise. In small projects it is essential that some of them have the capacity for, or ability to acquire, qualitative data gathering and analysis skills. It is also desirable that at least one researcher has experience in quantitative consumer research.

EXAMPLE: A research team to improve the value-chain for fresh meat in Kenya

Project leader is a systems specialist.

Project manager is a marketing specialist.

Experts: animal breeding and nutrition, animal health, farm management and economics, marketing / consumer behaviour, VCA.

The project leader and three of the experts (including VCA) are international, and two experts and the project manager are Kenyans.

Part 2.3 Understanding context

Value-chains do not operate in isolation. Although they are described as involving consumers, businesses and other stakeholders along the whole chain, and are analysed from physical, financial and relational perspectives, the influence of the external environment within which value-chains operate must be understood. The starting point for value-chain research is therefore identifying what parts of this environment provide the context for the particular research problem, and how they exert their influence.

It is possible to examine a chain's external environment by identifying the major marketing, biophysical, economic, social and institutional factors that influence its operation. These are the factors that must be taken into account in analysing how the chain operates now (its current state) and how it might be improved (its desired future state). They are identified using methods drawn from individual disciplines in the physical and social sciences.

Consider the following examples of how external factors can influence the performance of chains:

* The marketing environment: In some countries modern retailing formats are displacing traditional wet markets for food.

* The biophysical environment: On average, every fifth year papaya farmers in this location expect to lose one whole crop to typhoons.

* The regulatory environment: Lack of hygiene regulations in meat processing significantly reduces the ability to access high-value markets where food safety standards are mandatory.

* The sociocultural environment: In a remote rural village, women produce high-quality value-added specialty foods but are unable to meet with distributors and retailers in metropolitan markets.

These examples illustrate how, in the absence of an understanding of the external environment, a VCA could fail to identify feasible improvement options.

The research methods used to identify the context of a particular VCA are tailored to its situation. Marketing specialists may study the structure and operation of a marketing system, economists the general profitability and competitiveness of the kinds of businesses represented in the chain, social scientists the impact of family and community on willingness to adapt to change, policy specialists the regulations within which a chain operates, and agronomists plant–soil–climate interactions as a general indicator of potential for higher yields or better quality.

Figure 12 shows how different disciplinary perspectives provide context for the current state of a value-chain system, and how discipline-based and VCA research interact in improving the system. These issues are further discussed in Part 2.4 (biophysical, economic, sociocultural and institutional baseline studies), Part 2.7 (market research) and Parts 2.9–2.11 (data collection, analysis and interpretation, and identifying and implementing interventions).
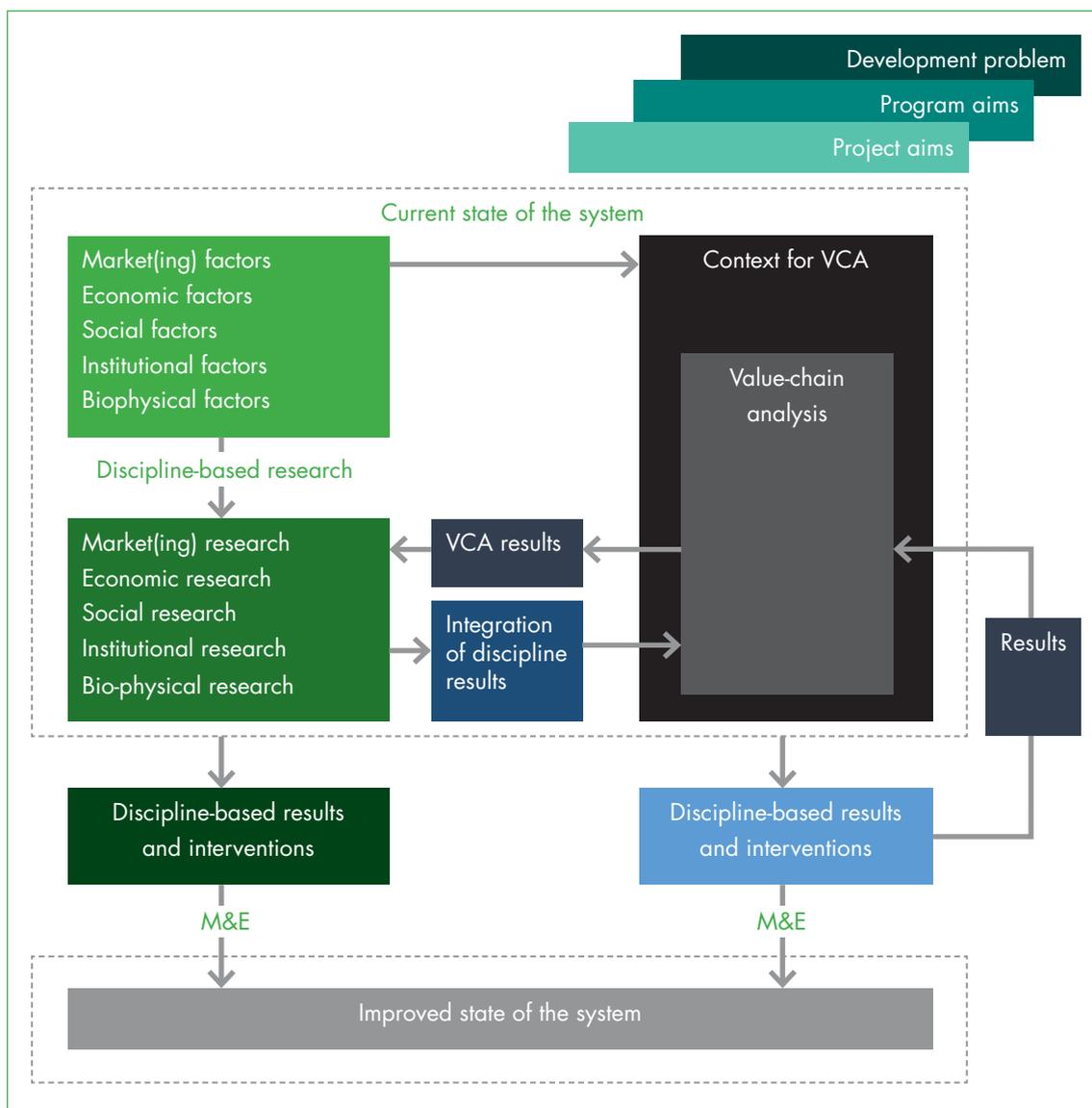
Figure 12: How the context for value-chain analysis informs research, intervention and improvements

Part 2.4 Conducting baseline studies

Part 2.4 provides an orientation to the conduct of baseline studies early in a value-chain research project. While the precise form of baseline studies depends on the needs of each project, they are normally completed before other research commences so as to capture the current, or baseline, state of the external environment within which a project's businesses and communities are situated. Baseline studies may profile the following aspects of the external environment:

∗ the sociocultural status of the communities, families, businesses or individuals involved in a value-chain project

∗ the economic conditions of those communities, families, businesses or individuals

∗ institutional factors, both formal and informal, that affect the value-chain's operation

∗ elements of the biophysical environment that are targeted for improvement through the project.

In keeping with the overall approach of this manual, Part 2.4 does not provide a 'how to' guide to conducting baseline studies, as this is a field that requires specialist skills. However, it does discuss the main types of baseline studies and why they are important, and describes the methods that are used. There are many excellent references on the conduct of baseline studies and some are listed at the end of this chapter. Be aware that most of the literature refers to projects that are much larger than those involved in VCA-led development research. Hence, researchers should be careful to design their baseline studies to match the project's objectives and the resources available.

2.4.1 Introduction

Overseas Development Assistance (ODA) projects aim to have a positive impact in partner countries; therefore, the measurement of the results of a project is in large part a responsibility of the project team and contracted agency. Because a baseline study gathers key information early in a project so that later judgments can be made about the development results it achieved, it is a critical element of the project's overall M&E plan (AusAID 2003).

Baseline data establish the current state, or value, of an indicator prior to implementation of a development intervention, against which progress can be assessed or comparisons made over time. This is done by establishing a baseline value for each performance indicator in the project plan, using the same data collection sources and methods that will be used to collect data for that indicator throughout the life of the project (USAID 2013).

Figure 13 illustrates how project results can be measured using indicators for timeframes from the very short to the very long term. *Outputs* are the direct result of project activities through which longer term results are achieved. Baseline studies are most often concerned with establishing measures against which *outcomes* and *impacts* can be judged. Definitions of these terms are provided below:

∗ **Outputs** result directly from activities carried out by the project team, such as the production of manuals, guides, reports and research papers.

∗ **Outcomes** are the observed effects of the outputs on the beneficiaries of the project. These may be *tangible* (e.g. the number of small farmers growing, harvesting and feeding a new fodder variety to their beef cattle or the number of small farmers accessing micro-loans) or *intangible* (e.g. where the farm family believes they have an improved quality of family life).
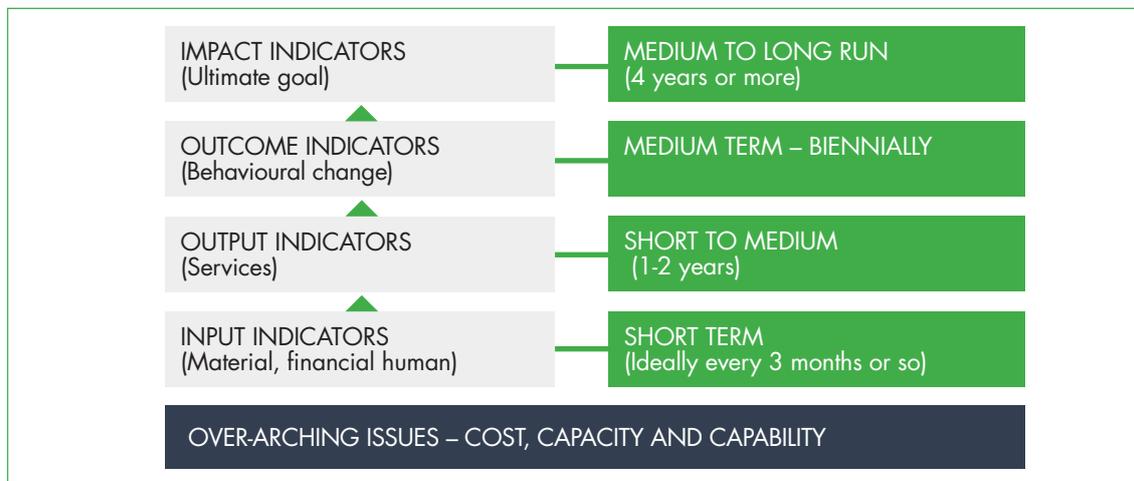
Figure 13: Frequency of monitoring various indicators. Source: derived from Keita (2009)

∗ **Impact** is the degree to which the outcomes observed by the project team are attributable to its activities. Following on from the previous examples, these may be outcomes such as:

- improved liveweight gain of beef cattle

- improved smallholder farming family income

- reduced time required to 'cut and carry' fodder for cattle feed, enabling increased time for parents to spend helping their children with school homework.

In practice this means that selected indicators will have been collected as part of a pre-intervention baseline study, then monitored regularly through the life of the project for its primary stakeholders (project beneficiaries) and in some circumstances for a control group not involved in project interventions, so as to assess the counterfactual, or what would have happened without the intervention (Bird 2002). Thus, annual, mid-term and final reviews and other evaluations can judge a project's progress based on comparisons with information from the baseline study.

In summary, a baseline study is necessary to be able to measure the changes resulting from a value-chain project. To do so it must provide indicators that can be used in making judgements to:

∗ show whether change is occurring;

∗ indicate the results of an activity, including eventual impacts, and whether these changes are intended or not intended, direct or indirect, positive or negative, primary or secondary;

∗ suggest how to improve the efficiency of implementation, the extent of the desired results achieved and their sustainability; and

∗ assess whether there are any changes in country context, assumptions, risks or game changers not previously identified that have potential implications for strategy and project implementation, and need to be monitored.

A baseline study should take place as soon as possible after a project begins (AusAID 2003).

2.4.2 What does a baseline study include?

When the project is being designed, the project team must look forward to the desired outcomes and impacts at the end of the project and develop a clear cause-and-effect pathway linking the proposed project methods with the achievement of the desired outcomes and impacts. Many funding agencies require the use of the Logical Framework Approach (LFA or 'Logframe' approach) at the design stage to assist this process (see footnote[5] and Recommended Reading).

As explained earlier, a baseline study describes the current state of the environment within which the value-chain project will take place. Its precise form will depend on the project's goals, objectives and resources. For example, a small project over a short time frame may focus on technical improvements to a specific value-chain, while a large project over many years may focus on improving the livelihoods of smallholder farmers by linking them more closely with their markets. In any case, only the data necessary to measure the outputs, outcomes and impacts of the project's objectives and activities are considered in determining the scope of the baseline study (AusAID 2003).

As in most projects, in a value-chain research project the baseline study has two key objectives:

1. 'proving' the impact of the intervention (accountability), both outwards to funders and inwards to the potential project beneficiaries whose practices and livelihoods are the focus of improvement; and

2. 'improving' the practices of value-chain R&D (the lesson-learning agenda).

Baseline studies may gather data using methods such as:

∗ desktop research

∗ quantitative surveys

∗ interviews

∗ rapid appraisals

∗ participant observation

∗ case studies

∗ participatory processes

∗ specialised methods (e.g. photographic records and videos).

Thus, it is important during the project design stage to consider which data collection methods best suit a project's baseline study. Once chosen, these methods are also applied to the M&E processes conducted at various stages of the project's life cycle, such as periodic milestones, mid-term review, and final review or evaluation. Like the baseline study, the M&E plan is closely linked to the project's objectives and activities, and must include indicators of achievement and their means of verification[4]. The conduct of M&E is explained in more detail in Part 2.12.

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4   These terms are used in Logical Framework Planning, often called Logframe Planning, and also known as Goal-oriented Project Planning (GOPP) or Objectives-oriented Project Planning (OOPP), which is a hierarchical, cause-and-effect method for specifying the goal, activities, purpose and outputs with associated KPIs, means of verifying these KPIs, and assumptions or risks involved in their achievement. Although criticised for being too linear, it was until recently mandated by most UN, multilateral and bilateral ODA agencies. It is still widely used by many agencies for planning and M&E.

While mid-term and end-of-project M&E and impact assessment are usually carried out by specialist reviewers employed by the funding agency, these reviews will examine whether/how the project team has delivered on its targeted outcomes and key performance indicators (KPIs). Value-chain projects typically seek to address the biophysical, economic, social and institutional dimensions of a problem or opportunity; thus, in a value-chain project plan:

* each of these four areas has its own sets of objectives, activities and KPIs; and

* the baseline study will usually focus on each of the four areas.

BIOPHYSICAL BASELINE STUDIES

Every agrifood value-chain project depends on physical elements associated with the production, processing, distribution and retailing of food products. For example, projects focused on improving smallholder farm production and linking farmers with markets may concentrate on soils, climate, water, farm practices and postharvest systems between the farm and market. Projects with a focus on adding value to existing products may concentrate on biophysical aspects of processing, quality management, food safety, value-addition and other downstream processes. In either case the baseline study will establish the current biophysical conditions relevant to the project's objectives. For example, what are the current climatic conditions and how do they impact on the farming systems of the focus area? What are the types, distribution and condition of soils used for agricultural production in that area? What varieties are grown, and how … and so on.

A note of caution—the baseline study must be confined to those factors most critical to achieving the project's aims and objectives. This is an area where researchers can fall into the trap of collecting masses of baseline data that are interesting but not important.

ECONOMIC BASELINE STUDIES

Overlying the physical map of the chain, economic baseline studies map the input costs and prices received at each stage of the chain to show, for example, how and where profits are generated. Results are usually expressed so as to illustrate relative performance, such as each chain member's share of the consumer dollar, contribution to the value of the product, or marketing margins. Economic studies may also identify the level and type of capital investment at each stage of the chain so that profitability can be related to the capital required to generate that profit. Depending on the project, economic baseline studies may also investigate factors such as the types and availability of credit, levels of indebtedness, trading terms and cash flow patterns.

Many value-chain projects have livelihood improvement goals, and here social researchers must work closely with economists in designing and conducting their studies so that, where appropriate, the two can be integrated.

Livelihood analysis in a value-chain project aims to identify:

* the household indicators of the sustainability of smallholder farmers' livelihoods that can be enhanced by improved production and marketing of their farm produce; and

* the current status of those indicators.

This may involve an assessment of the stock of assets employed by the project's intended beneficiaries. These may be assessed using Emery and Flora's (2006) well-known '7 capitals':

* natural—natural resources and amenities;

* human—the skills and abilities of people to enhance their resources, access outside resources and bodies of knowledge, identify promising practices, and access data for community-building;

* social—the connections among people and organisations, or the social 'glue' to make positive things happen;

* financial—access to the financial resources necessary for development;

* physical or built—production and marketing facilities and infrastructure;

* political—access to power; and

* cultural—the way people 'know the world' and how they act within it.

Building these 'capitals' reduces vulnerability, changes the asset base, and influences the policies, institutions and processes that improve livelihoods (Carpenter and McGillivray 2012). Therefore, when designing baseline studies that incorporate livelihoods analysis, it is critical to consider how the data collected can be used to provide indications of change in these parameters over time, so that at the end of the project the stakeholders will be able to identify clearly the project's outcomes and impacts (DFID 2001; USAID 2013).

SOCIOCULTURAL BASELINE STUDIES

The social analysis component of a VCA identifies how social, cultural and economic factors constrain performance, change and technology adoption, and negatively affect livelihoods. The baseline research seeks to identify the background situation of the main beneficiaries (usually smallholders) who will directly participate in the project. The broad areas of investigation are:

* **social diversity, culture and gender**, in which resource management processes associated with food production and marketing are embedded in a larger social context where beliefs, norms and behaviours are conditioned by differences in race, class, ethnicity, caste, religion, gender and age;

* **institutions, rules and behaviour**, which overlap with institutional analysis by analysing the informal rules (culture) in the context of the formal rules (institutions);

* **stakeholders,** which identifies the individuals and groups that have an interest or 'stake' in decisions affecting resources management in the project, their interrelationships and key persons of influence;

* **participation,** which identifies the appropriate persons, strategies and techniques for engagement, and the nature and level of participation; and

* **social risk,** which identifies the vulnerability (economic and social), political economy (bureaucratic, power elite, corruption) and institutional (inappropriate institutional arrangements, weak capacity and complexity to those participating) risks (The World Bank 2005).

INSTITUTIONAL BASELINE STUDIES

While institutional analysis may not generally be considered a 'baseline study', it is essential to an understanding of the external institutional influences operating on a project.

Over time every culture and community has developed complex shared social rules, norms and strategies to preserve basic societal values. Within these, economic activities have developed interdependently with five key institutions: political, legal, financial, labour and cultural systems. The more integrated and mutually supportive such institutional systems are over local populations, regions or nations, the more cohesive and adapted their business system will be to the local business needs and environment (Ostrom 2007; Whitley 1996).

The nature and operation of institutions and their mode of decision-making will have major implications for community innovativeness in problem-solving (Hollingsworth 2000), and for the implementation of any strategy or planning related to the promotion of sustainable development (FAO 2001). This is because the extent to which they are aligned to both the needs of the people and the environmental constraints and trends will determine how successful that population is in economic competition and environmental sustainability. Put another way, when the institutions that govern agriculture are dysfunctional or inefficient, local populations struggle to be competitive and sustainable. For example, where the grazing rights to public land are allocated unequally, parts of the population will be economically favoured while other parts will be disadvantaged.

The main types of institutions likely to be relevant to planning and management of primary production are:

* local, district, provincial and national government (formal);

* agencies and advisors of government;

* formal and informal business associations;

* funding agencies and donors;

* non-government organisations (NGOs);

* groups that establish or influence moral or ethical norms of behaviour (e.g. religious institutions); and

* town, village or commune decision-making structures (both formal and informal) (FAO 2001).

Institutional analysis can be carried out using:

* case study analysis—rich description arising from the use of both qualitative and quantitative methods collected from different sources and using different techniques (known as 'mixed methods'), using triangulation of data to check and validate results. Common methods of case study research often start with desk reviews of secondary sources, expert and key informant interviews, participatory methods such as focus group discussions, and surveys (Melim-McLeod et al. 2012);

* econometric analysis—the quantitative investigation of relationships between particular quantities of interest; and the identification of causal effects and probabilistic testing of theoretical propositions so as to regard results as representative of a larger set of homogeneous units;

∗ experimental economics—studies of the interaction of human subjects within a context specified by the researcher; or

∗ agent-based modelling—studies of the interaction of artificial actors in artificial environments using computer simulations (Beckmann and Padmanabhan 2009).

WHAT MAKES A GOOD INDICATOR FOR BASELINE STUDIES?

Selecting and refining indicators for baseline studies is similar to selecting KPIs. Careful consideration must be given to how the data will be collected, including costs and feasibility. Determining appropriate indicators is usually an iterative process that is shaped by data considerations. All indicators should meet the **SMART** criteria (Keita 2009):

S SPECIFIC and SENSITIVE to changes that may be induced as a result of actions taken

M MEASURABLE progress can be shown and is not easily manipulated

A ATTAINABLE and APPLICABLE to the actions taken

R RELEVANT to the areas in question

T TIME BOUND and TRACKABLE by showing changes over time

They should also be **RAVES**:

R Reliable

A Appropriate

V Valid

E Easy to collect

S Sensitive and specific

2.4.3 How is change measured?

As already discussed, the purpose of baseline studies is to allow the assessment of change as a result of a project's activities. Understanding how change can be measured can therefore help in the design of baseline studies. There are two common ways to measure change:

1. 'With and without' activity—seeks to mimic the use of an experimental control by comparing change in the activity location to change in a similar location where the activity has not been implemented; and

2. 'Before and after' activity—measures change over time in the activity location alone (AusAID 2003).

WHAT METHODS ARE USED?

Data for baseline studies can be collected from a wide variety of sources using different methods, each of which comes with its own strengths and limitations. Sources and methods will vary in levels of rigour, extent of participation, anticipated validity and resources required (Figure 14). The selection of appropriate data collection methodologies and sources should be guided by which indicators are most appropriate to measure the results the project seeks to achieve, taking into account cost, feasibility and any other context-specific considerations (USAID 2013).

USAID (2013, p. 145) describes in detail the strengths and weaknesses of the most common baseline data collection methods. In summary, they are the following:

* Surveys (both quantitative and qualitative) are cheap, quick and adaptable, providing reliable data, but once administered cannot be modified and may not provide sufficient depth.

* Key informant interviews provide in-depth data that can be adapted, but are time-consuming and thus expensive, have few respondents and are less standardised across respondents.

* Direct observations allow the researcher to capture data about what is actually happening, avoiding the bias of going through another person, but are very dependent on researchers' skills.

* Focus group interviews collect views of a larger group of people in a shorter time, allowing participants to interact with and respond to each other, producing rich, useful information, but the data are not generalisable.

* Expert panels provide a wealth of expert knowledge quickly, allowing for interaction among participants, but can introduce bias and be expensive, and the data are not generalisable.

* Community interviews capture a larger number of views in a shorter period of time than individual interviews and can be arranged quickly, but do not allow for much interaction among respondents and the data are not generalisable.

* Document reviews are flexible and can be done remotely and generally at low cost, but may be constrained by availability, definitions of parameters may be difficult to ascertain and data quality can be variable.

* Participatory rural appraisals can be used with populations from whom it is otherwise difficult to collect information (e.g. because of low literacy), but the data that can be collected are limited.

* Most significant change prioritises the views and values of participants while still reaching a tangible conclusion, but can introduce bias and the data are not generalisable.

It is important that multiple, mixed (both quantitative and qualitative) methods are used to allow the triangulation of results to improve the validity and reliability of the findings.

2.4.4 What are the steps in implementing data collection methods?
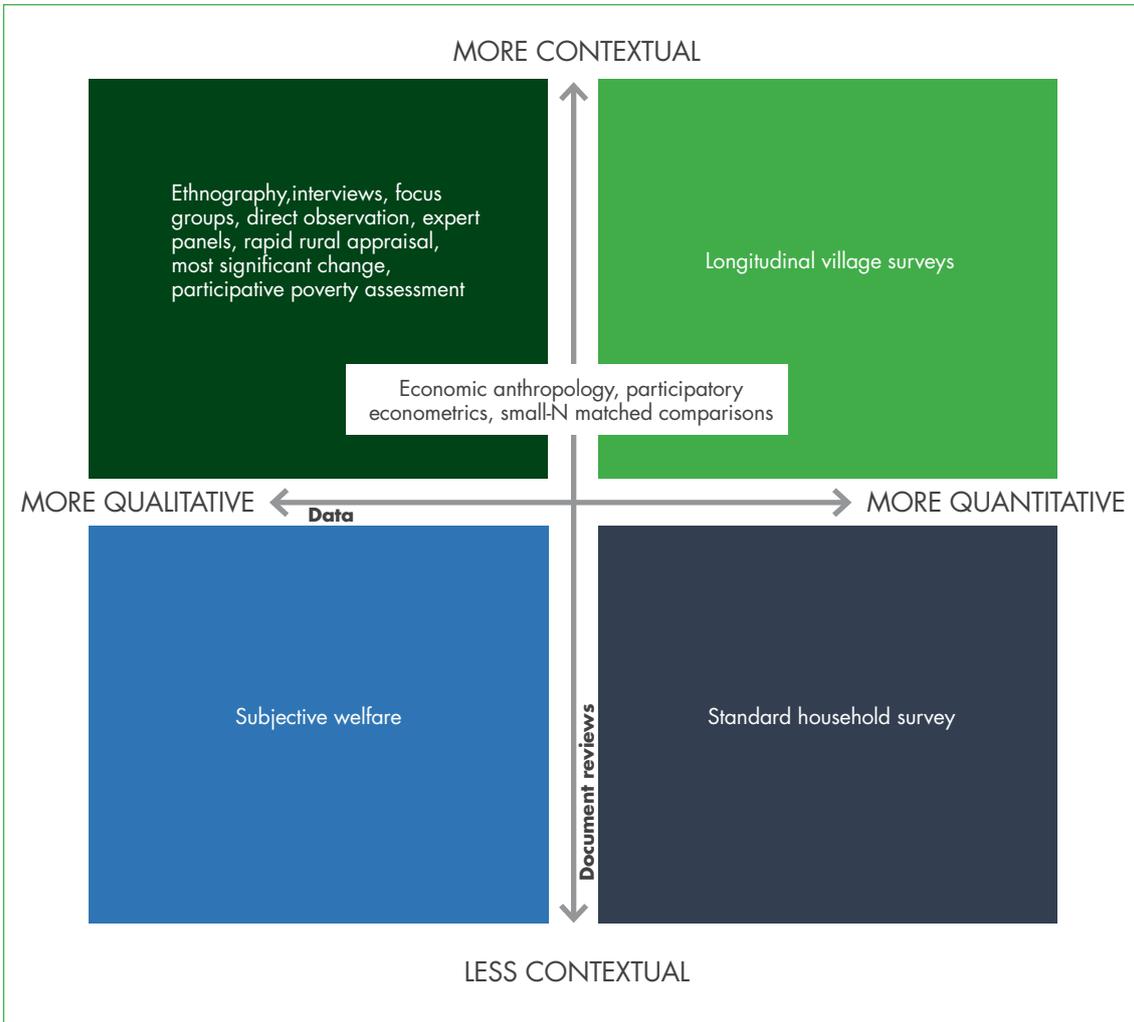
Figure 14: Types of data and methods used in baseline studies. Source: Derived from Hentschel (1999); Rao and Woolcock (2003)

There are seven steps in designing baseline data collection, as shown in Figure 15.

1	Identify the scope and objectives of the data collection methods. Which indicators and results/purposes will it link to?
2	Identify data needs: quantitative vs qualitative
3	Develop research protocols: questions, guidelines, checklists
4	Identify facilitators, enumerators, coders, and other relevant personnel
5	Determine data analysis mechanisms e.g. SPSS, qualitative content analysis (CAQDAS) etc
6	Train personnel if needed on implementation of the method/tools and analysis of data
7	Pilot-test the tool with a small population to determine whether any changes are needed

Figure 15: Steps in designing baseline data collection. Source: derived from USAID (2013, p. 40)

Researchers should be aware of the possibility of the following intentional or unintentional biases in their data collection:

* Definitional bias occurs when there is ambiguity in definitions.

* The 'Hawthorne effect' occurs when a subject knows that he or she is being observed and this causes his or her behaviour and responses to change.

* Instrument bias occurs when the measuring instrument is not properly calibrated or is inadequate for providing a complete picture.

* Interviewer bias occurs when a researcher unintentionally elicits a different kind of response dependent on the background or attitudes (e.g. educational, ethnic or cultural) of the interviewee.

* Observer bias occurs when the observer unwittingly or intentionally exercises more care about one type of response or measurement, such as those supporting a particular hypothesis.

* Recall bias is time-based (recent vs old) or importance-based (more-memorable important or extreme events).

* Response bias is intentional or unwitting suppression of information due to embarrassment or other sensitivities attached to questions, and can also be related to information bias.

* Seasonal bias occurs when data are collected during different times of the year without taking into account seasonal differences.

∗ 'Tarmac' bias occurs when the researchers or enumerators choose to stay near the paved or better roads rather than travel over dangerous, uncomfortable, unpaved or poor roads to reach the target data collection sites, thus resulting in biased data collection (USAID 2013).

Recommended reading (see also References)

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Part 2.5 Conducting consumer research for value-chain analyses

Consumer research occurs once the chain has been selected. Ideally, it should be conducted at the commencement of the VCA so that researchers understand the consumer value attributes before they commence the 'walking the chain' process.

Value-chains are defined as a sequence of processes in linked businesses that transform raw materials into products, services and information that consumers value and will pay for. It is the consumer who determines the characteristics of 'value', so that is why we refer to 'value in the eyes of the consumer'. Thus, 'value-chains' are focused on the delivery of value to consumers. Whether the aim is to analyse the efficiency and effectiveness of an existing value-chain or develop a new chain, it is important first to understand the attributes of consumer value.

In developing countries, improving the performance of value-chains so that they become more competitive and profitable is an approach to improving the livelihoods of poor smallholder farmers. Yet, typically, smallholders who produce commodities for markets beyond their local village have little knowledge of what happens to their produce after it leaves their hands and even less understanding of the consumers of their products. They are price-takers at the mercy of a small number of traders who often control information in the chain. Hence, value-chain projects seek to enhance the livelihoods of smallholders by developing higher quality, better targeted or more-specialised products that are marketed through coordinated, more-efficient and -effective value-chains. This requires knowledge of the product attributes that consumers value and are prepared to pay for, so that the VCA can identify where value is created and destroyed in the chain. However, consumer research in VCA has its own distinguishing features.

2.5.1 Consumer research in value-chain analysis is different

The aims and scope of VCA consumer research are commonly more constrained than in commercial consumer research because:

1. VCA consumer research aims to:

* contribute to improving livelihoods, especially those of smallholder farmers;

* validate any existing knowledge of consumer value based on prior consumer research;

* test assumptions and opinions that drive current behaviour;

* understand where value is created so as to determine whether it is shared equitably through the chain among those who help to create that value;

* develop a whole-of-chain perspective of value creation, that is how each chain member can contribute to creating consumer value and attracting shoppers; and

* demonstrate to chain participants the value of even small investments in consumer research.

2. The scope of consumer research within a VCA is usually quite limited by project budgets and time. Even large, donor-funded VCA projects cannot hope to match the consumer and product research investment of commercial food companies. Thus, based on the VCA principle of 'assume nothing, validate everything', it is necessary for the project research team to examine:

* Any existing research to identify if it is sufficiently thorough and comprehensive enough to be a reliable indicator of the primary consumer value attributes that affect the purchasing decisions of shoppers. Surprisingly, even though there may have been previous consumer research projects done, they may have a number of weaknesses from a VCA perspective, which requires that they be validated; for example:

  - Their aims may be incompatible with the project aim of understanding consumer value attributes.

  - There may have been assumptions made that invalidate the data for VCA purposes.

  - The target segments or sample frame may not be the same as those for the current project.

* Frequently, there will also be widely accepted opinions about products, markets and consumers—regardless of how well-established these are, they may also need to be tested if they are important to the project (e.g. that Vietnamese consumers prefer tough meat rather than tender or 'soft' meat).

However, there is sufficient similarity between commercial and international development consumer research for similar methods to be employed. The main challenge lies in adapting to the culture and constraints of market research in developing countries. For readers who are not market research professionals and do not have professional market research members in their team, the links at the end of this section referring to complete third-party manuals on how to conduct market research will be very helpful.

DISTINGUISHING BETWEEN CONSUMER PREFERENCE AND SHOPPER BEHAVIOUR

Consumers are commonly held to be the ultimate arbiters of value, based on the premise that they decide whether and how much they consume of a product, and the extent of their enjoyment when they do—this collectively determines the price point, which optimises margin and volume and therefore 'the size of the pie' (Jap 1999, 2001). This is one of two main strategies for growing the market for a product, the other being internal chain or business efficiency and effectiveness—

hence the emphasis placed on consumer value. However, in the same way that retailers are the gatekeepers to the market, shoppers (i.e. the person in the household who actually buys the food for the family) are the gatekeepers to every household, and they determine:

* whether an item is purchased;

* how frequently an item is purchased;

* the volume purchased; and

* the price they are willing to pay for it.

Certainly, the views of all the consumers within a shopper's household are a significant influence on that shopper's decisions, but not exclusively. For example, consumer research might reveal that a new product had considerable market appeal to children, but if it is unhealthy, their mothers (in most cultures typically those who are responsible for shopping) may not buy it. Similarly, male farmers may make incorrect assumptions about whether products should sell well if they have very little personal experience of how purchasing decisions are made by shoppers. Accordingly, understanding shoppers' purchasing decisions can be important, alongside consumer preferences.

There is an argument for distinguishing between projects that concern new versus existing chains (see Table 2). In most development projects where the objective is to improve existing chains, shoppers should be surveyed, usually through point-of-purchase intercept interviews. This approach suits situations where specific cohorts of consumers and/or specific retail markets are relevant to the research question, 'How to improve this chain?' Mass surveys of consumers would be wasteful and lack focus in this situation. Conversely, where the question is to understand what consumers might value in developing a new chain or product, or a new market for an existing product, traditional consumer research approaches are applicable, through methods such as online surveys, questionnaires and telephone surveys. In both approaches it is common to employ focus groups as a way of gaining initial insights into consumer preferences, and to apply conjoint analysis to survey data where the research needs to quantitatively establish how much consumers would pay for various combinations of improved product/service attributes. This relationship between project objectives and shopper/consumer research is summarised in Table 2.

	OBJECTIVE TO IMPROVE AN EXISTING CHAIN	OBJECTIVE TO DEVELOP A NEW CHAIN OR PRODUCT, OR A NEW MARKET FOR AN EXISTING PRODUCT
SHOPPERS	Understanding what determines shoppers' decision-making in existing markets and channels will inform the priorities for improving the chain's performance.	Understanding how shoppers choose products for which the new product would be a substitute will ensure that the chain's strategy reflects shoppers' roles as gatekeepers to consumers.
CONSUMERS	Understanding how to strengthen the preference of the most promising consumers (e.g. sensory research) and where their households shop will ensure that their needs can be more effectively met.	What combinations of product attributes would be most attractive to the target consumers?

Table 2: Relationships between the project objectives and shopper/consumer research

2.5.2 The concept of value

The notion of value is complex, being inextricably linked to three key strategic marketing principles:

1. market segmentation;

2. product differentiation; and

3. brand positioning.

The demand for particular product attributes varies between individuals and groups. 'Market segmentation' is the process of gathering sufficient data to divide a broad target group into smaller subgroups that have more-specific needs and priorities. These can be used to design and implement strategies that target them by positioning the product's value characteristics to better meet consumer needs. The types of segmentation are:

* geographic—nations, states, regions, countries, languages, cities, neighbourhoods or postal codes;

* demographic—age, gender, income, ethnicity, religion or stage of family life cycle;

* behavioural—knowledge of, and attitude towards, usage rate or response to a product;

* psychographic—values, attitudes or opinions;

* by benefits—as sought by the consumer; and

* multivariable—using multiple measures.

Preferably, a brand should be positioned as close as possible to the ideal point of an unsatisfied segment of buyers. The combination of features, attributes and benefits providing maximum consumer value for the relevant consumer segment may lead to a greater market share and increased repeat purchases. Achieving the maximum delivery of consumer value is widely viewed as a key for gaining competitive advantage; however, delivering consumer value means understanding the complexities of how it can be perceived by consumers:

* extrinsic/intrinsic—the consumer perceives value in using or owning a product or service as a means to an end versus an end in itself (intrinsic value is internal or psychological);

* self-/other-oriented—the consumer perceives value for their own benefit versus the benefit for others;

* active/reactive—the consumer perceives value through direct use of an object versus understanding, appreciating or otherwise responding to an object (Holbrook 1999).

Thus, when designing consumer research in value-chain studies it is most important to incorporate questions relevant to these multiple aspects of value because they may be critical in understanding the attributes that are most important in the purchasing decision. Table 3 provides examples of product attributes that relate to different dimensions of consumer value.

CHARACTERISTIC	EXTRINSIC	INTRINSIC
SELF-ORIENTED		
ACTIVE	Skin colour, shape, size, smell, texture, lack of blemishes, packaging, convenience, shelf life, price	Internal flesh colour, texture and mouthfeel, flavour, tenderness, ripeness, juiciness
REACTIVE	Variety/breed, design, ease of use	Beauty, cultural preference
OTHER-PEOPLE-ORIENTED		
ACTIVE	Nutrition, safe, ease of use, packaging, convenience, shelf life, price	Status, symbolism, emotion (e.g. affection)
REACTIVE	Variety/breed, design, ease of use	Ecological value, social value, ceremonial significance

Table 3: Types of value attributes

For example, in China imported fruit can sell for 10 times the price of domestically produced fruit because it is grown, packaged and marketed as a flawless, attractively packaged, expensive gift that is more likely to be left on the mantelpiece to be admired than to be consumed. Consumer research may identify the following profile of value attributes that could explain the purchase decision for such a gift.

CHARACTERISTIC	EXTRINSIC	INTRINSIC
SELF-ORIENTED		
ACTIVE	Skin colour, shape, flawlessness, packaging, price	
REACTIVE	Variety, design of packaging	Attractiveness of the total package
OTHER-PEOPLE-ORIENTED		
ACTIVE	Practical suitability as a gift	Status and symbolism associated with offering it as a gift
REACTIVE		Ecological credentials, social significance

Table 4: Value attributes identified for imported fruit in China

The value construct now helps to explain the different facets of consumer behaviour that occur both before and after the purchase itself; for example, purchase intention, product selection, brand choice and repeat purchase. The value concept emphasises both the affective (emotional) commitment to a service provider and the repeat-purchase intentions, often called 'loyalty behaviour'. The concept of value, buyer behaviour and decision-making is very complex. Further reading may be justified if team members want a deeper understanding of consumers (refer to the reading list provided). This brief explanation has been offered to assist readers in designing their own consumer value research.

2.5.3 What attributes of food are valued by consumers?

It is commonly thought that price is the dominant factor in the purchasing decision. This is not always the case although there are distinct differences between socioeconomic groups, with lower income consumers often being more price conscious. Research in a wide range of contexts indicates that there are common groups of food value attributes, although their prioritisation varies between cultures, contexts and products. Nonetheless, the following broad groups of value attributes can be applied to most food products:

* attributes of the product:

    - internal, such as flesh colour, taste (e.g. sweetness, tanginess, tartness, intensity, mouthfeel), fat content, texture/tenderness;

    - external, such as size, colour, freedom from blemish;

    - credence, such as chemical-free, provenance (i.e. where the food is produced), method of production, authenticity, food safety;

    - augmented, such as packaging, labelling, convenience, shelf life.

* attributes of the way the product is sold:

    - the physical environment, such as cleanliness, accessibility;

    - the service environment, such as 24-hour service, knowledge of the retailer.

Invariably, the priority list of the valued consumer attributes looks deceptively simple and often very similar to many other products in the same category (e.g. other fresh vegetables, fruit or meat). There is a temptation to dismiss this part of VCA as unnecessary because assumptions can be made based on similar products in other contexts. However, the specific combinations of local attributes, especially among the target market segments, and the conditions under which they are created and sold, can make profound differences to enhancing the livelihoods of the small businesses in the chain as well as identifying the competitive positioning of the product in the marketplace. The risks of not adequately examining consumer value include:

* not being able to focus the research project's efforts (biophysical and socioeconomic research activities) on the high-priority issues that will achieve the project's goals, for example identifying new varieties that can withstand transport over long distances to large, new markets

* not being able to reliably categorise wasteful, necessary, but not value-adding and value-creating activities in a chain

* losing the ability to create a strategic, competitive difference for a product versus other similar products, for example qualitative, varietal or geographic attributes

* losing the ability to target a product to high-value segments of consumers

* not adequately identifying where value-chain improvement initiatives can be targeted

* not identifying who in the chain creates consumer value, how much effort it takes to create it and,

hence, how much of the 'pie' (i.e. the monetary value created by consumers purchasing the product) they should receive, thus affecting the whole chain's incentives to innovate and create value.

Importantly, it is also often forgotten that it is the consumer who determines how much value any chain has to share, not the retailer, even though the chain members determine how that value is distributed and how much notice is taken of consumers. Similarly, it is a mistake to conclude that consumers can be ignored or given minimal consideration for reasons such as:

* it is difficult to get consumer data;

* it is hard to predict their behaviour (what they say is not always what they do);

* consumers are too diverse or 'heterogeneous'; or

* there is a lack of research capacity within a team to conduct consumer research.

As a consequence, signals from retailers are sometimes used as a surrogate for consumer research, but these signals can be distorted, wrong or focused on supply rather than demand.

Consumer research is an essential element of VCA projects, focusing researchers' thinking on three broad questions:

1. What are the consumer value attributes for a particular product, family of products or a service?

2. Where is that value created?

3. How is it distributed up the chain?

The understanding of value is central to understanding the efficiency and effectiveness of every value-chain.

2.5.4 What are the challenges of consumer research in developing countries?

Conducting consumer research in developing countries can present unique challenges:

* Consumers are often unable to articulate the actual value of food attributes or information, particularly as some aspects of food attributes are not well established.

* Cultural sensitivities may make the use of some methods, such as women's focus groups or intercept interviews, more difficult (e.g. in some patriarchal cultures).

* Consumers tend to have heterogeneous preferences and utility for food attributes.

* Distribution of both cash and non-cash value through the value-chain is often difficult to determine, and there are often differences between stated and actual behaviour.

* Sampling may be especially difficult, particularly selecting the sampling frame, obtaining lists of contacts and defining the market precisely, because of the lack of broad, reliable population, consumption and trade statistics.

* Identifying the target or potential market may be difficult because censuses may not be undertaken regularly, there may be difficulties in identifying the purchase decision-makers, and there are often big differences between modern retailers and traditional markets (World Bank 1997).

* Overcoming these challenges is situation-specific and usually requires a combination of methods so that triangulation of data can be used to improve reliability.

2.5.5 What is the process for consumer research in value-chain analysis?

Figure 16 highlights the differences between consumer research and market research—they comprise similar steps but very different focus and methods.

MARKET RESEARCH	STEPS IN THE PROCESS	CONSUMER RESEARCH
To select the most appropriate chain	1. Set the objectives	Where value is created or destroyed?
Which value-chains? What criteria?	2. Formulate the research questions	What consumer value attributes?
Market definition, size, segmentation, trends, stakeholders	3. Specify the information required	Priority of value attributes, substitutes, willingness to pay, purchase size and frequency, purchase environment
Government, academic, MDBs, bilateral organisations	4. Identify the information sources	Consumers, shoppers, retailers
Strategic and competitive analysis tools	5. Choose research methods & tools	Interviews, focus groups, surveys, observation, sensory testing
Who, what, when, where…only necessary data to answer RQs	6. Plan the data collection	Who, what, when, where…only necessary data to answer RQs
Undertake the data collection. Allow sufficient time for 3rd party sources	7. Undertake the data collection	Sample size, stratification, resources necessary
Analyse the data aggregation; use non-statistical comparisons	8. Analyse the data	Analyse the data – qualitative (CAQDAS) & quantitative (e.g. SPSS)
Incorporate into decision-making for market and chain selection	9. Incorporate into decision-making	Incorporate into VCA chain mapping and developing improvement projects

Figure 16: The process for market and consumer research

As explained in the market research section (Part 2.7.3), the best way to design consumer research is to start where the process ends (Andreasen 1985, 2002)—thinking about what consumers value and will pay for in the attributes of the product and the way it is sold. This will then identify where value is potentially created and destroyed in the value-chain. An example of how it can be used appears in Table 5, which identifies where mango value is potentially created or destroyed for Australian consumers.

CONSUMER VALUE ATTRIBUTE	% RANKED AS 'IMPORTANT'	WHERE IN THE CHAIN THE ATTRIBUTE IS POTENTIALLY CREATED OR DESTROYED
1. FRESHNESS	95%	On-farm management; whole chain
2. TASTE	93%	Genetics; on-farm management
3. RIPENESS	82%	In-transit ripening; cooling; distribution-point management
4. PRICE	81%	Whole chain
5. JUICINESS	81%	Genetics; on-farm management; cooling; distribution-point management
6. SMELL	77%	Genetics = on-farm management; Transit = whole chain
7. FIRMNESS OF THE FRUIT	76%	Whole chain
8. HEALTH	76%	On-farm management; whole chain
9. EXTERNAL SKIN DAMAGE	68%	Packing and grading management; whole chain
10. COLOUR OF THE SKIN	67%	Genetics; on-farm management; in-transit ripening
11. SIZE OF THE FRUIT	61%	On-farm management; packing and grading management
12. BLEMISH-FREE	58%	On-farm management; packing and grading management
13. VARIETY	44%	Genetics; on-farm management
14. SHAPE OF THE FRUIT	36%	Genetics; packing and grading management

Table 5: Location of the creation or destruction of consumer value attributes for mangoes. Source: Lim-Camacho et al. (2015)

A range of methods and tools can be used to gather such value attribute data. They should be chosen to suit the project context.

2.5.6 What methods are used for consumer research in research for development?

Consumer research methods can be grouped into:

1. primary and secondary research, which relates to the way information is gathered; and

2. quantitative and qualitative analytical methods, which relate to the way information is gathered and analysed in both primary and secondary research.

Primary research (or field research) gathers original information directly for a specific purpose, rather than being drawn from published sources. Primary research includes:

* surveys of consumers

* direct observations of consumers

* interviews and focus groups with consumers that are developed and conducted by the research team.

Primary research gives control over the type of questions asked and the information gathered. The outputs can be extremely valuable; however, they can also be much more time-consuming and costly to gather than by secondary research. Primary research methods may be used once secondary research has determined what information already exists.

Secondary research (or desk research) draws existing information from available sources. Such methods include:

* internet-based information

* existing market research results, which may be purchased from market research companies

* existing data from the research team's own sources

* information from government agencies, industry bodies and local government.

Secondary research uses existing information about prospective markets and is often faster to analyse than primary data. However, it can be a challenge to find information that is entirely relevant, it may be difficult to collate because of definitional and methodological differences, and its reliability cannot always be established. Secondary research may be helpful to get an initial understanding of a market (e.g. market analysis) prior to undertaking primary research.

Where possible, triangulating a mix of primary and secondary, as well as qualitative and quantitative, research provides the best understanding of consumer value.

VCA consumer research should involve primary research where possible. Well-designed primary research can be very effective in validating, identifying and/or prioritising consumer value attributes. The methods that could be used are described below.

CONSUMER FOCUS GROUPS

Convening consumer focus groups of approximately eight people per group and up to five groups, depending on budget, can produce valuable consumer insights. Focus groups with existing and potential consumers are conducted to understand their feelings and attitudes towards particular products and services. This technique is based on the assumption that people are often more

willing to discuss in-depth their views about an issue or a question in small groups. The focus is on answering 'why'-related questions through semi-structured questioning.

ONLINE SURVEYS USING SURVEYMONKEY[5]

Online surveys can be quantitative or qualitative using emails or a website, or be hosted on a third-party survey website such as SurveyMonkey. This approach can collect information that is exportable in an Excel file for analysis by statistics packages such as SPSS or by SurveyMonkey's own analytical tools. Such a survey could be developed after data from focus groups and interviews have been analysed, to further explore the key themes identified. Typically, prizes (such as gift vouchers) can be used as an incentive to generate a higher response rate (participants go into a draw to win a gift voucher) or, if there is a need to pay respondents to participate, PIN numbers can be issued to enable payment on completion. However, this approach introduces bias because it can only capture data from those with internet access and who are motivated to participate.

CONJOINT ANALYSIS

Conjoint analysis involves three steps:

1. assessing how different consumers rank product attributes, and then trade-off between various combinations of attributes. This recognises that no product can maximise all the attributes that all consumers desire, given that consumer preferences vary and one of their considerations is price. Attributes need not be binary (i.e. the product either does or does not have them); for example, rather than either fresh or not, it could be expressed as *how* fresh it is;

2. estimating different consumers' value preferences for different combinations of attributes (i.e. how strongly the preferences for each combination are held); and

3. making choice predictions to identify the combination of attributes that would be most influential on shoppers' collective purchasing decisions, and so how the market should respond when offering different combinations.

The advantages of conjoint analysis include investigating the trade-offs that consumers must make when evaluating several product attributes simultaneously. In doing so it identifies relationships behind that evaluation of which individuals may not be aware, and that are not revealed by other forms of analysis. Criticisms of conjoint analysis include that studies can be complex, and if respondents are presented with too many options they start to simplify their answers. It also requires very conscious decision-making, which does not necessarily replicate shopping habits, where behaviour is governed by less overt considerations. Some approaches seek to mitigate this by simulating as closely as possible a shopping environment. In addition, it may be difficult to incorporate attributes with which respondents have no experience. Finally, the calculation of market share works best for products that are bought singly, because the analysis may struggle to take account of multiple purchases.

SENSORY EVALUATION

Sensory evaluation is a branch of consumer research that has rigorous protocols for how it should be used. Researchers who use this method should familiarise themselves with these protocols before commencing to design their research or, alternatively, engage a specialist.

Sensory evaluation can be either quantitative or qualitative depending on the research questions and the product being investigated.

5

There are three basic types of sensory evaluation tests[6]:

1. Difference or discrimination testing is used to determine if there are any differences between products, using tests such as paired comparison, triangle or duo-trio. The results are expressed as frequencies or proportions of correct choices of the test sample from a set of similar or control products.

2. Descriptive testing uses a trained panel that agrees upon the attributes to be evaluated to quantify perceived intensities of product characteristics, and then rates the intensity of each attribute. Methods often include quantitative descriptive analysis, the Spectrum Method and the Flavour Profile Method.

3. Affective or hedonic testing[7] is used with untrained panellists to quantify the degree of liking or preference for a product, by having panellists choose among alternatives or rate their degree of liking on a scale that may be structured or unstructured, bipolar or unipolar, and with varying numbers of anchors. A nine-point hedonic scale is commonly used although other systems including purchase-intent scaling and preference ranking are available.

Panellists can be randomly chosen or screened depending on the type of research and product. Screening occurs at recruitment for qualities such as preference for the product (so strong prior positive or negative feelings should be excluded), frequency of use, sensory acuity (so colourblind people or those without the ability to smell should be excluded), ability to discriminate basic tastes, availability and willingness to participate.

Instruction in the testing procedures must always be provided; however, training in the art and science of discrimination and description is where panellist types differ. Untrained panellists are used in affective testing to gather hedonic or opinion data. They are meant to give unskilled opinions as average consumers regarding how much they like/dislike the taste, colour, smell etc. of the product, and are unable to provide detailed descriptive evaluations. The panellists required for descriptive evaluation require months of training so that their descriptions are 'calibrated' regarding qualities such as taste, odour, flavour (i.e. the combination of taste and odour) and texture (Janz 2003).

Therefore, if sensory evaluation is necessary, affective or hedonic testing using untrained panellists is most suited to VCA research in developing-country settings. It is usually used to complement data on consumer value attributes gained from other methods such as interviews, focus groups and surveys.

2.5.7 What value-chain analysis questions are answered by consumer research?

It is important, mostly for reasons of economics, that projects only collect the data necessary to answer their research questions.

The focus of consumer research is typically on exploring the following aspects of consumer behaviour (note that six of these seven are about shoppers/buying, not consumers/eating—refer to Table 2):

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6 Readers wanting more details on the methods described below should consult the website of the Society of Sensory Professionals at <*www.sensorysociety.org/about/Pages/default.aspx*>.

7 Affective testing (i.e. relating to the emotions), which may also be called 'hedonic testing' (i.e. relating to pleasure), uses untrained personnel individually or in focus groups to obtain subjective data, or how well products are likely to be accepted. Methods used can vary from simple comparative testing (e.g. Which do you prefer, A or B?) to structured questioning regarding the magnitude of acceptance of individual characteristics (e.g. Please rate the 'mango smell': dislike/neither/like).

1. What segments exist that will assist in better targeting the characteristics of the product?

2. What do consumers value about a product?

3. How much will they pay for those characteristics?

4. How much will they buy?

5. How often will they buy?

6. What will entice them to buy the product for the first time, and thereafter purchase more product and/or purchase more frequently?

7. What do they value in the place where they buy the product?

Indirectly, the answers to these questions will also lead researchers to where those value characteristics are created in the chain and by whom. This also helps identify where waste or other types of value destruction are occurring, and forms the basis for subsequent chain improvement projects.

The following list of topics should be taken as a guide to the specific consumer research questions that need to be answered and how they may be approached. These questions could be answered using a range of complementary research methods:

* sufficient demographic questions to be able to segment the market appropriately

* current behaviour regarding the product—do they currently buy it, how often, how much do they buy, how frequently

* identifying where consumers prefer to buy the product and what are the important characteristics of that place that induce them to buy the product there; of these, which are the most important/least important

* knowledge of the product—where, how, when to buy it

* perceptions of the product—how is it used; is it a family staple, or a luxury or special occasion food

* value of the product—what do they value about the product; why; what could be done to enhance that value; at what price point do they usually buy it

* what is important when purchasing the product—what characteristics do they look for; what indicators of these characteristics do they look for; on what basis do they make that judgement; of these, what are the most/least important

* preferences for the product—relative importance of the product and why; are there substitutable foods that compete; what, when, how much

* awareness of the product—do they know much about its production methods and where it comes from

* how price affects their purchasing in terms of volume/weight and frequency of purchases; how high does the price have to be before they stop purchasing, and at what discounted price might

they stop buying it and why; what aspect of the product would entice them to pay more and how much more would they pay for that characteristic

* current issues—what problems or preferences for enhancements can they suggest (i.e. what could be improved); if those characteristics were present would they pay more, buy more volume/weight or buy more frequently; of these, what are the most/least important

* for seasonal products—how would the chain's product fit with competitors from other countries; are there substitutable products that would potentially compete under certain circumstances and therefore determine price points for the product

* predicting demand for a new product—what will they do in the future (i.e. in the next weeks, months, years).

Remember, consumer research is essential to value-chain research but it must be designed and conducted to suit the context of the project and the resources available. Sometimes, all that is possible is a small-scale investigation that serves as a demonstration of the value of further consumer research, and conducting that more-detailed research becomes a value-chain development activity.

Recommended reading

WEBSITES

ACDI/VOCA. <*www.acdivoca.org/site/ID/ourwork_valuechainspublications*>.

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Microlinks/USAID:

* Guidelines for designing surveys, focus group guides and interview guides (USAID). <*www.microlinks.org/good-practice-center/value-chain-wiki/guides-interviews-and-focus-groups*>.

* How to conduct end-market analysis (USAID). <*www.microlinks.org/good-practice-center/value-chain-wiki/end-market-analysis*>.

* Backward market research process (USAID). <*www.microlinks.org/good-practice-center/value-chain-wiki/backward-market-research-process*>.

USAID. End-market research toolkit: upgrading value-chain competitiveness with informed choice. <*pdf.usaid.gov/pdf_docs/PNADP053.pdf*>.

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Jap S.D. 1999. Pie-expansion efforts: collaboration processes in buyer–supplier relationships. Journal of Marketing Research 36(4), 461–475.

—— 2001, 'Pie sharing' in complex collaboration contexts. Journal of Marketing Research 38(1), 86–99.

Lim-Camacho L. Crimp S.J., Bonney L., Ridoutt B., Somogyi S., Ariyawardana A. and Lewis G. 2015. Adaptive value-chain approaches. Technical report 2 prepared for the Department of Agriculture as part of the Filling the Research Gap program. CSIRO: Commonwealth of Australia.

World Bank 1997. Rural development, from vision to action: a sector strategy. The International Bank for Reconstruction and Development: Washington, DC, USA.

Part 2.6 Addressing gender equity

2.6.1 Introduction

Gender equity is an integral component of development programs and critical to achieving Millennium Development Goal (MDG) 1 (i.e. Eradicate extreme poverty and hunger) and MDG 3 (i.e. Promote gender equality and empower women). In seeking gender equity, the goal is to ensure that all participants are able to equally make the choice to participate, share the workload and enjoy the benefits from the research. Achieving gender equity refers to:

* ensuring that women and girls have an equal opportunity to participate in and benefit from development projects, particularly in paternalistic cultures where they may come under duress that prevents or reduces participation and adoption; and

* minimising any disparity of workload between men and women, boys and girls.

Value-chain projects should identify the traditional and potential roles of women and girls as well as men and boys in production and marketing, recognising that in many places smallholder families work as a 'unit' focused on achieving subsistence and survival, often with aspirations for greater prosperity. Interventions should be designed to avoid increasing risk for the family unit but seeking to highlight potential enhancements to family productivity by improving the capability of women and girls as well as broadening their participation in socioeconomic activity.

This means that improvement programs should provide gender-specific training and activities to enhance the roles and status of women and girls. Where appropriate, women and girls should be provided with segregated training and activities, and the training should be sequenced to ensure that delivery and participation occurs in a non-threatening and positive context.

2.6.2 Gender equity during project design

The following checklist of questions (Hanks, Stür and Horne 2013) can assist in addressing gender issues at project design stages:

* What are the roles of women and men within the scope of the project, in both the target agricultural systems and project implementation?

* Is there potential for the project to improve the lives of women involved in agriculture through targeted research and communication activities? Are there constraints for farming women in accessing or participating in the key agricultural and production resources and services within the scope of the project?

* Is there potential for the project to facilitate women's/men's equal and meaningful participation in project implementation?

* Is there a need for the project to gather disaggregated demographic data on women? If yes, how would this happen?

* How will the project determine if there are specific opportunities for targeting research and communication activities towards women and, if constraints emerge, address these to enable women to better participate in development of new technologies, and their dissemination and evaluation?

* How will the project address any constraints that limit access or participation by women in the key agricultural and production resources and services within its scope?

* How will the project progressively monitor outcomes of these targeted activities?

2.6.3 Gender equity during project implementation

The following questions will assist in addressing gender issues at project implementation stages:

* Are the activities and outcomes that targeted understanding gender in the project design being realised? If not, what are the reasons? Can further steps be taken to make sure that the needs of all participants are addressed?

* Have new gender-related activities and/or opportunities been discovered that were not foreseen during project design? Have new strategies been proposed for addressing these as the project progresses? Are these strategies feasible within the current scope and constraints of the project?

2.6.4 Gender equity during project conclusion and impact assessment

The following questions help address gender issues as part of the project's conclusion and impact assessment:

* How were the roles and livelihoods of women and men affected throughout the duration of the project? How did the outcomes of the project impact differently on women and men (e.g. labour, income, roles)? Were there impacts on their other tasks and responsibilities? In determining the impact of project activities, what individuals, groups or organisations were consulted? Is the impact sustainable without further action from outside researchers and project staff?

* Were the gender-specific activities and outcomes that were targeted in the project design realised? If not, what are the reasons?

* Did new gender-related activities and/or opportunities emerge that were not foreseen during project design? How did the project identify, characterise and respond to these opportunities?

REFERENCE

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Part 2.7 Chain selection

VCA is a diagnostic process for improvement and a catalyst for change, and so its effectiveness depends on the potential of chain members to work together for a sustained period. Some chains may find this a struggle that cannot easily be resolved, and so they would reap few applicable insights from VCA.

Projects vary in their requirements at commencement. Some may provide a specific community, product or product-chain focus from a bilateral government agreement and/or scoping study, while others may begin more broadly, requiring the project team to undertake a number of analytical steps to determine the specific focus for value-chain R&D. Therefore, the following recommendations for chain selection can be matched to fit the specific circumstances at the commencement of a project.

2.7.1 Selecting the community

In development projects, partner governments or agencies frequently choose the communities that will be the focus for R&D. On occasions the host country or province will have policy or political priorities that will determine the province, district or community. However, if there is a short list of communities from which to choose, the task is to develop a set of criteria or a research method that will provide objective and defensible evidence for the selection. The challenge is to ensure that these are aligned with the objectives and intended outcomes of the project, a task that is not always

easy. The method chosen should be situationally determined but may include the joint development of selection criteria by the project partners and/or community that detail the conditions, needs and capabilities of target communities (e.g. see Table 6).

The activity should be conducted using standardised guidelines to establish research rigour but with sufficient flexibility to accommodate emergent factors in the field. The process could involve:

* the listing of potential sites through discussion with host-country commissioning agencies or project-partner agencies

* development of selection criteria relevant to planned project outcomes/impacts

* the development of rating scales for each criterion

* consideration of any weighting of criteria

* community awareness-raising of the project and the selection process

* the scoring of sites using an objective, non-biased method such as a transect across a site

* discussion/reporting of the results and site recommendations by team consensus.

Participants in the process should have familiarity with the process involved (i.e. the facilitators) and the community stakeholders (e.g. smallholders, village traders, village leaders). The methods could include desk research on existing data, community meetings, focus groups and individual interviews.

VAN DE FLIERT AND NICETIC (2010)	SMITH ET AL. (2014)

1. Connection to market
2. Natural resources constraints
3. Importance of maize
4. Importance of temperate fruits
5. Local government support
6. Other relevant projects
	1. Demography
	  a. Number of families producing beef cattle
	  b. Compatibility of language and culture
	  c. Geographic dispersion
	
	2. Agricultural capability
	  a. Size of herd and potential annual production of marketable cattle
	  b. Distance from larger population centres
	  c. Susceptibility to or evidence of the cold-nutrition stress mortality factors
	  d. Form of land tenure operating
	
	3. Human capacity
	  a. Experience in beef production essential
	  b. Evidence of previous innovation or entrepreneurship
	  c. Expressed desire to develop their business/work with the project team

Table 6: Examples of the selection criteria from two recent projects

The output from this process should be the reporting of the methodology, community profile findings, analysis and selection rationale.

2.7.2 Selecting the specific product

A project may be given a community or region in which to work to improve livelihoods by selecting an appropriate product and developing a market chain from the community to an appropriate market. This situation requires a 'new venture opportunity screening' process such as that provided by Timmons and Spinelli (2008). This process includes the following actions:

* Make a preliminary assessment of the local capacities, aims and outcomes for livelihoods, which amounts to a preliminary or rapid desk-based livelihoods analysis.

* Evaluate the new venture concept by describing the business idea, the product and its potential market.

* Conduct a largely desk-based market assessment including customers, market potential, industry, competition and potential customer profiles.

* Develop a demographic description of the potential market consumers so that they can be categorised into groups according to gender, age range, occupation type, income range, ethnic/cultural background and other important characteristics.

* Define the geographic area and population density for the area in which you intend to market your product and whether your new venture will service a certain region, city, province or country.

* Develop a psychological description as far as can be determined; in a developing country this can often be broadly derived from the demographic description.

* As far as possible, identify the purchasing patterns of your target consumer, which will assist you in predicting your sales, answering questions such as:

  - Why will the customer purchase your product?

  - How often will the customer purchase your product?

  - How much of your product will the customer purchase?

  - Why will the customer continue to use your product?

  - How will the customer learn about your product?

  - Where will the customer buy your product?

  - What is the buying sensitivity of your product?

* Assess the potential market size and evaluate the trends that will affect the market size and consumers' buying habits.

* Conduct an analysis of the industry forces that may affect your project's business venture, including international as well as internal issues such as government policy, and structural or technological change.

* Conduct a competitor analysis of direct competition (i.e. between marketers of the same products) and indirect competition (i.e. between marketers of similar or substitutable products or those competing for the same market).

* Conduct a cost–profit analysis to evaluate the feasibility of the new venture.

* Assess the prospects for success and an exit strategy to minimise risk to the community.

* Consider the planning requisites for implementation such as seasonality, time frames and resources (including training) that might be required.

2.7.3 Market research to select specific product markets

Market research (see Figure 17) is generally an essential part of identifying the potential chains for improvement or establishment; that is, it is used in a project scoping study or very early in the implementation of the main project. It is defined as:

> … the systematic gathering and interpretation of information about individuals or organizations using statistical and analytical methods and techniques of the applied social sciences to gain insight or support decision making … (ESOMAR 2008, p. 5).

Market research should be the basis for selection of existing chains for improvement based on project goals. Often this will focus on the potential for accessing an existing market or the potential for development of new markets. Market research examines all aspects of a business environment to determine the current and future attractiveness or potential of a market. It is often used by firms or groups wanting to find or gain access to a market for their product, so it matches a market demand with the capability to supply. It builds an objective picture of the alternatives for a new or rejuvenated value-chain by conducting a SWOT[8] analysis, to understand a market's evolving opportunities and threats as they relate to the strengths and weaknesses, and benefits and risks, for the firm. It considers factors such as market size (current and future), market trends, market growth rate, market profitability, industry cost structure, and distribution channel analysis and mapping. Market research uses 'secondary research methods'[9] to provide valuable insights into the external environment in which value-chains operate. It asks questions about competitors, market structure, government regulations, economic trends, technological advances and other factors that make up the business environment (Aaker, Kumar and Day 2008). Market research also seeks to:

* identify market segments specifically suited for the product being marketed;

* understand supply-chain capabilities;

* identify potential positioning in the market; and

* identify strengths and weaknesses for competitive positioning.

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8   SWOT = strengths, weaknesses, opportunities and threats.

9   Secondary research methods or desk research use existing information and data that were originally collected by someone else. Typically, this could be government statistics, academic journals, international aid organisations and UN agencies.

Because of its focus on secondary data, market research can be achieved in a few weeks with quite low inputs of time and money.
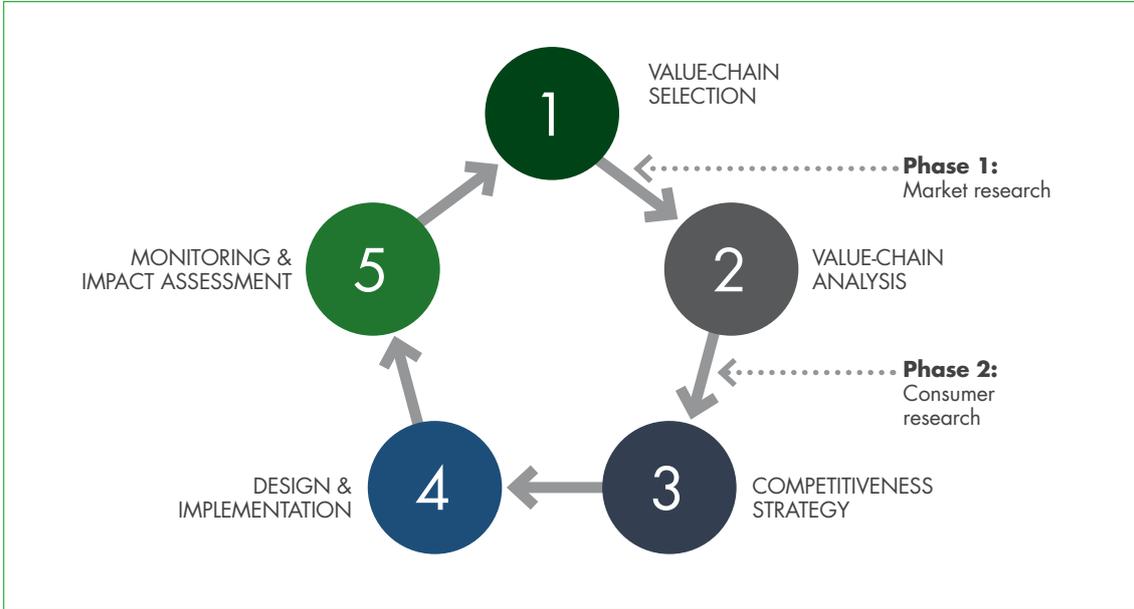
Figure 17: Market and consumer research in the value-chain development cycle. Source: derived from Henning, Donahue and Brand (2008)

Market research is an important step because in many value-chain projects the aim is to achieve development of an exemplar value-chain that can then be scaled out to other chains and communities. However, where choices are influenced by other, non-market-based considerations (e.g. political influences), projects may achieve only mediocre outcomes or may even fail, frustrating both donors and the host country and ultimately bringing the value-chain-based research approaches into disrepute.

The terms 'market research', 'marketing research' and 'consumer research' are often used interchangeably, but in fact are different and serve distinctive functions within value-chain projects (AMA 2014). Market and consumer research fit sequentially into a cycle for value-chain development (Figure 17) consistent with the participatory action learning cycle (Reason and Bradbury 2001).

Market research is broader in scope than, and does not substitute for, consumer research (sometimes also called 'marketing research'). Consumer research aims to understand the nature of 'consumer value' in a VCA. Understanding what attributes consumers value in a particular product is a fundamental element of VCA.

Some developing countries have low-quality or irregularly collected statistical data on industries, sectors and regions. If so, third-party data from sources such as United Nations (UN) agencies, bilateral aid organisations[10], multilateral development organisations[11] and multilateral development banks[12] are often the best available.

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10 A government agency or non-profit organisation based in a single country that provides aid, including medical aid or disaster relief, for people in other countries (e.g. AusAID, NZAID and USAID).

11 An international organisation whose membership comprises member governments who collectively govern the organisation and are its primary source of funds; they are generally less political and enable large-scale projects (e.g. OECD, WTO).

12 A financial institution formed by a group of countries, consisting of both donor and borrowing nations that provide financing for national development (e.g. World Bank, IMF, Asian Development Bank).

The approach to market research can be described as a form of 'backwards market research' (Andreasen 1985, 2002). This concept is based on the premise that the best way to design research is to start where the process ends because it is not always clear what the target of the market research really is. As is often the case in social research, particularly in developing countries, many aspects emerge during the process (e.g. expected markets do not exist or are very different from what is expected), so focusing tightly on what is needed to make key project decisions and write reports can result in very efficient and effective market analysis. Instead of just generating broad descriptive data, this process provides answers to the key questions needed to make the decisions that will take the project to the next steps, including consumer research to identify what consumers value and will pay for in the attributes of the product and the way it is sold.

Market research carried out for a VCA should use the overall project research questions (RQs) to develop its own RQs.

2.7.4 What research questions need to be asked in market research?

The first principle in designing the RQs is that they must result in the collection of data that will help achieve project objectives. For example, ACIAR project LPS/2012/062 'Developing productive and profitable smallholder beef enterprises in Central Vietnam' targets one chain in each of three provinces that will supply two geographical areas, Da Nang (a major provincial city in Central Vietnam) and Ho Chi Minh City. As these are new markets for managed chains, the precise target market in these large cities is not known, so initially market research needs to be undertaken to identify the most appropriate target markets and segments within those cities. Subsequently, consumer research should be undertaken to identify the attributes of beef valued by those segments, enabling identification of where value can be created in this new, coordinated value-chain, and of the key areas within that chain where the value could also be destroyed by waste and inefficiencies.

Every chain has different products, people and operating environments; therefore, the RQs for market and consumer research will be different for each project. However, Henning, Donahue and Brand (2008, p. 6) suggest that the RQs should focus not only on the market itself but also the choice between alternative chain participants and the best methods to engage them in the activities needed to supply the market. They have identified a research framework that aids market and value-chain decision-making that they call the 'six Cs'. This enables researchers to draw up comprehensive RQs and identify appropriate research tools with which to gather data:

1. **Context:** identifying the contextual factors that affect all the actors in the value-chain, for example human (labour) resources, physical (natural) resources, knowledge resources, capital resources and infrastructure (Porter 1992; Wignaraja 2003);

2. **Channels:** gaining an overall understanding of the characteristics of the channel members, their relationships and communication, and each of their needs for supplier behaviour (more-detailed data will be collected in the VCA);

3. **Consumers:** obtaining an overview of their needs and unmet needs as well as the nature and pattern of demand (more-detailed data will be collected in the consumer analysis);

4. **Competitors:** understanding the nature of competition, the main competitor firms/districts/countries, competitor products and substitutable products;

5. **Choices:** gathering the minimum amount of information required to make informed choices about which markets will be the focus of value-chain development/improvement; and

6. **Communication:** finding the appropriate means to communicate with the potential chain stakeholders to engage them in the planning and development activities that will underpin the new production and marketing protocols.

2.7.5 Designing the methodology for market research

When commencing with market research, researchers typically will have little understanding about the market and the supply chains that comprise it. Indeed, what information they have been given anecdotally should be treated with scepticism. Remember that scepticism is a fundamental mental model or frame of reference for a value-chain researcher. All data that are not sourced from an authoritative source such as a government or independent body should be validated if possible. In developing countries there may be little available data on industries and markets, so researchers will have to rely on a range of 'key person' sources (i.e. people with an overview such as government and NGO personnel) to map the product flows to the various markets and make the selection of target markets and chains.

Collect only as much data as are needed to select the target market and supply chains (if existing).

This manual emphasises the differences between the aims and methods of market research and consumer research because the latter is often done poorly or ignored in international value-chain projects. Consumer research should be regarded as phase 2 (see Figure 17) of the overall value-chain development cycle—understanding the attributes that consumers value acts as the focus for the subsequent VCA, which identifies where that value is created and destroyed in the chain. How to undertake consumer research is described in Part 2.5.

To make this distinction clear, the methodological differences between market and consumer research are highlighted in Table 7.

	MARKET RESEARCH	CONSUMER (MARKETING) RESEARCH
QUANTITATIVE METHODS	Broader in scope and examines all aspects of a business environment. Includes market analysis and competitor analysis using secondary research methods such as : * market definition * market size * market segmentation * market trends * market stakeholders (competitors)	Draws conclusions and tests a specific hypothesis using sampling techniques that enable inferences to be drawn from the sample to the population. It involves a large number of respondents in primary research methods (e.g. surveys and questionnaires for choice modelling, maximum difference preference scaling, covariance analysis) to determine: * nature of the buying decision * participants * demographics * psychographics * buyer motivation and expectations * loyalty segments
QUALITATIVE METHODS	Asks questions about competitors, market structure, government regulations, economic trends, technological advances, financial analysis of sectors and industries, and numerous other factors that make up the business environment. Uses analytical tools such as: * Porter's 5 forces analysis * supply-chain mapping * industry structure and strategic groupings * competition and market share * competitors' strengths and weaknesses * SWOT analysis	Exploratory research employing a small number of respondents. The results are not generalisable to the whole population. Statistical significance and confidence are not calculated. The methods used include: * focus groups of consumers/shoppers * in-depth interviews * qualitative consumer surveys * observations of shoppers * qualitative sensory testing of consumers/shoppers * triangulation of multiple types of projective techniques to gain insights into subconscious attitudes

Table 7: Comparison of market and consumer research methods and tools as employed in value-chain analyses

The World Bank defines a 'method' as a combination of instruments and tools held together by a guiding principle. The tools are the means by which practitioners facilitate and encourage participant involvement in creating inspiring solutions, gathering data, and investigating or analysing issues/problems. The instruments are usually formal surveys or tests designed to gather quantitative and/or some forms of qualitative data (World Bank Institute 2001).

Table 7 provides a comparative guide to the appropriate tools to provide this breadth of data for both market and consumer research. Step-by-step guides for some of these tools are provided in the following market research manuals—Henning, Donahue and Brand (2008); Miehlbradt and Jones (2007).

Choosing the appropriate market research tools involves answering three questions:

1. What type of information will answer your research questions?

2. What research tools are appropriate for those sources of information?

3. What sequence of tools will provide the information you need?

Table 7 and these manuals are only guides; there are many other tools and instruments and the guiding principles for selecting the appropriate tools should be the three questions above. There is no ideal sequence in which research tools should be implemented, no hard rules on how many tools should be used in market research, and no restrictions on which ones to combine with others. However, some tools tend to be more useful in the early stages of market research while others are more useful later in the process. Hence, there are many ways that tools can be sequenced and combined.

2.7.6 How is the output from market research presented?

Commonly, the output from market research is presented in a traditional economic narrative report with tables and graphs of data; most usefully for VCA purposes, it can be summarised by a map of the multiple ways a particular product gets to the consumer, from raw materials inputs (e.g. seed, fertiliser, chemicals) to the point of consumption. These are often called maps of distribution channels or channel maps, and are based on a large amount of qualitative and quantitative data and information. There are many variations on how they are presented, but they should be useful and informative to the project members and decision-makers because they are primarily a decision-making tool, a one-page summary of all the market data collected. These maps usually indicate some or all of the following:

∗ the actors in the channels

∗ the relative size of flows of product through the various channels to market

∗ the size of end-markets or segments and other essential economic data, for example buy/sell prices at each step.

Channel maps (Figure 18) are used with their accompanying socioeconomic data to guide the selection of the appropriate target market and the specific pathway to market that will be the focus of the VCA and development activities. In particular, they highlight the complexity of traditional supply chains (e.g. unnecessarily complex chains have multiple actors handling products, adding cost and taking out profit) and therefore act as a basis for analysing potential simplifications in chain improvement that will bring efficiencies. A channel map resulting from market research should not be confused with the value-chain map (Part 2.9), which is an output of the VCA occurring later in the value-chain development cycle.
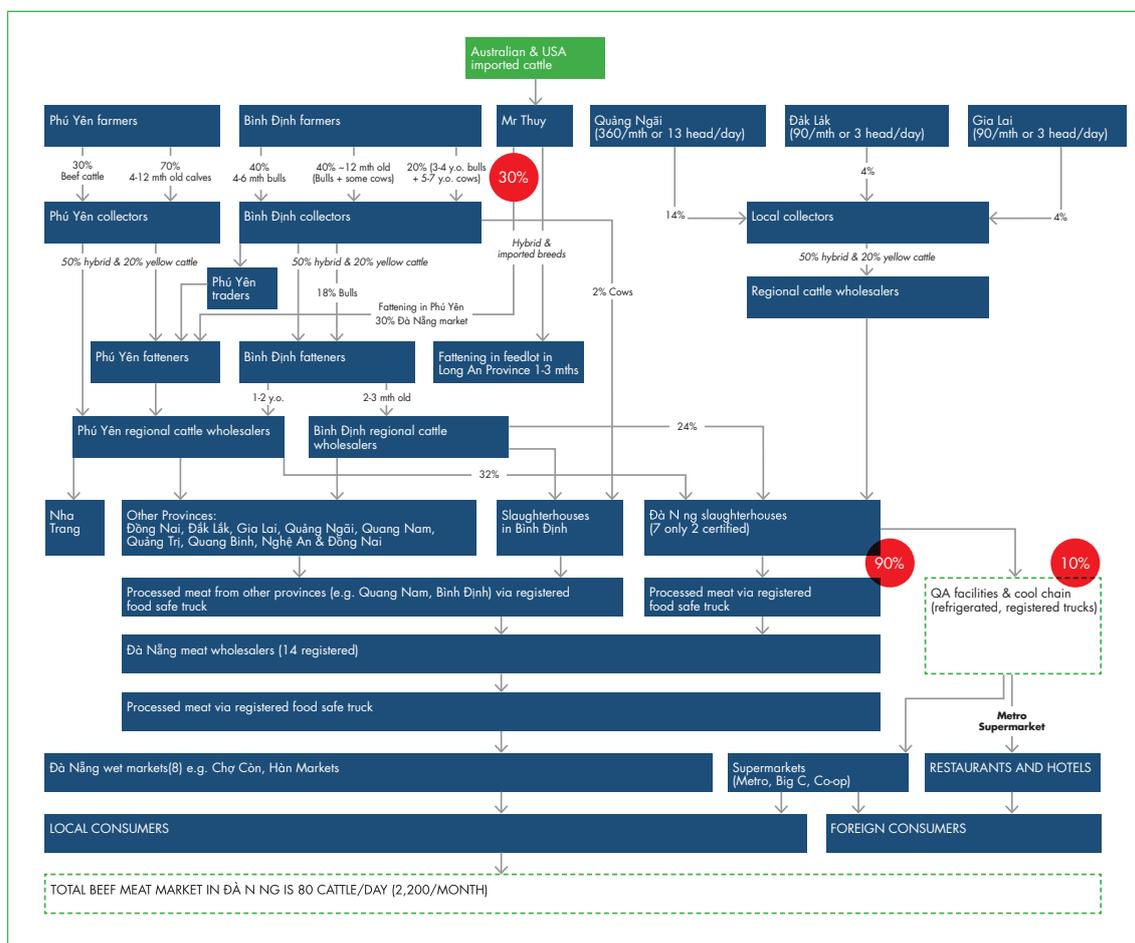
Figure 18: An example of a beef cattle channel map

Phase 2 of consumer research occurs once the chain has been selected. It should be conducted at the commencement of the VCA so that researchers understand the consumer value attributes before they commence the 'walking the chain' process and the full VCA.

2.7.7 Selecting the specific chain

Selecting the specific chain for the focus of a project is critically important to achieving project outcomes. All chains are different and the interaction of various factors (people, products, resources, arrangements etc.) ultimately determines project outcomes and impact (see Table 8).

RECOGNISING THAT VCA IS A CATALYST

VCA assesses the capacity for collaboration focused on creating value and identifies specific opportunities for improvement. Benefits to livelihoods are longer term outcomes, arising from sustained commitment to implementing these chain improvement opportunities. Thus, it is important that key participants and external stakeholders have the capacity to pursue a medium-/long-term strategy around growing value, rather than short-term/reactive tactics based on volume/margin considerations. In addition, the chains selected must also be of sufficient importance to justify continuing external support, because sponsoring government departments and development

NGOs may well need to remain involved during the implementation period to build value-chain management capacity. Finally, if the VCA is funded in order to showcase the application of value-chain thinking, then to justify continuing involvement, it may be important that the case study is representative of the industry, sector, region, product or problem being studied so that it is accepted as illustrative and the approach is able to be applied more widely.

While most VCAs examine a chain delivering one product or a small family of products, most farmers, processors and retailers will be dealing with multiple products, suppliers and customers. Accordingly, participants who benefit most from VCA often have the scope to use an individual VCA as a pilot and then extend the lessons to other products and chains.

PARTICIPANTS' READINESS TO COLLABORATE

The second criterion in chain selection is participants' readiness to collaborate. Value-chain management is difficult, not because it is complex to understand but because the behaviours upon which it depends are challenging. Accordingly, many of the critical criteria involve judging key participants' potential for engaging in a sustained effort to build collaboration. Partners need compatible objectives in order to remain motivated for the long-term development of the chain: is there a foundation for strategic alignment? Trust and commitment form the bedrock for operational improvements that arise from collaboration, such as more-open communication and the sharing of risks and rewards: do partners have the potential to develop this form of relationship? These evaluations should be based on evidence from their past history rather than gut-feel. Accordingly, while VCAs can be used to investigate existing chains, or as a basis for building new chains, working with new chains requires greater experience and selecting potential members is more challenging because there is less history of prior behaviour upon which to base assessments.

Finally, realistically, it is unlikely that the whole chain will be in the same state of readiness, but at least some of the participants must be working towards collaboration or be willing to do so.

IDENTIFYING KEY PARTICIPANTS IN VCA

Drawing practical, affordable but meaningful boundaries around who is involved is essential to generating the benefits of a VCA within the resources available. At times this may mean not involving every member of a chain. Generally, it is essential to include producers of the principal ingredients / raw materials, processors/packhouses, wholesalers/distributors and retailers. Secondary suppliers (e.g. of packaging or transport), importers or providers of genetics do not have to be involved unless they have the potential to create or destroy consumer value, which may only become apparent after the consumer research has identified those product attributes that consumers value. Secondary suppliers should also be involved if they are a potentially significant source of greater efficiency, reduced wastage or stronger relationships, or are a barrier to information flowing along the chain. These assessments should be made in discussion with the major participants.

Finally, retailers are usually involved because they can create/destroy value, for example through product promotion, and deciding where a product is sold or how it is merchandised in-store. They are also very useful if they can provide consumer behaviour data, for example through loyalty cards or if they have a choice of suppliers, and so the VCA needs to investigate how suppliers are selected. Indeed, the VCA itself may help strengthen the chain's relationship with retailers. They are also important if they are the brand owner (i.e. own-brand / private label products) or have the capacity to see opportunities to apply lessons to other, possibly more significant, chains/products, which results in the project's benefits being multiplied. Retailers may be less critical if the product is of no strategic interest to them because it is low volume/margin or has little influence on attracting shoppers. There is also little advantage in involving the retailer if their buyers are solely

and irretrievably driven by margin and volume rather than growing value. In such circumstances consumer research should specifically investigate shoppers' attitudes at alternative outlets, because switching retailers may be a value-chain improvement option arising from the VCA.

SUCCESSFUL VCAs REQUIRE SOME PRACTICAL CONSIDERATIONS

The selection of chains is also influenced by some practical considerations. Outcomes are more likely when there is a chain leader who can negotiate the involvement of other chain members and subsequently drive improvements. The focal product(s) should ideally have untapped attributes that will appeal to consumers. Consumer research will investigate these in detail but, from the outset, consideration should be given to opportunities to create value for consumers from a product's taste and other quality, packaging, portion size, convenience or credence attributes[13].

Multiple products can be investigated within a single VCA when the same chain processes are involved and they form a coherent family, for example in consumer research. However, be cautious not to jeopardise the richness of the VCA's insight by the analysis becoming broad but shallow.

Participants need to be available for data collection and feedback sessions, and this might affect the choice of best time of year to conduct the VCA. For example, avoid trying to interview farmers during a busy harvest period.

Finally, appropriate consumer research needs to be achievable within the funds available. A chain unused to consumer research may require only a demonstration of its value, since improvement projects can always include more-substantive consumer research once its potential benefits have been proven. However, a more-sophisticated chain may require more-complex research to ensure its credibility. Export chains will require in-market research, which will need additional resources.

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13   Credence attributes are those aspects of a product that consumers cannot experience but which are often connected with production conditions (e.g. low pesticide use, fair trade, environmentally friendly, localness, animal welfare).

Recognising that VCA is a catalyst

Key participants that have capacity to implement recommendations have:

* an appetite for change, rather than a history of finding excuses not to

* prior evidence of willingness to build relationships as a source of competitiveness

* resources to implement—if a chain or key members of it are in survival mode, there may not be the capacity to drive implementation

* stability in chain membership—a positive indicator because VCA findings are most likely to be internalised and post-VCA initiatives embedded and pursued

Chains of sufficient importance to justify continuing external support

Scope to use an individual VCA as a pilot and then extend the approach to other products and chains

Participants' readiness to collaborate

Potential for strategic alignment includes:

* a shared objective of becoming more market-orientated as well as improving efficiency

* the importance of the product/chain to the major participants—a risk indicator is the scope/ likelihood for one participant to take VCA findings and apply them with a competitor chain that offers that participant greater returns

* the desire of the major participants to improve—external stakeholders cannot impose value-chain thinking

* mutual opportunities/benefits from collaboration

* interest shown by each chain member beyond their immediate suppliers and customers to other members and especially to consumers

Foundations of trust: VCA itself builds relationships and trust, but it is beneficial to see a history of prior cooperation indicated by:

* current relationships that are already beyond transactional, operational or opportunistic, where decisions are made primarily on short-term price, volume and quality

* stable and constructive existing personal relationships

* sharing of information about market opportunities or best practice

* relationships leveraged to the benefit of the chain, not protected as a source of power. For example, do wholesalers/importers protect their access to retailers and restrict the flow of information back upstream?

* feedback discussions that already transcend immediate issues/problems to consider strategic opportunities as well

* participants who are open to external advice and willingness to share experience and learning. The VCA process is highly participatory, so everyone needs to be receptive to external recommendations, able to internalise the improvement process and willing to explore findings openly with other chain members without feeling threatened

Identifying key participants in VCA

Essential participants are:

* producers of principal ingredients / raw materials

* processor/packhouse

* marketer (whoever interacts with the retailer)

* secondary suppliers (e.g. packaging, transport, importers, providers of key agricultural inputs) if they can create or destroy value, and desirable if they contribute to greater efficiency, reduced wastage, better information flow or stronger relationships

* the retailer, if they can create/destroy value, can provide consumer data, have a choice of suppliers, are the brand owner of the product, or have the capacity to apply lessons to help other value-chain upgrades

Practical considerations in VCA

Chain leadership: It is important to gain the personal commitment of those who can exert significant influence over participation in VCA and subsequently in implementation of recommendations:

* 'chain captain'—the firm or individuals with greatest influence over the chain

* the head of individual firms, stakeholders or other organisations involved

* opinion-formers ('chain champions'), especially where many suppliers/farmers are involved, since it will often require an influential/respected peer to ensure their participation

Suitable products:

* scope for creating value from attributes that would affect some consumers' behaviour, such as taste, appearance, packaging, portion size, convenience or credence attributes

* the importance of the product to all the main upstream partners, and its recognition as either being a problem or having potential

Successful engagement with participants:

* evidence of commitment, for example participants' willingness to contribute time or money to the VCA

* availability for data gathering and feedback

* willingness to be candid

Consumer research:

the ability of the project to afford the scale and sophistication of consumer research necessary to convince chain members that the findings are relevant to their decision-making

Table 8: Checklist for chain selection

Recommended reading

WEBSITES

ACDI/VOCA. Promoting economic opportunities for cooperatives, enterprises and communities through the innovative application of sound business practice. <*www.acdivoca.org/site/ID/ ourwork_valuechainspublications*>.

Carloni A.S. and Crowley E. 2005. Rapid guide for missions: analysing local institutions and livelihoods. Food and Agricultural Organization (FAO): Rome. <*www.fao.org/3/a-a0273e.pdf*>.

USAID. How to conduct end-market analysis. <*www.microlinks.org/good-practice-center/value-chain-wiki/end-market-analysis*>.

USAID. Backward market research process. <*www.microlinks.org/good-practice-center/value-chain-wiki/backward-market-research-process*>.

MANUALS/REPORTS/PAPERS

Arnould E.J. and Price L.L. 1993. River magic: extraordinary experience and the extended service encounter. Journal of Consumer Research 20(1), 24–45.

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Henning R., Donahue N.A. and Brand M. 2008. End market research toolkit: upgrading value-chain competitiveness with informed choice. United States Agency for International Development, US Government. <*pdf.usaid.gov/pdf_docs/PNADP053.pdf*>.

Miehlbradt A. and Jones L. 2007. Market research for value-chain initiatives. Information to action: a toolkit series for market development practitioners, Mennonite Economic Development Associates (MEDA) <*edu.care.org/Documents/MEDA%20Market%20Research%20for%20Value%20 Chain%20Initiatives.pdf*>.

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Reason P. and Bradbury H. 2001. Handbook of action research: participative inquiry and practice, 2004 edn. Sage Publications Ltd: London, UK.

Smith R. Nguyễn Xuân Bả, Nguyễn Hữu Văn and Bonney L. 2014. LPS/2012/062 Developing productive and profitable smallholder beef enterprises in Central Vietnam: process and selection criteria for selecting participant communes/villages/cattle clubs, Australian Centre for International Agricultural Research (ACIAR): Canberra, ACT.

Timmons J.A. and Spinelli S. 2008. New venture creation: entrepreneurship for the 21st century, 8th edn. McGraw-Hill Education: Boston, MA, USA.

van de Fliert E. and Nicetic O. 2010. Annual report for ACIAR project AGB/2008/002: Improved market engagement for sustainable upland production systems in the northwestern highlands of Vietnam. Australian Centre for International Agricultural Research (ACIAR): Canberra, ACT.

Wignaraja G. 2003. Competitiveness strategy in developing countries: a manual for policy analysis. Routledge: London.

World Bank Institute 2001. Urban and city management distance learning course: city strategies to reduce urban poverty through local economic development. International Bank of Reconstruction and Development.

Part 2.8 Project initiation

Once identified, but before the VCA mapping begins, the lead firms, key influencers and/ or potential new value-chain leaders should become involved. They may, for example, help to identify a stakeholder group that will take ownership of the conclusions as the VCA moves towards designing and implementing value-chain improvement interventions. The stakeholder group should be drawn from all the major participants in the selected chain(s) and its members should be sufficiently influential to:

* secure ongoing commitment within their own organisation, for example for completion of surveys and interviews, and for implementation of improvement projects; and

* acquire any necessary resources for the VCA itself (e.g. budget, information/data and staff), and help resolve significant problems during the VCA process.

Stakeholder groups must involve growers, although how this is achieved will vary between chains and cultures. It is impractical to introduce a formal representative structure just for this purpose, so unless such a mechanism already exists, it is appropriate to co-opt respected leaders within the farming community who embrace the need for change. They can encourage other farmers to contribute to the data collection, and subsequently engage in the improvement projects, but without the presumption or pressure of being deemed to formally represent the chain's growers.

Project initiation commences by working with the stakeholder group to reach agreement about the clarity and consistency of expectations. This is achieved by setting out the principles of value-chain management (as these eventually guide the way in which an improved value-chain system will operate); and agreeing on the process and timetable for VCA, what it will deliver, and the need for ongoing commitment to implement the value-chain interventions in order to reap the benefits. Sometimes this process is formalised into project inception workshops, but the objectives remain the same—to be clear about what is planned, explain the overall process and the kind of results expected, clarify the roles of various team members, reinforce the need for commitment, and begin identifying next steps.

This paves the way for awareness-raising workshops with a wide range of farmers in the target communities: to explain value-chain thinking (as set out in Part 1 of this manual), allow farmers to decide on participation, and identify farmer participants who are committed and have the capacity to improve. It may be possible and desirable for farmer leaders and/or farmer subgroups to emerge from this process. The number of farmers directly involved in the VCA and subsequent improvement

activities will be determined by the scope and scale of each project. In the beginning this may be a relatively small number, but many times this number may become involved through extension activities and later scaling-up stages of the project.

Just as farmers become engaged with the project, so similar processes should be undertaken to identify, build awareness, incentivise and engage with key downstream businesses, such as collectors, traders, transporters, processors, wholesalers and retailers.

Part 2.9 Data collection

2.9.1 Introduction

In value-chain research, data collection has two objectives. The first is to assess the current state of the external environment or context in which the focal chain exists. This research usually includes some combination of baseline surveys and appraisals of the marketing, biophysical, economic, social and institutional influences on the focal chain. The second objective is to generate the inputs that will be used for analysing the current state of the focal chain itself. Combining the results from analysis of the external environment and the chain itself leads to identification of interventions to improve the chain's effectiveness and efficiency (see Figure 12).

Part 2.9 is presented in three sections:

1. Part 2.9.1 Mapping the current state—including the chain's context, an overview of consumer research and mapping the chain itself;

2. Part 2.9.2 Rapid appraisal approaches to chain mapping; and

3. Part 2.9.3 A detailed explanation of conducting consumer research for VCA.

2.9.2 Mapping the current state: the chain's context

As explained in Part 2.3, baseline surveys of the focal chain's context, or external environment, aim to describe and understand the main influences on chain performance. For example, understanding a chain's marketing environment may require identifying the types of markets involved and their relative shares of goods traded, the different channels to market and how they are used, how markets are regulated, and how markets are changing. Understanding the biophysical environment may involve identifying climatic, soil, water, agronomic, environmental and infrastructural factors that are external to the chain but influence its performance. The external economic environment may be understood by identifying, for example, enterprise gross margins and whole-farm profitability for typical smallholders in the industry, the availability of credit and its influence on farm economics, and marketing margins. Social influences could include understanding the culture in which the project is taking place, factors involved in economic decision-making by smallholder households, the presence or absence of necessary skills, or community attitudes to new technologies and ideas. Understanding the institutional environment could involve identifying the adequacy of public infrastructure, the effects of the regulatory environment, the impact of extension services, or government policy initiatives impacting on the project.

In addition, collecting data about the chain's context usually involves mapping knowledge pathways and networks (i.e. where and how members in a chain source the knowledge they need for business decision-making), to identify key people, businesses and organisations at each stage of the chain that influence farming or business practices. These data are particularly important because they are required in developing culturally appropriate models for change and knowledge exchange, and in encouraging the adoption of value-chain thinking. The concept of knowledge networks can expand researchers' perspectives of a value-chain because it adds social objectives as well as economic motivations, and provides an understanding of how information and ideas are transferred and how learning occurs. Mapping knowledge networks as part of a value-chain's context, sometimes called value-network analysis (Allee 2008), will identify:

*   specific knowledge-related roles that actors in a network play, such as leader, idea generator, network gatekeeper, financier or knowledge source;

*   transactions or activities between people or groups; and

*   tangible or intangible deliverables passed from one role to another, such as knowledge, expertise, advice, information, or a favour or benefit that is bestowed upon the recipient.

In summary, gathering data on the current state of the environment within which a value-chain operates provides an essential foundation upon which analysis of the chain itself can take place. The external environment is defined by its marketing, biophysical, economic, social and institutional elements, among which special attention is paid to understanding how knowledge is generated and transferred.

CONSUMER RESEARCH

Consumer research is dealt with in more detail in Part 2.9.3, but by way of introduction it is important to understand that VCA commences by identifying what consumers value in a product, and where in the value-chain that value is created or diminished. Such knowledge about consumers informs the examination of the present and possible future improved state of a chain. Hence, VCA identifies how much and where value is currently created, and what opportunities exist for creating and efficiently delivering more value.

Primary consumer research is usually needed to reveal consumer value attributes. Such research in developing countries can be difficult, but initial data can be collected through semi-structured interviews of small retailers, supplemented by observations of shoppers. As resources allow, these initial insights can be supplemented by both qualitative (focus groups) and quantitative (survey) data collected at a range of outlets. Consumer research can also include sensory evaluation, either informally by shoppers in retail outlets, or formally by trained sensory panellists. The objective is usually to investigate specific value attributes in a product that can be used for market segmentation.

Whatever the approach adopted, consumer research should provide an understanding of how product attributes can drive purchase behaviour and thus the performance (or underperformance) of a chain.

MAPPING THE CHAIN

The aim of mapping the chain is to document the flows of materials to explore how efficiently and effectively the chain creates and delivers a product of the required type, volume and quality to meet the needs identified by consumer research. Mapping involves identifying those major inputs and activities that constitute the production, processing, distribution, retailing and consumption stages of the product, and then assessing them against the findings of consumer research to classify each activity as one of the following:

∗ **Value-adding:** those activities that, in the eyes of the final consumer, make a product or service more valuable, that is activities that result directly in attributes that the consumer values and will pay for;

∗ **Necessary, but non-value-adding:** those activities that do not make a product or service more valuable but are necessary under the existing supply processes. The mapping process should identify where and why waste occurs in these activities, for example from excessive or substandard inputs, lack of skills, unnecessary processing or supply being greater than demand; or

∗ **Wasteful:** as mentioned above, any activity that is unnecessary and should be modified or eliminated.

Material flow should be mapped from one end of a chain to the other, that is from suppliers of agricultural inputs through to consumers. This produces a map of the product flow, identifying each activity involved in its production and, if possible, where and how much inventory is held. The precise activities involved in a chain will depend on the nature of both the raw materials and the final product, and on the geographical configuration of the chain, but they may include:

∗ agricultural inputs:

  - genetics (e.g. seeds, seedlings, livestock)

  - chemicals, fertiliser, feed, equipment/tools etc.

  - extension services

  - finance

∗ production:

  - arable/horticulture: land preparation, planting, growing, irrigating, spraying, harvesting

  - livestock: breeding, animal health, feeding, land management

∗ transportation:

  - of the raw material from where it is produced along the chain to the retailer

∗ processing:

  - adding ingredients or processing to create a more-valued product

  - packing, which may involve identifying suppliers of packaging materials

∗ middlemen (multiple forms and roles are possible):

  - harvesting contractors (may include packaging)

- collecting from farmers

- primary and secondary wholesaling (storage and transport)

* retailing:

  - intake/distribution to outlets (stores/foodservice)

  - storage

  - merchandising

* consumption:

  - purchasing and storage by consumer

  - consumption

  - disposal.

Ideally, the project team should physically walk the chain involving farms, collectors, processing, transporting, wholesaling and retailing. Depending on the importance of different stages within the particular chain, it may also be necessary to detail the production of agricultural inputs, and storage at different parts of the chain.

Examples of value-chain maps

MAPPING THE CHAIN

TOMATO VALUE-CHAIN

INPUTS	FARMER	RETAILER	CONSUMERS
Seeds (variety) Pesticides Fertiliser Water Labour Equipment and tools Advice	Prepare land Plant Crop practices Add manure Spray Weed Water Monitor Harvest Sell	Buy Transport Grade Store Sell	Buy Store Process Eat
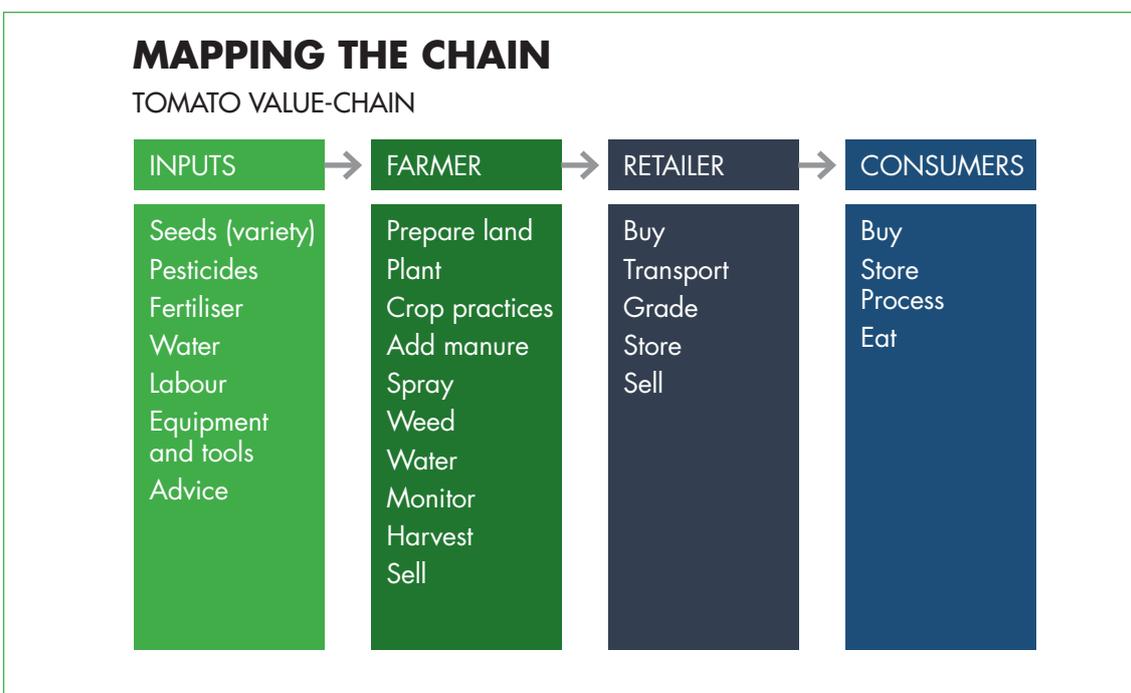
MAPPING THE CHAIN

PORK VALUE-CHAIN

INPUTS	PIG FARMS	PROCESSING PLANT	RETAILER	CONSUMERS
Genetics Antibiotics Feed	Housing Husbandry Breeding Feeding Growing Finishing Transport	Slaughtering Blanching De-hairing Butchering Packaging Storage Dispatch	Ordering Intake Display Promote	Select Transport Store Cook Eat
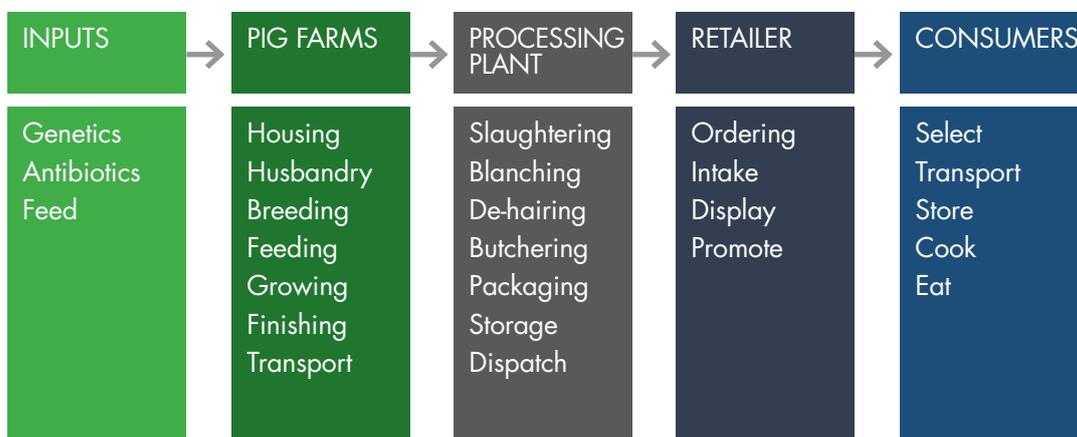
MAPPING THE CHAIN

MANGO VALUE-CHAIN

INPUTS	PRODUCER	IMPORTER	CONSUMERS
Genetics/ planing material Fertilisers Pesticides Water Equipment Packaging materials Advice	Tree planting Growing crop Harvest Grading Packing Cooling/ storage Export	Intake at warehouse Storage Distribute to stores Display	Select Purchase Transport Store Eat
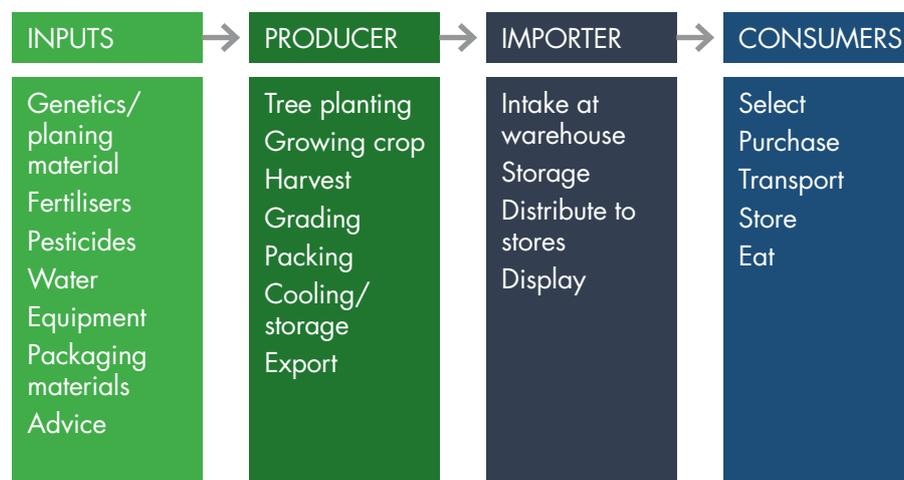
After walking the chain the next stage involves individual and group interviews using semi-structured, convergent interviewing techniques. Participants are selected using purposive sampling (i.e. selecting those known to have the information needed) and, ideally, data are collected until saturation occurs (i.e. when gathering more data gives little or no further insights). Data collected should focus on the efficiency and effectiveness of product flows, communication and information flows, chain relationships and governance. When combined with data from analysis of the external environment, this information provides a basis for identifying the distribution of economic benefits and the sharing of risk along the chain, that is identifying the fairness and equity of the value-chain's operations. This part of the analysis assists in identifying the behaviours, incentives and institutional conditions that underpin chain inefficiencies as well as social factors affecting householder incomes.

Depending on the chain, the interviewees are likely to include:

* **agricultural input suppliers**, such as agricultural advisors/extension officers and suppliers of equipment, chemicals, feed and genetics (e.g. seeds, seedlings, livestock)

* **farmers**, sampled to reflect differing abilities, resources and motivations

* **processing input suppliers**, such as packaging suppliers

* **processors**, such as graders and packers, producers of value-added products

* **collectors/traders/wholesalers**

* **retailers**, which may include modern retailers as well as wet market and street retailers.

This part of VCA investigates the efficiency and effectiveness of product flows, communication and information flows, and relationships (governance) through which value is created and diminished in the value-chain production and marketing processes. It examines the presence/absence/importance of the following factors that lead to a chain's success:

1. a common understanding of:

   - consumer preferences: product attributes that positively change consumer behaviour, measured as frequency and volume of purchase, and willingness to pay (i.e. *value-chain members' knowledge of the needs of the final consumer);*

   - final customer requirements: product quality and service that determine from whom the final customers (retailers, caterers etc.) source their stock (i.e. *value-chain members' knowledge of the needs of the retailer or food service provider);*

   - accordingly, where the greatest value for consumers and final customers can be created (i.e. *improvements that would have most impact on consumers, retailers and food service providers);* and

   - where waste arises, its causes and how to reduce it (i.e. *where costs could be reduced*)

2. prioritisation of resources towards delivering product attributes that the target consumers expect, and additionally the service levels the final customer requires to allow market access

3. strategic alignment, reflected in agreed objectives and complementary resources (i.e. inputs; land and labour; production, processing, transport and retailing facilities), which are focused on delivering consumer expectations

4. trust, commitment and collaboration, displayed through resisting opportunism, responsiveness to new inputs and dynamic downstream requirements, reliability in delivering commitments, joint planning and problem solving, mutual understanding of the role of other businesses in the chain, and consistency between words and actions

5. power and dependency, which is manifest through the extent/recognition of interdependence, conflict avoidance (i.e. are problems pre-empted?) and resolution, as reflected in both individual incidences and long-term patterns

6. sharing of risk and rewards, for example through incentives for delivering product and service quality that creates value, reduces waste and facilitates market access

7. open and frequent communication on operational issues.

DATA GATHERING USING SEMI-STRUCTURED INTERVIEWS

Aim and process

The aim is to gather the data needed for the VCA by conducting a guided conversation with business managers at each stage of the chain(s) being studied. Data from these conversations enable documentation of the current performance of the chain and its potential for future improvement.

The data-gathering process is guided by the three major dimensions of the value-chain mapping framework:

1. **material flow**—materials and activities that transform inputs through production, accumulation, processing, wholesaling, distribution and retailing into products for the final consumer

2. **communication and information**—how, why and when information flows both upstream and downstream in the chain

3. **relationships**—how chain activities are coordinated, governed, managed, incentivised etc. as a result of relationships among the businesses in the chain.

Semi-structured interviews

Semi-structured interviews combine some of the precision of a formal survey with some of the richness and depth of an informal conversation. The sets of questions provided as examples in this section can be used to guide a conversation between researchers and a business manager so that all the relevant topics are covered, but the discussion remains open to the possibility of covering other issues that respondents see as important.

Ideally, semi-structured interviews are carried out by two researchers, one to focus on asking the questions and keeping the conversation going, and the other to record responses, check progress and prompt for more information where necessary. Having two researchers present improves both the continuity of the interview process and the reliability of data.

If the need to work through an interpreter and/or gatekeeper means that three or four people must be present at an interview, it is important that the respondent knows this in advance and is put at ease as much as possible. Such interviews always take longer, so thorough preparation of their structure and questions is important. In particular, the interpreter must know in advance what information is being sought.

It follows that the interview guides provided later in this section are *not a prescription.* Every research project must adapt data gathering to its own circumstances, questions and context. For example, rapid appraisal approaches (see Part 2.9.2) may use the smallest number of the most critical questions because they are usually limited by time and funds, while large longer term research projects would explore issues in greater depth with more respondents.

Data generated are used to validate and refine the initial material flow map that typically would have been produced by project members walking the chain.

An example of data-gathering guidelines for researchers

The following is an extract from guidelines for a beef VCA in Vietnam. It is aimed at giving the local research team clear guidance as to the stages of the data-gathering process, what each stage entails and how as researchers they might prepare themselves for the tasks involved.

'In the process of conducting this research we will:

* **Use knowledge networks:**
  We will identify people who have knowledge about the beef supply chains in the target cities/ provinces. These might be MARD, DARDs, Extension Centres, NGOs, university academics, or others such as the chain actors themselves. We will use them to gain background information and to get us introductions to the owners or senior managers of those businesses.

* **Conduct a brief price survey of various outlets:**
  We will ask for the prices of some of the common cuts of beef in wet markets, specialty stores and supermarkets.

* **Conduct semi-structured interviews:**
  We will then visit the businesses and people identified by the previous knowledge networking. We will conduct interviews based on the semi-structured question guides (these are on separate pages for printing as interview guides).

* **Make observations during visits:**
  During visits we will see things that give us valuable information (e.g. labels on packets or boxes, company names on trucks), which provide cues and information relevant to our investigations.

* **Reflect on interviews:**
  Occasionally our research group will reflect on, or discuss, the information we have gained from the interviews and observations, and we will record this as part of our dataset.

* Map the existing channels to market

At the start of each interview it will be necessary to explain:

* who we are

* what we are trying to do (e.g. mapping the beef supply chains to HCMC)

* that we have permissions to do this (by specifying who the authorities are)

* that the data will be aggregated and analysed, and the participants will not be identified in our report

* that they do not have to participate if they don't want to

* that they do not have to say anything that they feel is confidential or sensitive or will disadvantage them, and if they reflect later and want data removed we can do that

* that their data will be held securely and no-one will have unauthorised access to them.'

Source: derived from Bonney (2015)

Semi-structured interview guide for wholesalers and retailers of meat products

Introduction

* who we are

* what we are trying to do

* that we have permissions to do this (specify who the authorities are)

* that the data will be aggregated and analysed, and they will not be identified without their permission

* that they do not have to participate if they don't want to

* that they do not have to say anything they feel is confidential or sensitive or will disadvantage them, and if they reflect later and want data removed, we will do that

* that their data will be held securely and no-one will have unauthorised access to them.

Processing systems and material flows

These questions describe what is purchased, processed/retailed, and why; how this is done; and what are the main issues impacting wholesaling or retailing.

* What does your business do? Who are your main meat suppliers? Why do you buy from them? Do you know where they source their meat? Is this important to you?

* What are the typical arrangements for supply of the meat you buy; that is, how often, how much, what type?

* How do you determine the price that you pay for meat? How do you determine the selling price of your meat? How volatile are prices and can you explain what causes these fluctuations?

* How is meat transported to you? Is it refrigerated? How much do you usually have in storage at any one time?

* Is hygiene an issue for your suppliers, you or your customers? Have you ever had problems related to hygiene? How were they resolved?

* Who do you sell your meat to? For how long have you supplied them? Do you know why they buy from you?

* Can you describe what your customers/consumers are looking for in the meat that you sell?

* How much do you sell? (per day, week, month—as appropriate)

* Who are your main competitors in the markets you serve? Could you estimate your market share?

* What are the main causes of waste in your business? How could it be reduced? Who pays for this waste?

Information and communication

These questions explore what information is provided to whom, in what format and how it is used. Attention is paid to the visibility (or not) of what consumers demand and how this is related to information flows within the chain.

* (For wholesalers) What do you know about the type of meat that the final consumer wants? Where/how do you get that information? How often? Would you like to know more? Explain.

* (For retailers) How do you get information about what consumers want in the meat they buy from you? How often? Would you like to know more? Explain.

* Do you always buy from the same supplier(s) or are there factors that influence your decision on where to buy? What are those factors? How long have you been buying from that source? What information do you give them about your needs?

* What information do you receive from your main supplier(s)? Is this information reliable, is it useful, and do you get it when you need it?

* What additional information from suppliers would be useful? Have you ever asked for it?

* Would you like to know more about your customers/consumers? Explain.

Relationships

These questions focus on how relationships with other members of the chain explain the presence or absence of behaviours such as cooperation, conflict resolution, power and dependence, and co-innovation.

* For how long have you dealt with your main suppliers? Are you satisfied with these relationships? Why/why not? What would improve these relationships?

* For how long have you dealt with your most important customers/consumers? Are you satisfied with these relationships? Why/why not?

* Do your supply relationships involve contracts? Explain.

* Do you think your suppliers understand your business? Explain.

* Do you understand their business? Explain.

* How would you rate the following factors in your decision to do business with your main supplier(s) (1–5, where 1 = irrelevant, 5 = highly significant):

  - the price of their meat

  - the security of ongoing business with them

  - the volume and/or quality they can supply

  - lack of alternative suppliers

- practical help/advice offered

- credit terms

- long-term prospects of continued business

- the strength of your personal relationship with them

* How would you rate the following factors in explaining your relationships with your main customers/consumers (1–5, where 1 = irrelevant, 5 = highly significant):

  - the quality of your meat

  - the prices they will pay for your meat

  - their loyalty in doing business with you

  - the quantity they buy

  - their lack of alternative suppliers

  - practical help/advice/information you offer them

  - credit terms you extend to them

  - the strength of your personal relationship with them

* What are your main problems with your suppliers and buyers? Is this a frequent occurrence? How do you resolve them?

* Have you ever made investments of time or money in order to meet the requirements of a customer? Explain. Was this voluntary or involuntary?

* (For wholesalers) As things currently stand, would you be willing to invest in the future on the basis of a continuing relationship with your main buyer(s)? If no, what would have to change?

* (For retailers) As things currently stand, would you be willing to invest in the future on the basis of a continuing relationship with your main supplier(s)? If no, what would have to change?

* Do you feel motivated by the future prospects of your business as part of the meat industry? Explain.

* Are you open to the idea of working with other upstream or downstream chain members, for example to share information, pool resources, implement quality management systems? Why/why not?

Semi-structured interview guide for cropping farmers

Introduction

* who we are

* what we are trying to do

* that we have permissions to do this (specify who the authorities are)

* that the data will be aggregated and analysed, and they will not be identified without their permission

* that they do not have to participate if they don't want to

* that they do not have to say anything they feel is confidential or sensitive or will disadvantage them, and if they reflect later and want data removed, we will do that

* that their data will be held securely and no-one will have unauthorised access to them.

Production systems and material flows

These questions describe what is produced and why, how it is produced, and what are the main issues impacting production.

* What do you grow, when, how much? How do you grow it? How do you make your annual cropping decisions; how far in advance are they made? Do you get outside help in making cropping decisions and, if so, from whom?

* Describe the typical material flow: input purchasing; field preparation; sowing, growing, pest and disease management; and harvesting, focusing particularly on:

    - production: What are the typical yields from each crop and what are the major influences of high/low yields?

    - waste: What level of wastage do you incur both on-farm (i.e. from inputs and produce) or from rejections at the point of sale/collection? What wastage occurs at each stage (storing inputs, production, harvesting, storage, transporting)? What causes it? Could waste be reduced with assistance or changing requirements from upstream or downstream along the chain?

    - inventory: How much input/produce do you store on-farm at various times of year, and why?

    - marketing: How are crops marketed, and why? How are marketing decisions made? What are your major marketing issues?

Information and communication

These questions explore what information is provided to whom, in what format and how it is used. Attention is paid to the visibility (or not) of what consumers demand and how this is related to information flows within the chain.

* What information do you receive from your main input suppliers? Is this information reliable; is it useful; do you get it when you need it?

* What additional information would be useful? Have you ever asked for it?

* What information do you receive from those downstream of you in the chain, such as collectors, traders, wholesalers? Is this information reliable; is it useful; do you get it when you need it?

* What additional information would be useful? Have you ever asked for it? Explain.

* Do you know who are the main final consumers of your products, where they are and what they want? What do you think the key product attributes are? Would you like to know more about consumers of your products?

Relationships

These questions focus on how relationships with other members of the chain explain the presence or absence of behaviours such as cooperation, conflict resolution, power and dependence, and co-innovation.

* For how long have you dealt with your major input suppliers? Are you satisfied with these relationships? Why/why not? What would improve these relationships?

* For how long have you dealt with your major buyers? Are you satisfied with these relationships? Why/why not? Do any of these relationships involve contracts? Explain.

* Do you think they understand your business? Explain.

* Do you understand their business? Explain.

* How would you rate the following factors in your decision to do business with your major buyer(s) (1–5, where 1 = irrelevant, 5 = highly significant):

  - the price they offer you

  - the security of ongoing business with them

  - the volume they will buy from you

  - lack of alternatives

  - practical help/advice offered

  - finance offered

  - long-term prospects of continued sales

  - the strength of your personal relationship with them

* What are your main problems with your input suppliers and buyers? Is this a frequent occurrence? How do you resolve them?

* Have you ever made investments of time or money in order to meet the requirements of a buyer or another downstream chain member? Explain. Was this voluntary or involuntary?

* As things currently stand, would you be willing to invest in the future on the basis of a continuing relationship with your buyer or another downstream member of the chain? If no, what would have to change?

* Are you aware of any investments of time or money by downstream chain members in order to assist you or other suppliers, collectively or individually (e.g. investment in R&D for inputs, credit for increasing production capacity, employing quality assurance / traceability systems, delivery or storage infrastructure, financial support (e.g. discounts, payment terms)? Explain.

* Do you feel incentivised (penalised/rewarded) by your main buyers?

* Are you open to the idea of working with other farmers, for example to share information, pool resources, accumulate produce for a buyer, implement quality management systems? Why/why not?

2.9.3 Rapid appraisal approaches to chain mapping

It is common for a development research project to be preceded by a scoping study whose objective is to assess the current state of a problem situation. By their exploratory nature, these studies are usually completed in short time periods with limited budgets, even though their impacts on the shape and direction of the project itself are significant. Rapid appraisal methods are a response to this need to gather reliable data with limited time and funds. These methods can define a problem situation quickly and in sufficient detail so that follow-up activity can effectively target the problem.

Three guiding principles of rapid appraisal have been applied to value-chain research (Collins and Dunne 2008). First, there is a need to adopt a *systems orientation* to focus data collection on the behaviour and performance of the system as a whole. Second, the principle of *optimal ignorance* refers to the need to establish what information is necessary, and what is not. Finally, *proportionate accuracy* refers to the fact that high degrees of accuracy are not the objective in rapidly scoping a problem. In combination, these three principles guide rapid data collection so that the whole system's behaviour is understood rather than only its parts; just enough information is collected to enable such an understanding to be reached, and judgements are made as to the accuracy and representativeness of data rather than collecting statistically validated samples.

Rapid appraisal of the external environment of the chain focuses, where necessary, on the five dimensions identified earlier (i.e. marketing, biophysical, economic, social, institutional).

Rapid appraisal of the current state of the chain itself focuses on four subsystems (Collins and Dunne 2008):

1. product integrity: the biophysical and technical aspects of production, packing, storage, handling and transport with an emphasis on impacts on product quality;

2. communication: the nature of information exchanges among members of the chain in terms of target recipients, accuracy, timeliness and relevance;

3. value: how much consumer value is created and where it is either created or diminished in the chain; and

4. governance: how the activities of the chain are coordinated and how the value created from the chain's activities is distributed among its participants.

While these rapid appraisal methods do not, by definition, generate a full dataset for VCA, they may be the only approach that is feasible in circumstances where the problem state and possible improvement interventions must be identified quickly and with limited resources.

RAPID VALUE-CHAIN ANALYSIS

Rapid VCA (RVCA) generally requires the following conditions:

1. Consumer research is completed prior to data collection about the chain and its external environment. This may take the form of a small number of focus groups and retailer interviews where both time and money are limited, or more traditional survey-based approaches where time is limited but financial resources are available. Consumer research findings should inform and guide the steps that follow, as in a traditional VCA.

2. Chain mapping, data collection, analysis and reporting take place rapidly and intensively, with a typical 10-day timetable, as shown in Table 9. The chain can be mapped by starting with a generic map of similar chains in that sector or industry, and modifying or validating it with chain members during the interview process. It is critical to identify and review the minimum number of interviewees (proportionate accuracy) and the minimum scope of each interview (optimal ignorance) as the RVCA proceeds so as to ensure rapid completion.

DAY 1	Project team briefing on RVCA methods and the crucial need for team members to adopt value-chain thinking in undertaking RVCA; agreement on generic chain map as starting point for interviews and mapping; allocation of teams and division of tasks
DAYS 2–4	Chain mapping and interviews with chain members; 3–4 interviews per day per team of 2–3 (target up to 15 interviews per chain depending on its complexity and diversity of members), with the interview teams meeting each evening to update maps and share daily findings
DAY 5	Review of all data collected to date; identify emerging findings; establish need for further interviews and mapping
DAYS 6–7	Final interviews and mapping to further investigate/validate emerging findings
DAY 8	Complete analysis and interpretation of results; agree on findings; identify strengths and limitations of the RVCA
DAY 9	Preparation for feedback workshop
DAY 10	Feedback workshop with stakeholders to further validate findings and discuss potential interventions

Table 9: Example timetable for data collection

An RVCA following the timelines above can be completed by just two or three researchers, but using more researchers obviously results in greater richness of data and deeper insights, as well as opportunities for more capacity building where that is also an objective. A team of five to eight researchers can achieve the necessary speed, rigour, insight and capacity building so long as financial and human resources allow.

2.9.4 Conducting consumer research for value-chain analysis

Undertaking consumer value research should be one of the earliest research activities in any VCA. Value-chains are defined as a sequence of processes in linked businesses that transform raw materials into products, services and information that consumers value and will pay for. Thus, it is the consumer who determines the characteristics of 'value'. If a value-chain is to focus on the efficient delivery of value to consumers, then first it is necessary to understand the attributes of consumer value.

In developing countries improving the performance of value-chains so that they become more competitive and profitable is an approach to improving the livelihoods of poor smallholder farmers. Yet, typically, smallholders who produce commodities for markets beyond their local village have little knowledge of the consumers of their products. A strength of value-chain-led projects is their ability to enhance the livelihoods of smallholders by developing higher quality, better targeted and/or more-specialised products that are marketed through coordinated, more-efficient and more-effective value-chains. Clearly, this requires knowledge of the product attributes that consumers value and are prepared to pay for, so that the VCA can identify where that value is created and destroyed in the chain.

WHAT ATTRIBUTES OF FOOD ARE VALUED BY CONSUMERS?

The following broad groups of value attributes are common among food products:

* attributes of the product:

    - internal: e.g. taste (such as sweetness, tartness, intensity, mouthfeel, aroma), texture, tenderness, fat content, colour

    - external: e.g. size, firmness, colour, freshness, blemish

    - credence: e.g. nutritional value, chemical-free, provenance, method of production, hygiene throughout the chain

    - augmented: e.g. packaging, labelling, convenience, shelf life

* attributes of the way the product is sold:

    - physical environment: e.g. cleanliness, convenience

    - service environment: e.g. 24-hour service, knowledge of product.

Although the priority list of value attributes that is generated by consumer research may look deceptively simple, making assumptions about consumer value can threaten the final outcomes and impacts of a project. These high-priority value attributes will be the basis for gaining an understanding of:

* the specific combinations of attributes and market segments that allow targeted production and marketing; and

* where in the chain those value attributes are created and destroyed, enabling targeted improvement of value creation and reduction of waste to improve the efficiency and effectiveness of the chain.

COPING WITH THE CHALLENGES OF CONSUMER RESEARCH IN DEVELOPING COUNTRIES

The challenges in Table 10 were identified in the earlier discussion of consumer research (World Bank 1997) in Part 2.5. Overcoming these challenges is situation-specific, usually requiring a combination of methods and best undertaken jointly with host-country partners and local experts. Table 10 summarises lessons learned from field experience.

CHALLENGE	POSSIBLE STRATEGIES
Consumers may not be able to articulate the actual value of food attributes.	* Keep questions simple (it is preferable to ask a larger number of simpler questions than a few complex questions). * Use consumer researchers from the same ethnic or regional group (some attributes may have very localised interpretations and significance). * Use semi-structured instead of structured questions. * Identify specific rather than broadly descriptive differences, e.g. through sensory testing. * Use value attribute data from large retailers or processors. * Do not assume that retailers can provide reliable consumer data—always triangulate retail data against data from consumers themselves.
Cultural sensitivities may make the use of some methods more difficult.	* Understand and work with local cultural values and mores[14]. * Select appropriate consumer researchers, e.g. women to interview women. * Use appropriate interview strategies, e.g. group interviews of one gender. * Avoid intercept interviews when respondents are most busy.
Consumers tend to have heterogeneous preferences and utility for food attributes.	* Heterogeneity is a basis for segmentation. * Use qualitative methods to identify diversity. * Use value data from large retailers or processors.
There are often differences between stated intentions and actual behaviour.	* This applies in any culture or segment. * Try to understand what factors drive decision-making in practice; where appropriate, focus questions on behaviours rather than intentions. * Use qualitative methods. * Point-of-purchase interviews can reveal actual purchasing behaviour.
Sampling may be especially difficult—particularly the sampling frame, obtaining lists of contacts and defining the market precisely—because of the lack of broad, reliable population, consumption and trade statistics.	* Use field-based random sampling, i.e. 'intercept' interviewing (where appropriate). * Aggregating data from large retailers or processors can sometimes give an indication of overall market size and composition.

14 The accepted moral norms or customs of the region or ethnic group.

CHALLENGE	POSSIBLE STRATEGIES
Identifying the target or potential market(s) may not be straightforward.	∗ Understand the cultural mechanisms of purchasing, e.g. gender roles, religious or cultural festivals, cultural mores for entertaining. ∗ Clarify who makes shopping decisions in households—the shopper may not always be the consumer. ∗ Seek to understand differences among different types of markets such as supermarkets, specialty stores, wet markets and street markets. ∗ Identify trends in shopping behaviour that may represent opportunities, such as trends away from wet markets to modern retail formats.

Table 10: Strategies to guide consumer research in developing countries

Overcoming these challenges is situation-specific and usually requires a combination of methods so that triangulation of data can be used to improve reliability.

WHAT VCA QUESTIONS ARE ANSWERED BY CONSUMER RESEARCH?

It is important that projects only collect the data necessary to answer the research questions and complete the project as economically as possible. The focus is typically on answering the following basic questions (Note: six of these seven questions are about shoppers/buying, not consumers/eating—refer to Table 2):

3. What segments exist that will assist in better targeting the characteristics of the product?

4. What do consumers value about a product?

5. How much will they pay for those characteristics?

6. What volume/weight will they buy?

7. How often will they buy?

8. What will entice them to buy the product for the first time, and thereafter purchase more product, more frequently?

9. What do they value in the place where they buy the product?

Indirectly, the answers to these questions will also lead researchers to where those value characteristics are created in the chain and by whom. This also helps identify where waste or other types of value destruction are occurring, and forms the basis for subsequent chain-improvement projects.

The following list of topics should be taken only as a guide. Such questions could be answered using a range of complementary research methods:

∗ sufficient demographic questions to be able to segment the market appropriately

∗ current consumer behaviour regarding the product—do they currently buy it, how often, how much do they buy, how frequently

∗ where the consumers prefer to buy the product and what are the important characteristics of that place that induce them to buy the product there; of these, which are the most/least important

* knowledge of the product—where, how, when to buy it

* perceptions of the product—how is it used; is it a family staple, or a luxury or special occasion food

* value of the product—what do they value about the product; why; what could be done to enhance that value; at what price point do they usually buy it

* what is important when purchasing the product—what characteristics do they look for; what indicators do they use as a guide; on what basis do they make that judgement; of these, what are the most important/least important

* preferences for the product—relative importance of the product and why; are there substitutable foods that compete—what, when, how much

* awareness of the product—do they know much about its production; where it comes from etc.; are any of these attributes of particular value to them

* how price affects their purchasing in terms of volume/weight and frequency of purchases; how high does the price have to be before they stop purchasing, and at what discounted price might they stop buying it and why; what aspect of the product would entice them to pay more and how much more would they pay for that characteristic

* what the current issues are—what problems or preferences are there for enhancements (i.e. what could be improved); if those characteristics were present would they pay more, buy more volume/weight or buy more frequently; of these, what are the most important/least important

* for seasonal products:

  - how the chain's product would fit with that of competitors from other regions or countries

  - whether there are substitutable products that will potentially compete under certain circumstances and therefore determine price points for a product

* predicting demand for a new product—what will they do in the future, that is in the next weeks/months/years.

Recommended reading

PRACTICAL GUIDANCE ON CONDUCTING CONSUMER RESEARCH

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Miehlbradt A. and Jones L. 2007. Market research for value-chain initiatives. Information to action: a toolkit series for market development practitioners. Mennonite Economic Development Associates (MEDA). <*edu.care.org/Documents/MEDA%20Market%20Research%20for%20Value%20 Chain%20Initiatives.pdf*>.

USAID. How to conduct end-market analysis. <*www.microlinks.org/good-practice-center/value-chain-wiki/end-market-analysi*s>.

USAID. End market research toolkit: upgrading value-chain competitiveness with informed choice. <*pdf.usaid.gov/pdf_docs/PNADP053.pdf*>.

USAID. Guidelines for designing surveys, focus group guides and interview guides. <_www.microlinks.org/good-practice-center/value-chain-wiki/guides-interviews-and-focus-groups_>.

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World Bank. 1997. Rural development, from vision to action: a sector strategy. The International Bank for Reconstruction and Development: Washington, DC, USA.

Part 2.10 Analysis and interpretation

2.10.1 Introduction

The objective of this stage of the VCA is to draw meaning from the data. In a general sense this is done by asking the question, 'What enables and constrains the chain's efficiency and effectiveness?' However, as discussed in the following sections, there are many individual questions that need to be explored as part of this process. Answers to these questions form the building blocks for improving the chain's performance (discussed in Part 2.11). In keeping with the way in which data were collected, analysis and interpretation focuses on material flow, information and relationships.

Note that it is not always possible to neatly separate the collection of data from analysis and interpretation of the data. It is quite common, for example, that while walking the chain to map material flow and interview those involved, researchers encounter issues that need to be understood in more detail to ensure that the relevant data are collected. This process of knowing what data are needed and how many data are enough, actually involves a level of analysis and interpretation as part of the collection process. For example, where mapping material flow reveals a source of waste, it would be necessary to explore its causes. Are the causes technical or are they related to problems with information flows or relationships? What data are needed in order to answer these questions? Although this manual separates the collection of data (Part 2.9) from their analysis and interpretation (Part 2.10), in practice the two processes can become quite interdependent.

2.10.2 Evaluating material flow data

The objective of material flow in a value-chain is to produce and deliver efficiently the required timing, type, volume and quality of product that will ultimately maximise consumer value. Accordingly, each activity in the chain is assessed against results from consumer research and chain mapping, and classified as one of the following:

1. **Value-adding**—those activities that, in the eyes of the consumer, make a product or service more valuable because they affect consumers' willingness to pay and/or their frequency of purchase. For example, if consumer research showed that convenience was a valued attribute in a ready-to-cook product, the activities directly involved in pre-preparing and packaging that product would be classified as value-adding.

2. **Necessary, but non-value-adding**—those activities that, in the eyes of the consumer, do not make a product or service more valuable but are necessary unless the existing supply process is radically changed. Efficiency and the reduction of waste are essential to such activities. For example, irrigation is necessary to ensure satisfactory plant growth, but is not something that adds value that a consumer would pay for. 'I will pay for someone to peel, slice and package my ready-to-cook vegetables in portion-sized oven-ready containers, but don't expect me to pay for the irrigation required to grow them'.

3. **Wasteful**—whole activities on the value-chain map that are neither necessary nor make a product or service more valuable in the eyes of the consumer. These activities should be eliminated because they consume resources but serve no purpose. For example, unnecessary time that products spend in storage or waiting for processing is classified as waste.

In assessing material flow, the number of characteristics mapped and the level of detail achieved will depend on the resources available, particularly time. As a minimum, each major discrete activity in the chain should be identified from the data, then characterised as value-adding, necessary or waste. Activities that create value or waste are often the ones that become priorities for chain-improvement interventions.

Analysing material flow should examine the scope for:

* reducing waste in production, postharvest processing, transport and retailing, and in shoppers' own homes, remembering that activities that cause waste may be upstream from where the waste occurs. For example, vegetables may not last long on a supermarket shelf because they were left too long in the sun between harvesting and collection

* improving the upstream use of information from retailers so that the volume and timing of production and processing is pulled by demand rather than pushed by supply forecasts, which are often inaccurate. This may include a better understanding of how demand and supply vary weekly, seasonally, annually and between different market segments and locations. Failure to address these problems can have detrimental effects on relationships, especially with farmers if demand is overestimated and they have unsold produce or receive a lower price as a consequence

* focusing intervention programs on efficiency and consumer value creation, and crucially distinguishing between the two.

2.10.3 Evaluating information flow data

Information should be collected, shared and used throughout a value-chain to improve the chain's effectiveness (through market orientation) and efficiency (through waste minimisation). Accordingly, the information flow in a value-chain is assessed in order to improve:

* its **effectiveness** by:

  - identifying what consumers value in the final product; and

  - communicating and then incorporating these values in the choice of inputs and during production, processing and marketing activities, including those performed by external chain stakeholders (e.g. plant breeding).

* its **efficiency** by:

  - ensuring the production and processing of sufficient quantity to the required quality and at the right time;

  - maximising productivity on-farm and in subsequent processing;

  - minimising waste during production, postharvest handling, in shops, and during transport and storage, including by consumers; and

  - ensuring that regulatory and consumer requirements are met.

To analyse data relating to information flows and to indicate areas for improvement, the following characteristics are examined:

* **Barriers to information flows**: Where does information not flow or flow partially? Are there operational reasons for this or is it caused by problems in relationships, for example due to a lack of trust? Is information flowing but not being used because of a lack of alignment or commitment?

* **Waste**: On-farm, during processing and in transit, how is information about waste monitored and acted upon, especially where waste arises downstream but its causes are upstream?

* **Delay and distortion**: Does information suffer from delay and distortion as it moves along the chain? This is often associated with poor relationships and can be revealed through investigating the causes of waste.

* **Value-chain strategy**: Is there an agreed strategy, however informal, to align chain members in terms of delivering and rewarding better quality product and service, and targeting consumer requirements? Is there a history of updating any strategy to reflect changes in markets and technology? What are the information sources and channels that enable or constrain such a strategy?

* **Forward planning**: To what extent do chain members share information to enable short-term planning (e.g. harvest dates) and/or longer term planning (e.g. varieties and volumes to be grown next season)?

* **Focusing on the value rather than the volume of information**: Is information communicated indiscriminately, or is it managed and targeted?

* **Format**: Is the most appropriate form of communication media used, for example face-to-face or through the use of mobile phones and other technology?

* **Performance measurement**: To what extent do suppliers and their customers review performance and agree on improvements? How is this process enabled or constrained by the availability and use of necessary information? Is improved performance rewarded through incentives?

A chart showing how information flow data can be coded and then analysed is shown in Figure 19.

2.10.4 Evaluating relationship data

Value-chains' relationships are the foundation of their success. Positive relationships drive the ability to adapt and innovate, while poor relationships usually underlie problems in material and information flows. Based on data gathered during interviews, and sometimes through observations, the strength and potential of the relationships among all value-chain partners, including among key functions within larger firms, are evaluated against indicators of three characteristics: strategic alignment; trust, cooperation and commitment; and power, dependence, opportunism and conflict resolution.

1. **Strategic alignment** is investigated by exploring the following questions:

   * Is there a shared orientation towards the needs of the final market?

   * Are expectations between chain members aligned in terms of increasing returns through efficiency and waste reduction?

* Do members agree on the importance of value-chain thinking, and do they have the knowledge and skills to build strategies on the basis of understanding consumers?

* Do customers incentivise their suppliers on the basis of commitment, quality, volume, reliability, efficiency and/or adding value?

* Are opportunities and risks discussed between chain members? Are mutual responses explored?

* Does contact only take place when required by operational needs, or does it also happen for discussion of longer term issues?

2. **Trust, cooperation and commitment** are identified by examining the data for answers to these questions:

* What is the nature of formal and informal contractual arrangements? For example, is there sharing of risks and rewards for mutual benefit; what is the length of forward commitments (i.e. days, weeks, seasons or years); and what is the frequency and extent of negotiation? If arrangements are informal, vague or frequently change, is there evidence of either party taking advantage? Is there any history of resorting to enforcement action over commitments?

* Is there collaboration involving joint commitment of time, money and expertise to solve problems, and is this reflected in the sharing of risks and rewards?

* Is there open communication, such as sharing sensitive market or price information? Is there honesty and consistency between words and actions?

* Do members understand each other's businesses to the extent that they appreciate the impact of their own actions upon other chain members?

* Are there feedback discussions and do they result in action to improve the chain's effectiveness and efficiency?

* Are the customers/suppliers in the value-chain prioritised compared with other customers/ suppliers? For example, when supplies are short, are the chain's customers prioritised; or when they are abundant, are commitments to the chain's suppliers still fulfilled?

* Are commitments honoured? Is performance delivered reliably, including through timely response to requests? Is there recognition of each other's competency and contribution to the chain?

3. A chain's relationships also reflect the **balance of power and dependence, the extent of opportunism, and how conflict is resolved**. These can be assessed by examining:

* Interdependence: What is the relative importance of the value-chain to each party in the relationship in terms of volume, value, opportunity for increasing income or social ties?

* Asymmetrical power: What is the relative size of the different businesses in the chain? Do chain members have ready access to alternative customers and/or suppliers? Is there a history of opportunism?

* Dysfunctional behaviour: Where one partner has greater power, how is that power used positively or abused? Is there evidence in relationships that information is used as power rather than something to be shared for mutual benefit?

  - What causes conflict between chain members? Are disputes resolved in ways that build or diminish trust?

Charts showing how information flow and relationship data can be coded before analysis are shown in Figures 19 and 20.

Figure 19: Coding for information flow

Outcomes
- Production and processing of
  - sufficient raw material
  - & other inputs (packaging)
  - to deliver required quantity and quality of final product
- Maximising productivity
  - of farms
  - subsequent processing
- minimising waste
  - on farm
  - in factories
  - in shops
  - during transport
  - during storage
- minimising inventory
  - inputs
  - work in progress
  - final product
- traceability requirements
- Informing chain's strategic management
  - Shared visions & decision-making
  - process alignment
  - incentives and mutual benefits
  - transparency of
    - market/sales data
    - costs
    - forecasts
    - performance
- minimising delay/distortion
  - order/demand data
  - forecasts

Mapping
- Intra- & inter- partners
- strong, partial or weak
  - complete
  - credible
  - accurate
  - timely
  - adequate
- direction
  - Uni-
  - Bi-
    - equal flow
    - unequal flow

Behaviours
- Formality
  - Formal (structured, planned, routinised)
  - Informal (unstructured etc)
- Behaviours
  - Positive indicators
    - Information seen as source of competitive advantage
    - Norm: assumption of sharing
    - information exchanged both
    - benchmarking
  - Negative indicators
    - distortion
    - selective disclosure/ opprtunities withholding
    - inventory
- Hinderancies
  - by operations, eg incompatibilities
  - by poor realationships
    - information not flowing (lack of trust)
    - information flowing but not used (lack of alignment)

Figure 20: Coding for relationships

Assessment — **RELATIONSHIPS**

Overall evaluation

- Outcomes
  - Shared
    - Visions
    - Culture
    - Leadership
  - Compatible
    - Structures
    - Processes
  - Mutual alignment of
    - Ability
    - Resources
    - Motivation
  - Commitment to continuous improvement of
    - Products
    - Processes
    - Systems
  - Trust
    - Dependability
    - Predictability
    - Faith (not acting oportunistically)

- Mapping
  - Intra- & inter- partners
  - Extent of collaboration
    - Strong
      - Vertical integration
        - Operational integration
        - Potentially legal integration
      - Joint venture — Legal agreements, but limited scope
      - No end date
        - Significant operational integration
        - Regard other oartner(s) as 'extension'
    - Basic
      - Wider Scope
        - Long term
          - History
          - Forward contracts/expectations
        - Some collaboration
    - Weak
      - Short term
        - Limited contect
        - Limited co-ordination and planning
      - Arms length
        - Transacion/adversarial
        - Price based discussions

Themes

- Quantity of interaction
- Scope of interaction
  - Quality
  - Nature
- Mode of interaction
  - Informal relationships richer than
  - Formal relationships
- Bredth of interaction — Narrow or broad range of functional units
- Level of interaction
  - Senior, strategic
  - Middle, operational
  - Lower, tactical

Part 2.11 Identifying and implementing interventions

2.11.1 Identifying interventions

This stage identifies and prioritises the biophysical, social and structural interventions that will improve chain performance in delivering consumer value.

The previous VCA will enable the design of the preferred value-chain model ('the future state') to supply each of the target market segments. This will involve the preparation of production, marketing and change protocols on which the new best practices will be based, and can be used as the basis for training design. Specifically, these protocols should address the production systems and marketing practices to build the delivery of value to consumers and improve the sustainability and profitability of the value-chains. They should identify what support, skills, incentives and conditions chain participants need to change, and how that can be delivered and facilitated, for example through a learning alliance. Potential interventions could also include proposals for changes to the regulatory and policy environment to remove any constraints on the chain's ability to deliver value to consumers.

In addition to external expertise, developing potential interventions can usefully involve a workshop for the chain actors to discuss the results of the analysis, and contribute their perspectives on improving production and marketing and what they can collectively and cooperatively do to address the problems identified.

2.11.2 Implementing interventions

VCA is a diagnosis, not a cure. The uplift in smallholders' livelihoods and the sharing of value among chain participants will be dependent upon implementing interventions to improve production and marketing practices.

The interventions begin with a collaborative value-chain planning workshop, bringing together all chain participants from the production end to the retail end of the chain to build awareness and understanding of each others' viewpoints, highlight issues to be addressed and develop an annual action plan for chain improvement. In some cultures it may be appropriate to initially engage men and women separately. This workshop involves developing the change protocol—that is, the best practice behaviours for production and marketing for the chain participants and the model of change interventions to be undertaken by the local advisors (e.g. government officials, extension officers, NGOs and private sector agents) to the chain.

This process is then annualised through a yearly performance review and forward action planning process.

Chain improvements are underpinned by a training plan to provide chain participants with the knowledge and skills necessary to facilitate the changed behaviours. This may include establishing learning alliances with farmer 'interest groups', other farmers, various chain participants including 'middlemen', government officials and extension officers, other public and private rural agents, and stakeholders of other projects.

Commencing interventions may involve bringing farmers to the market that they supply to meet with consumers of their product, as well as their retailers and others in the downstream chain, to give them firsthand experience of problems facing those parts of the chain. Fundamentally, this is a powerful awareness-raising and motivating process that links farmers face-to-face with their market.

INTERNALISING LEADERSHIP

Implementing interventions is likely to include regular visits and reflection meetings in local communities to promote the project outcomes and benefits to non-participating farmers and other chain participants. However, it should gradually shift the emphasis from:

* external leadership and facilitation to internal farmer leadership; and

* focal farmers in the chain to non-participant farmers through scale-out processes.

SCALING OUT

An important part of facilitating the scale-out process is the promotion of project findings and recommendations to individuals and groups beyond the focal farmers. This is essentially a promotion and extension process using both the data generated by the value-chain and successful project farmers as credible sources and exemplars. This process can be initially facilitated by the project team but should progressively incentivise and hand over the process to the farmers themselves.

The project team should continually review implementation of the knowledge exchange and adoption framework with the chain actors, and develop new, amended implementation plans on the basis of experience. The mechanism for this will be the annual value-chain collaborative planning process.

Part 2.12 Monitoring and evaluation

2.12.1 The purpose of monitoring and evaluation

This part explains what is meant by monitoring and evaluation (M&E) and why it is important in value-chain development projects, but it is not meant to provide guidance for conducting M&E.

Investments in value-chain research, development and extension (RD&E) are made in the expectation that they will lead to desired improvements in the state of a targeted system, such as a value-chain, with consequent benefits for human welfare, for example improved smallholder livelihoods. The justification for investing in agricultural development is often couched in terms such as reducing poverty or improving food security, health and nutrition. The role of M&E is to assess to what extent a particular investment results in the expected desirable changes in the state of a system. For research funders M&E provides a measure of the value of an investment in relation to other investments that they may or may not have made. For recipients of that investment M&E provides a measure of its immediate and flow-on impacts. For project teams M&E provides an indirect measure of the appropriateness of their methodologies and how well they have been applied.

2.12.2 The practice of monitoring and evaluation

Monitoring is the process of observing and documenting the execution of a project or program to provide data for:

* day-to-day and strategic management; and

* subsequent evaluation of project outputs and outcomes.

The primary role of monitoring is to provide data for analysis and decision-making.

Evaluation uses data to trace the causal links between a research/development/extension investment and its impacts, whether those impacts are intended or unintended. To trace these links it addresses the following questions:

* As a result of this investment, what changed compared with what would otherwise have happened?

* What are, or will be, the impacts of what has changed?

* What is the net value of these impacts?

Investments include both cash and in-kind inputs into a project.

In general, the pathway between a value-chain project's inputs and its impacts follows this pattern:

1. Projects involve a series of purposeful **activities** (e.g. consumer interviews, field experiments, training of extension agents).

2. These activities result in **outputs** (e.g. consumer interviews identify consumer value attributes; field experiments develop a disease management protocol; training results in extension agents with new knowledge).

3. The adoption of outputs results in **outcomes** such as changes in practices or policies (e.g. farmers now grade produce to meet consumer value attributes; new disease management practices are adopted; extension agents use new knowledge to train other farmers).

4. Over time, these outcomes create **impacts** that are the consequences of changes in practice or policy (e.g. farmers' incomes increase from better meeting consumers' needs; losses from disease are reduced along the chain, lowering costs and raising returns for farmers, processors and retailers; training by extension agents raises other farmers' incomes).

This is referred to as the causal pathway of evaluation.

INPUTS ➡ ACTIVITIES ➡ OUTPUTS ➡ OUTCOMES ➡ IMPACTS

To summarise, the role of M&E in value-chain projects is to document and assess the causal pathways of programs and projects. The body of evidence resulting from M&E can be used to answer questions about how/whether value-chain RD&E investments improve the welfare of recipient communities.

In value-chain development projects there is always an element of monitoring that is associated with keeping the project focused, both operationally and strategically, on its objectives. There may also be some evaluation of outputs and outcomes. However, it is not usually until after a project is completed that a full evaluation of outputs, outcomes and impacts is completed, typically by an independent M&E specialist. This approach allows time for the pathways towards impacts to become visible and reduces the risk of bias or lack of M&E experience within project teams.

Recommended reading

It is not the purpose of this manual to explore M&E in any further detail. ACIAR's detailed guidance on assessing the impacts of research can be found at: <*aciar.gov.au/files/node/10103/ias58_pdf_20268.pdf*>.

Reference

Davis J., Gordon J., Pearce D. and Templeton D. 2008. Guidelines for assessing the impacts of ACIAR's research activities. ACIAR Impact Assessment Series Report No. 58, 120 pp. Australian Centre for International Agricultural Research: Canberra, ACT.

PART 3
LESSONS FROM THE FIELD AND CASE STUDIES

3.1 Introduction

Part 3 gives practical lessons learned about undertaking value-chain projects in developing countries. These cover project management, data collection and implementation of interventions.

The lessons highlight general principles that may help readers with their own projects, along with practical examples.

These lessons are then supplemented by the following specific case studies of value-chain research projects:

∗ Case study 3.1: Philippine papayas

∗ Case study 3.2: Pakistan mangoes

∗ Case study 3.3: Peri-urban vegetables in Nairobi, Kenya

∗ Case study 3.4: Nepalese tomatoes

∗ Case study 3.5: Value-chain thinking training in eastern and southern Africa

Case studies 3.3 and 3.4 were undertaken as PhDs, and the others are ACIAR projects. Each explains different approaches, including the use of rapid value-chain analysis (RVCA) as an initial diagnostic; the role of consumer insights and different disciplines in identifying opportunities to improve chains' effectiveness, as well as in consequent interventions; and how the chain members and other stakeholders were involved in the projects.

As relevant, the examples are structured to provide:

∗ the background to the context and objectives of the project;

∗ the research approach, including the problem, project design, fieldwork and resources;

∗ methodological recommendations, to provide advice for those undertaking their own projects; and

∗ examples of value-chain thinking in practice, including outcomes, which can be applied through interventions in other projects and used as examples in training.

3.2 Lessons learned in the field

The following pages give practical examples of lessons learned through field experience in the design and implementation of value-chain-led projects in developing-country settings. The lessons are grouped into three sections:

1. Project management

2. Data collection

3. Implementing interventions.

Each lesson is described in general terms so that readers can see a principle that may apply to their own projects, then supported with practical examples. Some are written in the first person where a project leader or team member has given a personal account from the field. Particular projects or countries are generally not identified, to respect any sensitivities that may arise.

3.2.1 Project management

MULTIDISCIPLINARY RESEARCH TEAMS ARE NECESSARY

Multidisciplinary teams are needed in conducting value-chain research because technical, social, marketing and economic perspectives are always part of the puzzle. Exactly what specialisations make up a suitably qualified team in a particular case depends on the focus of the project and the availability of local talent. In one example a value-chain research project with a strong postharvest technology component was conducted in a developing country that had a strong postharvest research group in one of its agricultural universities. In this case the in-country project team included two postharvest scientists from that university, who were also able to access master's students to conduct experiments that informed some of the project's postharvest research questions. That same in-country project team also included two young marketing academics, an experienced policy and strategy professional working for an NGO, and a project officer with an MBA. Halfway through the project, when it became necessary to conduct research into making value-added products from waste, a young food technology academic was brought onto the team. By that time the in-country team of seven provided expertise across four or five different disciplines. One project leader says:

> The absolute minimum requirement on a value-chain project team is for expertise in technology and marketing.

PROJECT OFFICERS—DON'T START WITHOUT ONE

Any project of more than 6–12 months' duration will benefit from a full-time project officer, the requirement for which should be built into project budgets. Using the project referred to in the previous section as an example, we employed a young agriculturally trained officer who had also done an MBA and was working for an NGO that was a project partner. For an annual salary of less than US$15,000, we were able to ensure that the day-to-day running of the project was kept on track, budgets were monitored, reporting timelines were met, communication lines were active and effective, and involvement in all face-to-face interactions with industry stakeholders included this officer. A project officer can also provide invaluable local cultural and social knowledge for international team members. From a capacity-building point of view, being a project officer on an internationally funded project provides great experience and a significant strengthening of their CV for a young professional.

PROJECT MANAGEMENT SKILLS ARE NOT OPTIONAL

> As project leader I was once asked by a slightly embarrassed project officer how to manage a large complex project. I personally accepted the responsibility for providing training for this young person, including giving him the opportunity to apply for a short-term scholarship to come to Australia for relevant experience. As part of this training he was able to develop a detailed project management plan, which guided his day-to-day and season-to-season project management thereafter.

In most projects it is safe to assume that an in-country project officer will need some level of capacity building in project management skills. One very capable project officer successfully applied at the end of the project for a John Allwright Fellowship to undertake his PhD in Australia. He later said that learning how to manage a large project gave him valuable skills that he applied to his PhD research.

PUBLIC SECTOR PARTICIPANTS EXPAND A PROJECT'S BREADTH AND DEPTH

Value-chain projects may be complex, multidisciplinary and commercially focused, but they don't operate in isolation. Their context and conduct can be strongly influenced by politics, the state of the economy, culture, or local traditions and practices. Therefore, having expertise within the project capable of understanding and perhaps influencing that context is vital. For example, do you need a public servant such as an extension officer or regional manager from a department of agriculture? Do you need access to a religious representative, a university vice chancellor or an NGO? Don't forget that these kinds of people can become powerful enablers of commercial activities, and there is benefit to them, too, in sharing in a project's commercial successes. A word of caution: in considering whether or how to engage public-sector participants in project activities, always first check the protocols of their employing organisations.

We made an error in engaging with a young academic without first getting clearance from the Vice Chancellor.

I didn't realise that the CEO of (an NGO) expected to participate in overseas project planning meetings because two of his staff were project team members.

THE TYRANNY OF LOCAL CONDITIONS

Not all developing countries are safe, despite what the locals tell you. The Australian Government will indicate whether it is safe to travel to a country, but even 'safe' may not mean that it is safe to travel to all parts of a country, especially its rural regions. Restrictions in some countries, for example, require travelling in armoured vehicles and staying in a limited number of safe hotels that are all in major cities; and activities such as field days with growers, visits to markets, walking the chain, and tracking product performance are therefore all off the agenda for Australian team members. Only local team members can carry out these activities, so they have to be fully trained, reliable, able to operate independently, and properly funded to do so. Unfortunately, no matter how well local team members carry out these tasks, members of the project's value-chains and their external stakeholders will still want to see the international team in their locality and may express disappointment when this is not possible. This is a case-by-case situation; don't assume that a value-chain project will have unrestricted access to all parts of a country.

The southern Philippines were out of bounds to Australians so only our local team members could carry out field work there. We had to train our Filipino researchers to higher levels of expertise and knowledge than would normally be the case, because we would not be there to give them on-the-ground training.

MAKE EXPECTATIONS CLEAR; THEN CLARIFY AGAIN

The prospect of a new internationally funded project can raise local expectations beyond what was ever intended or could be achieved. Often this starts when the project's scoping study is carried out. While raised hopes and expectations might seem to be inevitable in addressing a significant value-chain problem using outside funds and expertise, they can also hinder project execution. Most value-chain problems don't respond to short-term simplistic solutions, and results can follow far

behind the effort required to produce them. For example, an opportunity to develop value-chains to provide better quality tomatoes for consumers in Nepal had not been captured 3 years later—expectations had not been met (see Case study 3.4). In a formal sense, every value-chain project is bounded by its proposal documents and research contract. These boundaries must be made clear at project inception and reinforced along the way. What is possible and what is not possible should always be spelled out. An example: a fruit grower in Pakistan would not engage in sea freight trials unless the project purchased the fruit as a way of underwriting the risks of in-transit losses. This was simply not possible within the project's contract and budget even though the risks were low, as the project's researchers had already developed and successfully tested the sea freight system in static trials. Making the boundaries clear meant that sea freight trials with this grower's produce may never be possible.

Finally, remember that in many cultures it is not polite to say 'no', so a question asking whether something has been understood may be answered 'I think so' when the real answer is 'probably not'. Checking whether expectations have *really* been understood is just as important as pointing out what the expectations are in the first place.

FINANCE AND BUDGETS—PROBLEMS IN THE MAKING

International project funding is understandably attractive to local stakeholders in developing countries, yet systems of accounting and financial control may not be as well developed as funders would like. Managing funds internally can be an unavoidable headache, but addressing financial management at the very beginning of a project is critical. This is not just a matter of clarifying which institutions get what funds; it also involves clarifying how budgets will be calculated and how expenditure of those funds will be acquitted. Organisations may have their own accounting systems but having project funds tied up in bureaucratic internal processes can be frustrating or can impede fieldwork. In one example it took a face-to-face meeting between the Australian team leader and the CEO of an in-country organisation to avoid that organisation taking a disproportionate and unbudgeted share of project funds to cover what it claimed were the internal accounting and auditing costs of running its part of the project.

Changes in exchange rates can be another problem. Projects' budgets are formulated assuming an exchange rate that will almost certainly be different by the time the project actually starts, and can be very different by the time the project finishes. How these fluctuations will be managed must, like issues of accounting and auditing, be agreed at the start of the project.

> *We had a long-term value-chain research project in a country whose currency gradually weakened, and we were able to accumulate a reserve of funds because fewer dollars of the project's budget were required to carry out each in-country component of the project. The funds we were able to accumulate in this way were sufficient to extend the project by one more season, to the benefit of everyone involved.*

Note that the alternative in this case would have been to continue sending the originally budgeted amount in Australian dollars converted to local currency at the prevailing exchange rate. This would have provided much more than the amount actually required to fund the planned in-country project activities, enabling the opportunity to conduct more activities in the original contract period.

LONG-TERM PROJECTS ARE BUILT ON DAY-TO-DAY SUCCESSES

Value-chain projects may run for 6 or 7 years, relying on numbers of in-country teams working across multiple regions and involving hundreds of participants. Some also involve research in distant export markets. These are value-chain projects of significant scale and scope, and their

management is made all the more challenging by the complexities of working in a developing country. Long-term success needs careful planning and effective strategies, but it also comes from paying attention to day-to-day operations.

> *In my projects, workplans are essential in managing day-to-day operations. They are built from the project's agreed annual research plans (there is an annual review and planning process) setting out the activities required to achieve each component's objectives for one cycle, whether it be a breeding cycle, a season, a month, or whatever timing is relevant to the project. Workplans also attribute responsibility and timelines. We describe them as plans that set out 'who will do what by when'.*

In a typical value-chain project, workplans are developed by each in-country team (e.g. animal breeding and nutrition team, postharvest team, extension and training team, value-chain and marketing team), and they are coordinated and overseen by the project development officer, who also develops a workplan for his own component. Once agreed on, these plans not only guide day-to-day decision-making, but also provide a framework for monitoring and reporting progress. Additionally, workplans clarify lines of communication and areas of responsibility.

The importance of being flexible and responsive to changing circumstances cannot be overemphasised. Plans rarely proceed without the need for modification—seasons change, people change, disasters happen, politics change, and so on. Adapting to change keeps projects on track, and clear lines of communication among in-country teams and between the project officer and overall project leader are essential in being able to respond to changing circumstances.

> *The unexpected withdrawal of an in-country commercial partner required that we refocus the project completely on developing domestic rather than export value-chains.*

In other examples: sudden political unrest meant that fieldwork by Australian team members had to be abandoned so that they could immediately fly out of that part of the country; a change in leadership of the lead in-country organisation meant that a new lead organisation had to be found at short notice; research identified significant opportunities for products not envisaged in the original project proposal. These examples illustrate the need for adaptability and flexibility at every level of a project's operation.

GENDER

Many value-chain projects explicitly mention gender issues in a target country. Sometimes these are written as project objectives, such as to 'work with women so as to strengthen their role in …'. In other examples they are mentioned to provide guidance for project activities, such as 'to conduct project activities in ways that respect differing gender roles in the community'. Understanding gender roles is a starting point for all value-chain projects. In some societies women commonly engage in retail activity while men are the primary producers. In others these roles may be shared equally, or men may be responsible for all farming and commercial activities outside the home or village. Being sensitive to these differences is crucial to project success and must be reflected in annual plans and day-to-day operations.

> *In our value-chain project, raising the profile of women was an important objective, so a conscious decision was taken to ensure that project research teams featured female membership, and their roles and contributions were highlighted whenever we held seminars or workshops, and in communications and reporting about the project.*

CULTURE

As value-chain projects always operate within a local, regional and national culture, it follows that cultural familiarity is essential to understanding why and how a project operates as it does, and in being able to adapt in positive ways if circumstances change. Without support and guidance from local team members, this is not possible—there is no substitute for a 'trusted local' when it comes to operating within a particular culture. Sometimes the results of not paying enough attention to cultural sensitivities are not immediately obvious because participants are too polite to directly point out what is happening.

> *Without realising it, we put members of opposing groups together in the same value-chain building exercises. This led to poor commercial results that were difficult to explain until sometime later when we were politely told what we had done. We had not been culturally aware, but local team members didn't know how to tell us.*

Familiarity with culture can avoid costly mistakes and wasted time and effort.

3.2.2 Data collection

VALUE-CHAIN RESEARCHERS NEED TRAINING

> *In twenty years I have never encountered a value-chain research project where it is possible to assume that researchers could collect the required data without some level of pre-training. Being clear about the purpose for collecting data is an obvious, although sometimes overlooked, starting point because unclear objectives lead to either too much data being collected in the hope that 'what we need will be in there somewhere', or key data being missed.*

Data collection is expensive, some methods may be unfamiliar, some team members may not have collected value-chain data previously, and most team members will not have worked together before. For these reasons clear objectives and pre-training are essential starting points. Training should emphasise the importance of rigour in data collection for research, dealing with topics such as sample selection, validity and reliability. It is easy and necessary to set up training exercises where small teams can practise methods such as semi-structured interviewing or running a focus group under the guidance of an experienced team member. Data collected from training activities should be scrutinised for evidence of rigour in the collection process. Pre-training activities are an investment not only in project success, but also in the capacity building of researchers and in exposing them to the conduct and value of multidisciplinary teams.

KNOW YOUR GATEKEEPERS

Gatekeepers are people who can help researchers gain access to places, institutions, departments, businesses and other people of relevance to a project. Think of them as enablers of value-chain research. Examples of how gatekeepers can help include: getting access to remote ethnic minority farmers who were targets for value-chain development; organising a meeting with representatives of a global supermarket chain to discuss in-store consumer research; getting approvals to undertake trial marketing in tightly controlled wholesale markets; and introducing a project leader to a government minister who controlled funding that could augment project funds. Knowing that you need a gatekeeper follows from knowing what data you need to collect, and how. In practice it's a case of following 'someone who knows someone' until a helpful gatekeeper is found. Trying to go it alone can be frustrating, expensive and unproductive.

RECORDING, TRANSLATING, COLLATING, STORING

Knowing where and how to collect data is the important first step, but other steps follow. Data must be recorded, often translated, then collated and stored so that they can be analysed. How data are recorded depends on the situation, but hand-written notes, voice recordings (with permission) and still and video images (with permission) are common when the collection methods include interviews, focus groups and observations. As simple as it sounds, inexperienced researchers may need training and practice in the skills of note-taking, voice recording and capturing useful images. Data collected in local languages need translating for other team members. The act of translation itself can introduce bias or errors into research, so the choice of translator and checking the quality of translation are important considerations.

> *When we interviewed ethnic minority farmers in Vietnam it was necessary for two levels of simultaneous translation, one into the national language then another into English, so that Australian team members could participate in the interviews.*

Collating data soon after collection is one way of ensuring completeness, identifying missing information, checking progress towards sample size targets, or identifying the need for follow-up. Once collated, data should be stored safely, which usually means digital data stored in two separate places, hand-written notes stored in a safe place, and images saved to a secure file. Having the only copy of a dataset on a memory stick somewhere in a drawer or cupboard is unacceptable research practice.

3.2.3 Implementing interventions

In development settings the purpose of value-chain research is almost always to identify improvement opportunities. Converting opportunities into actions involves some level of intervention.

GETTING READY—COMMUNICATION AND A BUSINESS CASE IMPROVE THE CHANCES OF BEING SUCCESSFUL

There are three guiding principles in preparing to intervene so as to improve a value-chain system:

1. Be clear about the objectives of the intervention.

2. Be sure that collaborators and stakeholders are fully informed and, to the extent possible, have committed to the intervention.

3. When interventions have a commercial intention, develop a business case for what is being proposed.

In practice, lack of clear objectives or not being able to explain the business case behind a commercial intervention can severely reduce the confidence and commitment of collaborators, which subsequently impacts on the effectiveness of the planned improvement to the value-chain. In one case a farmer withdrew at the last minute from an export trial (the intervention) involving his product when he discovered that the project was unable to underwrite the risks involved and pay him the full price for his product regardless of whether the trial was successful or not. Although there was a strong business case for the trial, no-one had thought to check that the farmer was willing to take the risks involved because, to the researchers, those risks seemed miniscule.

INTERVENTIONS IN THE FIELD

Gatekeepers: Gatekeepers are as important to value-chain interventions as they are to data collection. They can give access to markets, producers, policymakers, regulators and others whose involvement or permission make an intervention possible. Some examples from value-chain projects: an influential farmer rallied smaller farmers to become involved in group marketing; a cooperative retailer gave access to her wholesale supplier in setting up a marketing trial; and a university classmate of one of the researchers gave access to export market regulators. Sometimes the gatekeeper can also act as a 'chain champion' (i.e. publicly advocating for the intervention/project) or the 'chain captain' (i.e. a participant who takes a leadership role within the intervention activity, such as the farmer who rallies other farmers).

> *The consolidator company was large and powerful. It operated in the middle of the value-chain, managing many growers on the one side and managing supply to the major retailers on the other. We could not have achieved the positive changes in how this value-chain operated without the full cooperation of this company at every level. We were so grateful that one of our team members from a local university had worked with the company before and introduced us to its CEO.*

Scale: Value-chain interventions are typically small in scale, usually as a means of reducing risk to both the project and the participants. Starting small also means that fewer collaborators are needed, helping to reduce the likelihood that 'free riders' will be involved. Free riders try to capture the benefits of an intervention without having to do the work or make changes in their practices. Experience shows that a small successful intervention can grow into a much larger improvement initiative based on the subsequent involvement of those who watched and waited before committing to change.

Push back: Interventions mean change, and change creates resistance. Value-chain interventions by definition involve participants along the producer-to-consumer chain. Some of these may welcome change, and others may not. For example, middlemen who control markets, information and credit may not see any benefit to them in a change in practice whose objective is to provide farmers with better information or a more equitable share of the consumer dollar.

> *Middlemen pushed back by telling our farmers that if they became involved in the project they would no longer market their products or provide them with credit.*

Retailers may resist change if it is seen as potentially upsetting their ability to procure supplies from their wholesalers, or if it involves a change in pricing strategy or an investment in promotion. Even consumers can resist change if it requires altering traditional habits of buying, storing, cooking or eating. Researchers need to remember that while traditional behaviours and practices may have given rise to the need for a change, traditions are important to people and can provide powerful motivations to resist change. Positive research results are one thing but achieving positive changes based on these results can be an entirely different challenge.

KEEPING INTERVENTIONS ON TRACK

Things don't always go to plan, especially in developing countries, where it is common for technical and institutional systems to operate with less certainty. Managing the progress of an intervention in these circumstances requires that:

1. There are clearly stated objectives and they have guided the development of a workplan.

2. There is a formal process of monitoring what is happening in the field versus what was intended to happen in the workplan.

3. Feedback from monitoring is used to develop and implement corrective actions where necessary.

Some examples: a sea freight container that was part of a market development trial was opened for inspection by anti-drug authorities and its critical controlled atmosphere conditions were compromised; protests in the lead-up to elections stopped Australian team members travelling to the country to deliver training; fibreboard cartons manufactured locally in a developing country proved to be too weak for exporting by sea, despite assurances that they were made to the required specifications; wholesalers sold high-quality products produced through a project at lower prices than traditional products so as to avoid upsetting traditional pricing arrangements that worked in favour of wholesalers and against producers; an exporter withdrew support when it became clear that higher quality product produced through the project made his own product look inferior; changes in leadership in a government department resulted in support for a new local initiative in favour of an externally funded value-chain project that was already operating. In each of these cases, monitoring workplans so that team members knew what was happening allowed corrective actions to be taken to get the intervention back on track or minimise losses. Remember that having a plan for an intervention is very different from having a plan to keep it on track.

Finally, as a value-chain project is system-based and many activities are usually happening at once, don't forget to monitor *across* interventions as well as *within* each of them. Sometimes what is happening in one area can impact (positively or negatively) on what is happening, or planned, in another. In value-chain projects interventions are usually not independent of each other. In one livestock value-chain project, for example, improved animal husbandry practices that reduced the time spent by women in this activity unexpectedly gave them time to engage in commercial income-generating activities. In another project,

> *Our market monitoring revealed that green plums traditionally used for alcohol production and in semi-industrial applications were in strong demand from the neighbouring country, and that their buyers would be encouraging our farmers to strip their plum crops well before they were ripe for fresh markets as planned by the project.*

Case Study 3.1: Philippines papaya value-chain

BACKGROUND

In the Philippines papaya is a widely consumed fruit. One of the major growing areas is in South Cotabato in the southern Philippines, but the major population centre is in Manila, 1,600 km to the north. Because the Philippines is a country of more than 7,000 islands, papaya are transported from South Cotabato to Manila by boat, a 3–5-day journey. Their perishability means that losses from farm to retail are high and the quality of fruit offered to Manila consumers does not always meet their needs. The cost of these losses is factored into prices received by farmers, who are mostly smallholders and mostly poor.

RESEARCH APPROACH

Focus: This project focused on the challenge of improving the livelihoods of smallholder papaya growers in South Cotabato by producing and delivering better quality papaya to Manila consumers and being equitably rewarded for the effort involved. This was a very small

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project. Available funds meant that it was restricted to one case study, 2 years' work and a four-person research team, two each from Australia and the Philippines.

Boundaries: All businesses involved from production to consumption were considered within the project's boundaries, even though security concerns meant that only local project team members could travel to South Cotabato. External stakeholders had minimal involvement because of the nature of the case study and the small size of the project. Nevertheless, a value-chain framework was deemed appropriate to working within these limitations.

Scope: The scope of the project was to consider what consumers in Manila would value and pay for if papaya quality was improved; how this could be achieved technically; and how a value-chain should operate so as to equitably share the costs and returns associated with quality improvement.

THEORETICAL FRAMEWORK AND METHODOLOGY

The theoretical framework reflected the project's focus on value to the consumer and whole-of-chain strategies. Thus, a value-chain approach was adopted and four integrated areas of research were proposed:

1. to improve product quality;

2. to improve market response;

3. to improve the performance of value-chains; and

4. in each of the other three areas, to build in-country capacity.
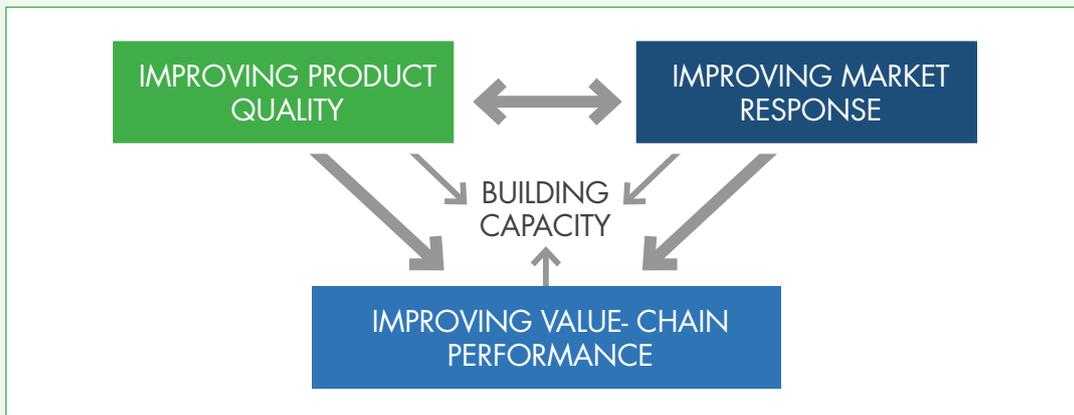
PROJECT DESIGN AND FIELDWORK

The project ran from 2009 to 2011, but interestingly was continued by the local research team after 2011. It was designed based on findings from a result of an RVCA undertaken over a week by two Australian team members with local support. One objective of the scoping study was to identify potential case studies, a process that eventually delayed the initiation of the project. The RVCA involved walking the chain from retail back to growers—at that time one growing region could be visited by Australian team members with fewer security issues. The project proposal was accepted for funding by ACIAR and began in 2009.

The first project activity was a 5-day value-chain research training workshop for the Filipino

members of the research team, also attended by two officials from a government agency. None of them had previously used, nor knew about, value-chain research frameworks, but they had strong disciplinary backgrounds in postharvest technology, marketing, economics and policy. Training included a mix of classroom sessions, group discussions and field visits to wholesale and retail markets. These visits gave valuable insight into the design of consumer research.

A suitable case study was confirmed and commercial confidentiality provisions agreed on. Research on consumer value attributes began with two focus groups, the results of which informed the development of an intercept survey instrument. A total of 232 consumers were surveyed in supermarket retail outlets in Metro Manila. Results highlighted the importance of freedom from blemish and damage, and expected sweetness (judged by skin colour and firmness) as key quality attributes. Two distinct segments were identified based on age and family income. Younger consumers with higher incomes (44% of the survey population) were more discerning about quality. Almost half the consumer population were frequently disappointed with papaya, the majority because of lack of sweetness and/or uneven ripening, both of which are due to lack of maturity at harvest. Almost 90% said they would pay more for higher quality papaya.

Chain mapping began with the large category management business that controlled stocks and flows of papaya in the case study. Mapping this business's processes, information flows and relationships identified the key members upstream and downstream of them in the chain. These were similarly mapped and interviews were held with their managers. Growers were interviewed by local research team members because the security situation did not allow Australian team members to travel to those areas. A current state map of the value-chain was produced (see below).
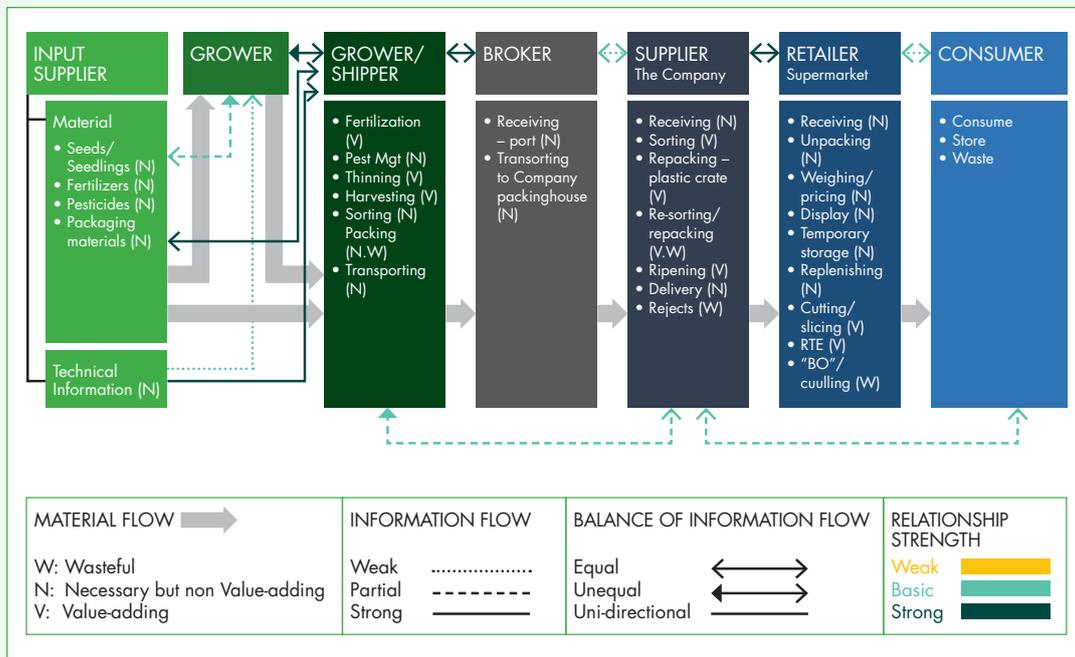
Analysing the current state of the chain showed that information flows were partial or weak, relationships mostly basic, consumer insights poor, and strategic alignment between firms weak. These results were validated in meetings with key managers of the category management company. A number of potential value-chain improvement projects were then identified, each shown as a yellow star in the map below. For example, the star in the top left-

hand corner under 'input supplier' signifies an opportunity to improve chain performance by sourcing varieties with sweeter fruit.

MATERIAL FLOW	INFORMATION FLOW	BALANCE OF INFORMATION FLOW	RELATIONSHIP STRENGTH
W: Wasteful	Weak ··········	Equal	Weak
N: Necessary but non Value-adding	Partial -------	Unequal	Basic
V: Value-adding	Strong ———	Uni-directional ——→	Strong
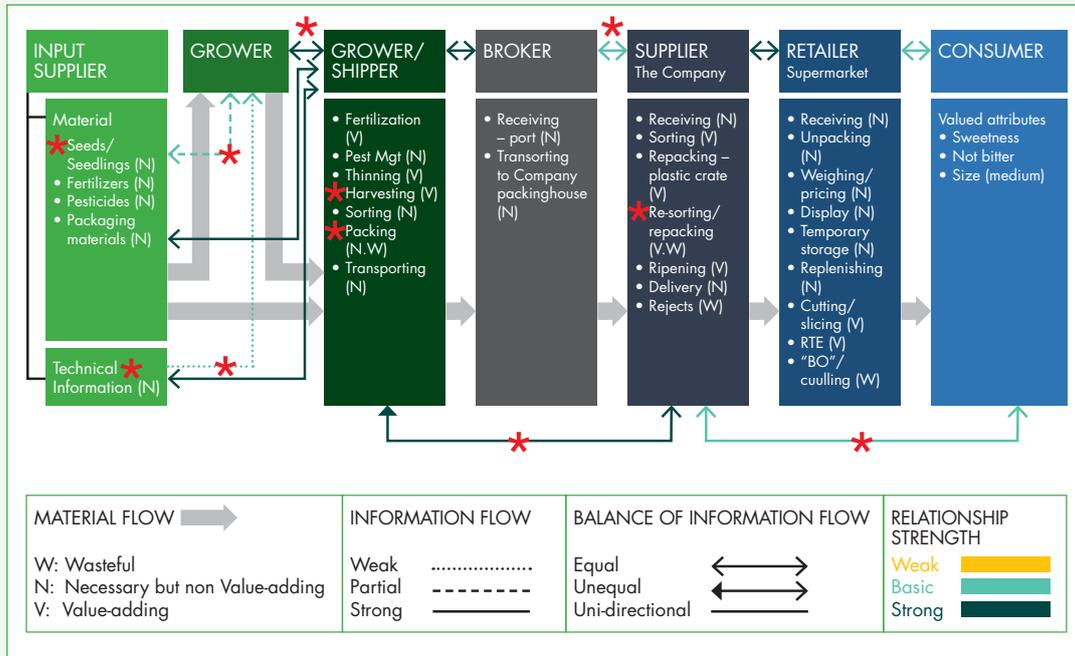
Because of the limited budget and scope of this project, the key improvement target chosen was sweetness to the consumer. Sweetness of the existing varieties was determined by the stage of ripeness at harvest, so much of the subsequent research concentrated on the relationship between harvest timing, susceptibility to disease and breakdown in transit, shelf life and consumer response to sweetness. Results demonstrated that: very few papaya at retail exceeded the point at which a papaya was deemed to be sweet (shown in sensory trials to be around 11 degrees Brix, which measures sugar content); later harvested fruit were sweeter but more susceptible to disease and therefore required special storage and handling conditions; sweeter fruit, if handled correctly, had no greater losses in-transit and no shorter shelf life; and consumers would pay more for sweeter fruit.

Returns to growers increased; the category management company was satisfied; retailers saw the benefits; the case study was documented as a lesson for other smallholder papaya growers; and these growers in 2012 were able to use the improved system to export to Singapore, traditionally a very quality-conscious market.

RESOURCES

The project team comprised two Australians with expertise in value-chain research, consumer behaviour and systems thinking; and two Filipinos who were university academics with expertise in postharvest science, marketing and economics. Three others from the same university, all with postharvest expertise but wanting to apply it in a value-chain framework, joined the team. The total budget for the project was A$180,000 over 2 years, funded as part of a much larger program by the Australian Centre for International Agricultural Research.

METHODOLOGICAL RECOMMENDATIONS

Choice of case study value-chains: Choosing this case study chain highlighted the very important role of a lead firm, or chain captain. In this case the large category management company powerfully controlled the papaya chain, although there was no evidence that it abused this power. Once its CEO was convinced of the value of the project, other businesses in the chain were easily engaged. Identifying whether there is a lead firm or chain captain would be a helpful starting point for choosing chains with which to undertake research, and in building demonstration chains.

Balance of team members' skills: This case study would not have been possible without its strong postharvest science component. Many of the quality-related problems required a sophisticated understanding of fruit physiology and microbiology. This could often be the case, so ensuring that a team has the required scientific skills should be given high priority. On the other hand, local team members learned how to conduct complex analysis of consumer buying behaviour, trained by the Australian team expert but not requiring that person to be in-country. With limited travel budgets, training at a distance may be the only option.

EXAMPLES OF VALUE-CHAIN THINKING IN PRACTICE

Collaboration among farmers: The South Cotabato growers in the project had to collectively adopt new harvesting standards for value-chain improvement to be successful. The new standards were more exacting than traditional practices, so willingness to collaborate had to be matched by greater attention to detail.

Consumer orientation: Consumer response was a make-or-break factor for this project. Although survey-based research showed a willingness of consumers to pay more for better quality, only a real market test could confirm this. Until that time the payoff for the considerable investments of time and effort made by chain members was uncertain.

Innovation: The project has developed new harvesting standards as well as new handling and shipping guidelines. These are focused on getting sweeter fruit to the consumer with minimal in-transit losses. In the absence of a collaborating group of growers and with a cooperating category management company, they are innovations that will be difficult for competitors to copy.

Sustainability: Early indications were that increased prices to consumers translated into better returns to the category manager, who also had less wastage and unsold product, and better prices to farmers. If this continues in subsequent seasons the project will have had a sustainable impact. The capacity of the group of five academics to undertake value-chain research projects with a strong postharvest component has been established, proven by their continuation of this project after its formal completion date to address papaya export value-chains to Singapore. Future projects in the Philippines will have access to this value-chain research team.

Impacts on the industry: Such a small project was never expected or designed to address industry-wide problems. In creating one demonstration value-chain where consumers, middlemen and growers all benefited from value-chain research, it models for the wider industry how agencies in future might think about investing development funds.

Case Study 3.2: Pakistan mango value-chain

BACKGROUND

Although Pakistan is one of the world's largest mango producers, yields are low, farmers are poor, production and postharvest systems are inefficient, practices are unsafe, export performance is low and wastage rates are high. In spite of these issues, the major Pakistan mango varieties have superior consumer attributes, costs of production are low, availability of labour is high and time of harvest is favourable for export markets. This project was conceived as an opportunity to demonstrate how improved postharvest practices, better marketing and value-led chains could satisfy markets while improving farmers' livelihoods. It has been funded by the Australian Centre for International Agricultural research (ACIAR) over the period 2006–15.

RESEARCH APPROACH

Focus: This project focused on the Pakistan mango industry, from harvest through to consumers in domestic and export markets. It collaborated with a second but independent project whose goal was to improve Pakistan mango-production systems up to harvest.

Boundaries: All businesses involved from harvest to consumption were considered within the project's boundaries; thus, a value-chain approach was appropriate. This meant that farmers, collectors, primary and secondary wholesalers, exporters and retailers were targeted by the research. External stakeholders such as extension agents, a government-funded export development company, universities and government departments were also heavily involved.

Scope: The scope of the project was to consider all value-related improvement options, including meeting consumer needs, equitable sharing of value, reducing waste and improving efficiency. Governance relationships were an essential consideration as smallholder growers had little influence on chain activities.

THEORETICAL FRAMEWORK AND METHODOLOGY

The theoretical framework reflected the value-chain nature of the project. Based on value-chain management principles, four integrated areas of RD&E were proposed:

1. to improve product quality;

2. to improve market response;

3. to improve the performance of value-chains; and

4. in each of the other three areas, to build in-country capacity.
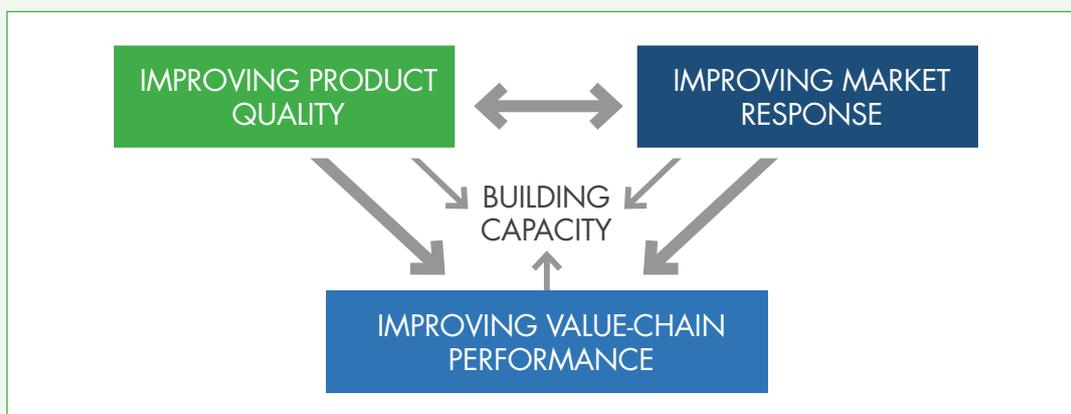
PROJECT DESIGN AND FIELDWORK

The project was designed in 2006 through two linked activities. The first was a 2-day workshop in Pakistan with all stakeholders from the industry (about 100) to discuss and document what they saw as the industry's potential and the main barriers to achieving that potential. The workshop produced prioritised lists of researchable topics to be considered for inclusion in the project.

The second activity was a 10-day RVCA by four Australian team members supported by local facilitators. This analysis was based on interviews and field visits involving representatives from every stage of the value-chain, including importers in Singapore as well as external stakeholders such as government officials (Collins et al. 2006).

The project proposal was accepted for funding by ACIAR and research began in 2007.

Initial market research based on intercept surveys of consumers in both domestic and export markets, supported by interviews with importers and retailers, identified consumer value attributes as well as downstream problems in the current state of chains serving each market. Common product attributes valued across most market segments were freedom from blemish and good skin colour.

Research began immediately to map chain processes for different markets and varieties, with special attention to waste and inefficiency. This mapping highlighted opportunities for technical improvements that were within the scope of the project, such as reducing sap burn on the skin of mangoes due to poor harvesting practices. At the same time interviews with wholesalers confirmed their power in the value-chains—upstream they controlled harvesting contractors and thus the prices farmers received, and downstream they controlled such volumes of fruit that small retailers also had little bargaining power. Very little information flowed in either direction that could be used for decision-making. Relationships were based on power.

The project team of five Australians and, at that time, three Pakistanis conducted postharvest fruit quality research at the University of Agriculture Faisalabad. Better quality fruit was test marketed in domestic and export markets to assess its ability to meet consumer value expectations and to quantify its value. Demonstration value-chains were set up among commercial operators who were motivated to be involved. These included growers, retailers and exporters. In general, middlemen were reluctant to become involved.

Extension and training activities consumed a significant proportion of the project's time and resources. Numerous on-farm field days and workshops were held during each harvest

season from May to September. These always included a hands-on component where farmers, contractors and other stakeholders could practise the improved techniques being developed. Simple posters and booklets, in local language where appropriate, were produced and distributed. Pre-season workshops with the main exporters were held annually to provide updates on product quality improvement research and market feedback from the previous season. Government officials, extension workers and other stakeholders were invited to all training and capacity-building activities.

RESOURCES

As mentioned, the project team started with five Australians and three Pakistanis, but by 2013 had expanded to eight Pakistanis, including new expertise in marketing, food technology and strategy/policy. From 2006 to 2015 project funding from ACIAR totalled approximately A$3.3 million, and significant in-kind contributions were made by both Pakistani and Australian government institutions.

METHODOLOGICAL RECOMMENDATIONS

Demonstration value-chains: The concept of focusing on creating demonstration examples of value-chains has proved its worth. It would be impossible and impractical to thinly spread limited resources across such a huge industry. Concentrating on markets, technologies and people that offer the greatest potential for improvement and the ability to demonstrate how value-chains can work in spite of an industry's problems and barriers has proven an efficient way to focus limited resources.

Cultural challenges: Countries such as Pakistan present cultural challenges for value-chain research by westerners. For example, it can be difficult to apply common research methods such as intercept interviews with consumers—women may make household decisions but men do much of the food shopping. Female research team members must be aware of cultural sensitivities they may not have encountered before, but they provide opportunities to gather data from other women where men could not do so.

EXAMPLES OF VALUE-CHAIN THINKING IN PRACTICE

Collaboration among farmers: In the two major growing areas, groups of mango growers have emerged, brought together by common interests in marketing better quality mangoes, particularly to export markets. These groups market under their own brands, adopt the project's 'best practice' systems, use project market intelligence, and receive technical support and training from project team members. One of these groups, Sindh Mango Growers and Exporters, has used the project's research results and resources to build its own value-chain and has become the first to successfully sea freight Pakistan mangoes under controlled-atmosphere conditions to the European Union (EU).

Consumer orientation: There has been a positive response from domestic consumers to higher quality mangoes sold at higher prices. The traditional view that Pakistani consumers want the cheapest mangoes and will tolerate poor quality to get low prices is not the case in the middle- and upper-income market segments. Here consumers will pay significantly higher prices for quality, sufficient to cover the additional costs of improved production systems. In export markets such as the EU and China this distinction is even greater. Here there are very high margins for high-quality fruit and little interest in anything else.

Improved information: The project produced a wide range of materials for mango growers to improve their postharvest systems. As already mentioned, it also conducted many field days and workshops as a means of communicating with growers and other chain members. On the other hand, market intelligence is generally not available in Pakistan, largely due to control exerted by middlemen. Larger growers who have improved their access to market information through participating in the project's activities have in general adopted value-chain models that allow them to deal directly with retailers and importers for feedback and forward planning. As part of this process they make face-to-face visits with retailers and importers that, over time, will strengthen relationships between them.

Innovation: The project has developed new low-tech harvesting systems that eliminate sap burn, a major cause of quality losses; ripening systems that do not involve dangerous calcium carbide; market entry strategies for China, a new market; long-distance sea freight systems from tree to plate; and confidence in improved systems that allows the development of value-based relationships among growers and with other chain members.

Sustainability: The test of sustainability is whether the project's outcomes become impacts after the project has finished. Early indications are that groups of growers that are focused on building their own value-chains, even one group of poor smallholder growers, will need less and less support from project team members over time. In-country capacity to carry out postharvest and market research without external assistance is well established through the project, so progressive value-chains will have access to local expertise beyond the life of the project.

Value-chain thinking and the future: The Pakistan mango industry will be dominated by hundreds of thousands of poor smallholder growers and powerful middlemen for the foreseeable future. Some things are changing, however. As a direct result of this project, thousands of growers know how to produce higher quality mangoes. Many will do nothing with this knowledge in the short term, but a few are committing to improved growing and postharvest practices combined with a more active involvement in their markets. Through the value-chains they are building they aim to deliver mango quality attributes that consumers want and will pay for, in return for higher prices and/or greater sales. These demonstration value-chains, some breaking new ground such as through sea freight, others very modestly improving their linkages with local markets, will increasingly serve as examples from which others can learn. Pakistan extension agencies and private-sector stakeholders can provide the mechanisms through which the project's benefits could impact a much wider audience.

VALUE-CHAIN PROJECT BENEFITS

Access to higher value markets: The needs of consumers and retailers in China, the EU and high-value segments of domestic markets have been documented and market entry strategies identified. Prices in these markets more than compensate for the extra cost and effort involved, so long as returns are shared equitably with growers. In 2014 'best practice' mangoes were produced by a farmer group at a cost of about 35 Rupees per kilogram (Rs/kg). These were retailed domestically through a supermarket for 109 Rs/kg compared with standard quality mangoes selling for 79 Rs/kg. Sales were rapid. Farmers received 70 Rs/kg for this fruit (a gross margin of 35 Rs/kg) instead of 40–50 Rs/kg for traditionally produced fruit (a gross margin of 20–30 Rs/kg).

Reduced waste: A project study in 2007–08 quantified the losses from harvest to the consumer in domestic mango chains in Pakistan. Across the two main varieties, for every 100 mangoes on the tree at harvest, about 25 reached the consumer (i.e. 75% waste).

Best practice systems developed by the project have reduced this to 10–20% depending on seasonal conditions, as high temperatures and strong winds are common during the harvest season. Other main causes of waste were the high disease load of fruit at harvest, poor transport and packaging systems, and poor temperature management. Each of these factors has been successfully addressed by project research, and management approaches have been developed and demonstrated to growers and other chain members, and documented in printed material distributed to the industry.

Reduced costs: In reducing waste, cost per unit sold has been reduced. Some improvements involve little or no extra cost, such as sap-burn management. Others such as sprays for disease control add to costs, but at a rate less than the value of product saved, even at traditional market prices. Costs to retailers through less wastage from disease and breakdown also improve their returns.

REFERENCE

Collins R., Dunne A., Campbell J. and Johnson P. 2006. A constraints analysis of mango supply chain improvement in Pakistan. Australian Centre for International Agricultural Research: Canberra, ACT, Australia.

Case Study 3.3: Peri-urban vegetable value-chains in Nairobi, Kenya

BACKGROUND

Rapid urbanisation in developing countries has intensified the role of peri-urban agriculture in providing cheap food, employment and livelihoods to small-scale farmers and traders. About 25% of Nairobi's fresh vegetables come from peri-urban chains that are characterised by extensive use of untreated waste water and overuse of pesticides and fertilisers. In addition, chain members have low levels of resources, skills and technologies; land use is unregulated; markets are congested and dirty; customer service is poor; and sharing of market information is limited. Conversely, consumers want cleaner, safer, yet affordable vegetables; chain members need higher returns; and the government wants production and marketing activities that do not threaten food safety, public health and the environment.

Use of untreated waste water from broken sewer pipes such as this is not uncommon. This practice poses great health risks to unsuspecting consumers of these vegetables.

PROJECT DESIGN AND FIELDWORK

This project, which was undertaken as a PhD study at The University of Queensland, Australia, in 2008–12, looked at the scope for upgrading peri-urban vegetable value-chains, specifically kale/spinach supplies in Nairobi. Data collection took 6 months and was conducted using documents, observations, interviews, discussions, mapping and surveys. Through factor analysis it was found that consumers of fresh vegetables in Nairobi fell into distinct segments depending on their

A researcher interviews a buyer of kale and spinach at a street vendor's stall in a low-income residential estate in Nairobi.

preferences for product quality, clean production, market condition and customer service. Using a multistep cluster analysis, 418 consumers were classified into the following four heterogeneous segments:

1. Prestigious shoppers (25%) sought high-quality products and superior customer service at supermarkets.

2. Safety sceptics (16%) were especially concerned about the quality of irrigation water in peri-urban production, and the levels of chemical usage.

3. Market enthusiasts (18%) sought better market facilities, product appearance and buyer–seller relationships.

4. Ethics crusaders (41%) wanted greater courtesy and transparency.

CONSUMER RESEARCH FINDINGS

John Macharia, the project leader, reports that, 'Our consumer research identified two opportunities for vegetable value-chains. First, the preferences of market enthusiasts and ethics crusaders—accounting for almost 60% of consumers—would be met better if Nairobi City Council, traders and stakeholders worked together to improve market conditions and customer service, and to reduce market levies. These changes would increase chain responsiveness by meeting the needs for

Some of the retail outlets in Nairobi are in poor conditions, especially during the rainy seasons, and have limited facilities such as toilets, tap water and storage space.

cheaper vegetables, cleaner markets and better customer relationships'.

'The second opportunity comes from meeting the preferences of prestigious shoppers and safety sceptics for fresher and safer vegetables. Farmers would need to use less contaminated waste water and only recommended levels of pesticides and fertilisers, with extension providers educating them on good agricultural practices and researchers developing appropriate technologies whose adoption would be enhanced by improved credit availability. This approach would facilitate the supply of clean, high-quality produce that, through higher prices, would generate more income for the value-chain.'

METHODOLOGICAL RECOMMENDATIONS

John drew a number of lessons from the fieldwork. 'We found that low-income consumers were less willing to answer questions, partly because they did not understand their purpose, so we had to rely more on observing shopping habits and listening to the questions shoppers asked retailers. Similarly, street vendors were often reluctant to participate themselves and discouraged their shoppers from answering questions, especially if they were selling produce from suspect sources. However,

Using good agricultural practices, small farmers along Nairobi River could produce large amounts of fresh, clean and safe vegetables such as these, thereby providing affordable food to consumers and stable incomes to small chain players.

cooperation improved after building rapport through the initial period of observation. Conversely, supermarket shoppers were more forthcoming about why they chose to shop there, and what problems they faced.'

He also had to negotiate entry to some farming communities. 'Where land was informally owned or squatted, there were complex social and leadership structures. We had to navigate through these networks in order to get farmers' cooperation. This included reassuring farmers that our work was not on behalf of the City Council of Nairobi, which was seen as a threat to their access to land, given that farmers had no legal rights over it.'

The peri-urban interface of Nairobi provides diverse opportunities to its residents such as housing, farming and small-scale business enterprises.

In addition, John found that, 'Many farmers were not concerned about food safety, so this aspect of the project's objectives offered no incentive for them to share information'. However, concern for food safety was greater further downstream in urban rivers because of the increased risks of contamination from activities and sewers upstream, and so there was more interest in the research. 'It is critical to understand farmers' different perspectives, and what would motivate them both to contribute to our project and to engage with any subsequent initiatives.'

RECOMMENDATIONS FOR VALUE-CHAIN THINKING IN PRACTICE

Overall, the project concluded that there was a lack of attention by extension and research services providers on peri-urban agriculture, with research mostly targeting rural settings. Greater resources and political will, and university courses tailored to address the distinctive problems in peri-urban settings in Kenya, are needed, particularly concerning production and marketing opportunities and challenges. Similarly, credit providers are more focused on rural production, especially of commodities, than on peri-urban production, especially of vegetables. 'There is a need for credit programs that take on board the limited capital of small players in farm-to-market chains in peri-urban corridors.'

'We also concluded that it is essential to build group leadership and management capacity across value-chains, not just among farmers, to overcome the challenges to the formation and maintenance of long-term business partnerships along the chain. Currently, there are only a few alliances, as well as relationships that are based more on social needs than technical ones, while governance structures are poorly developed.

The research developed a framework for integrating consumer value, chain practice and policy responses that could result in business models based on shared interests among consumers, chain actors and public stakeholders. The study also proposed how to improve the enabling of policies for peri-urban agrifood chains in developing countries, for example by integrating it into urban planning processes. Finally, although the peri-urban interface provides significant opportunities for improving the socioeconomic, political and environmental circumstances of its residents, it is beset by peculiar challenges that are distinct from those existing in rural settings. So more R&D is required in peri-urban food chains if their contributions to food and nutrition security, public health and environmental resilience are to be upheld.

Further reading

Macharia J. 2012. A systems approach to value management and performance improvement: a case study of fresh vegetable supply chains in Nairobi, Kenya. PhD thesis, School of Agriculture and Food Sciences, The University of Queensland.

Macharia J., Collins R. and Sun T. 2013. Value-based consumer segmentation: the key to sustainable agri-food chains. British Food Journal 115(9), 1313–1328.

The study developed three communiqués on the implications of current practice in farm-to-market chains on management, policies and R&D in the peri-urban interface of Nairobi. Further details can be found in the references below, which are available from John Macharia at <*jmacharia2003@yahoo.com*>.

Macharia J. 2012. Value-based performance improvement in urban agri-food supply chains in Nairobi, Kenya: managerial Implications.

Macharia J. 2012. Value-based performance improvement in urban agri-food supply chains in Nairobi, Kenya: policy Implications.

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Case Study 3.4: Nepalese tomatoes value-chain

BACKGROUND

The majority of Nepalese earn their livelihoods from the agrifood sector and, typical of many developing countries, a production-focused and farmer-centred approach has been the dominant development strategy. However, continuing poor performance in the sector and low returns to farmers led the Nepalese Government and its partners to explore alternative perspectives, including value-chain-led development. Dr Rajendra Adhikari, Joint Secretary and Chief of Policy and International Cooperation, Ministry of Agricultural Development, led a project focusing on tomato value-chains as an example of how VCA might be applied to this problem.

PROJECT DESIGN AND FIELDWORK

Primary data were drawn from five focus groups, surveys of 394 consumers, walking-the-chain observations, 110 semi-structured interviews of chain members and stakeholders, and an interactive workshop. Rajendra explains that, 'It was critical to include stakeholders because they have such a huge influence on the different members of the chain'.

Segmentation analysis revealed four segments of tomato consumers in Kathmandu, even though tomatoes were marketed with little product differentiation. The largest (41%) and most valuable consumer segment placed greatest importance on credence attributes and least importance on price, indicating that these high-value consumers would pay a premium price for attributes such as freshness, low pesticide residues, organic production, provenance and traceability. Accordingly, since existing chains were not delivering these preferences, there was great potential for whole-of-chain coordination because those attributes required stability and cooperation among chain members, from farmers through to stallholders. Consumers in the other three segments shared a common concern about price and so offered less-attractive prospective markets but, nonetheless, collaborative cost and waste reduction would help to improve returns.

Rajendra reports that, 'Having started with consumers, we mapped the chains backwards by asking stallholders how they sourced their tomatoes; then we interviewed those wholesalers, who directed us to the farmers they bought from. However, not all the farmers sold directly to wholesalers, and some did not see themselves as part of an interdependent value-chain and so were unwilling to participate'.

'My analysis found poor levels of consumer orientation and weak value-chain capability among chain members, suggesting that they were ill-prepared for adopting a value-chain management approach and so would need external support to become more chain-based, consumer-orientated and willing to cooperate. In addition, in evaluating a subsequent pilot-scale value-chain development initiative, we found poor implementation of the planned activities. This exposed that neither chain members nor those supposed to help them had the necessary knowledge and skills.'

The research concluded that value-chain understanding, compatibility, capability and championship are key forces determining successful value-chain development. It also found that these forces were as relevant in government departments as they were among chains themselves. As a result, it proposed a collaboration framework to help chain members and stakeholders overcome these constraints (see 'Further reading' below).

METHODOLOGICAL RECOMMENDATIONS

Reflecting on the project, Rajendra made the following recommendations:

1. Take time to build relationships with those involved. Chain members may be asked sensitive questions, for example about prices and profit margins, so they need to be confident how their answers will be used. Equally, government officers want assurances that information will be generalised, and so investing time in creating personal trust secures greater openness.

2. Workshops with farmers and other chain members are a valuable opportunity to talk about the reality of value-chain thinking—its benefits and examples but also how long it takes to evolve. Similarly, taking farmers to urban markets (i.e. walking the chain) is effective in highlighting the scope for more closely aligning production with consumers' preferences, and for reducing waste between farm and market and hence increasing incomes.

3. Often farmers do not have the capability to champion value-chain thinking, so government needs to adopt this role through investing in its own expertise and then engaging across chains.

4. Initial interventions should focus on nurturing dyads (one-to-one partnerships) rather than trying to achieve cooperation across whole chains in one leap.

5. Farmer organisations building partnerships with customers can be more effective than disparate efforts by individual farmers.

6. Farmers rarely keep records of costs and income, and their recollections are typically quite inaccurate, so any approach should not place too much emphasis on the need for accurate financial data.

7. Even when a project is under time pressure, it is important to ensure consistency among enumerators.

8. Existing consumer research is rarely available, so development partners could very usefully undertake some baseline research that multiple specific projects can then use.

Further reading

Adhikari R.P. 2013. Developing agri-food industry in Nepal: a value-chain management perspective. PhD thesis, School of Agriculture and Food Sciences, The University of Queensland.

Adhikari R.P., Collins R. and Sun X. 2012. Segmenting consumers to inform agrifood value-chain development in Nepal. International Food and Agribusiness Management Review 15(4), 93–114. For a video introduction to this paper, see <*www.youtube.com/watch?v=GOFQw1zMeQw*>.

Adhikari R.P., Collins R. and Sun X. 2013. Relationship management in a value-chain involving 'bottom of the pyramid' participants: a case study from Nepal. Acta Horticulturae 1006, 41–48.

Case Study 3.5: Value-chain thinking training in Eastern and Southern Africa

BACKGROUND

Value-chain thinking is integral to the concept of best practice hubs under the project 'Improving income and nutrition in eastern and southern Africa by enhancing vegetable-based farming and food systems in peri-urban corridors (VINESA)', funded by ACIAR / Australian International Food Security Centre, and led by The World Vegetable Center (AVRDC). The research is examining options for improving nutrition and generating youth employment and income opportunities in Ethiopia, Malawi, Mozambique and Tanzania. It aims to improve varieties and seed supply systems for traditional and introduced vegetables, enhance crop management practices, and develop more-effective value-chains. Between 2014 and 2017 VINESA will have trained 120 young men and women in each of the four countries, and reached a further 6,000 farming households through open participation such as field days and in farmer-to-farmer diffusion.

TRAINING DESIGN

Dr Benjamin Dent, who designed the value-chain thinking course for the hubs and train-the-trainer sessions, explains that, 'The training objectives are to teach participants the principles and decision-making processes, and then to help them prepare an individual action plan drawing together their training in production, postharvest activities and value-chain thinking. By testing and revising approaches across all four best practice hubs, the project should result in a flexible manual suitable for different contexts. In doing so the training would translate value-chain research into practice, use experience to feed back into research, and then capture the results in future revisions of the manual'.

Ben emphasises that, 'The training should focus on building participants' capacity. There is no 'right answer'; what is best for each participant will depend upon their own situation, for example finding the balance between growing for their family's own consumption and growing for sale, and the land, labour, finance and other resources they can access. And in all cases, market opportunities are dynamic, so participants need the skills to adapt to the future. Accordingly, while each individual emerges with an immediate action plan, they also have the framework for making ongoing decisions'.

The course also needed to adapt to local conditions. Each best practice hub operates in a context of distinctive production environments; consumer preferences; market opportunities and constraints, especially routes to market; and culture. Trainers in each country are being encouraged to reflect their local knowledge and try different approaches, so long as they record what they tested and what they concluded. This encourages them to choose which topics, issues and activities are covered, the exercises and examples used, the value-chain maps produced and the nature of the action plans that result.

Dr Florence Ghamunga, the AVRDC gender consultant, was responsible for ensuring that the training course was gender sensitive. 'Women undertake many of the core roles in vegetable value-chains', she says, 'so the course needed to tackle the social relationships that can exclude women from participating in, and benefiting from, value-chain thinking, particularly the division of labour and responsibilities, access to resources, decision-making and

negotiations. It is also essential that training is provided in ways that are as accessible and relevant to female participants as to males'.

Dr John Macharia, VINESA's project manager, says that there were two requirements of the course. 'First, it must be participative, based on exercises not lectures. This reflects both farmers' preference for hands-on learning and the training approach whereby, "What we hear, we forget; what we see, we remember; what we do, we understand". Second, reflecting the research nature of the project, the approach needed to have built-in flexibility through ongoing evaluation of experiences, and so allow for improvements to the training manual as the project team incorporates learning and disseminates successes.'

Dr Mohammed Yesuf, the project's country coordinator in the Ethiopian Institute of Agricultural Research, recommends the course, saying, 'It encourages trainers and farmers to look outside the box to find solutions that fit value-chains' local situations and work through building partnerships, with the case studies providing useful models'.

Enrique Maradiaga, Africare's country director in Malawi, reports a very positive reaction from the training course. 'We have been delighted by participants' enthusiasm. They quickly grasped how value-chain thinking offers farmers a fresh approach to deciding what to grow, how to grow it and who to work with, and immediately they started coming up with ideas for market opportunities in the Ntcheu region.'

RESEARCH RESULTS

Sixty-nine people were taught how to give the training across the four countries involved. The training course's effectiveness will be reviewed and improved during the project, with a revised training manual published at its conclusion in 2017.

Further details

More details on the VINESA project can be found at <*avrdc.org/tag/vinesa/*>.

PART 4
TRAINING ACTIVITIES

Introduction

When used as a training program for chain members, Figure 21 shows how the nine activities (4.1–4.9) listed below can contribute to the core activity of each participant developing their own action plan (Activity 4.10). Trainers are encouraged to select and adapt those activities that suit trainees' needs and reflect their own experience of the local context.

Figure 21: Roadmap to training activities

Activity 4.1: Mapping the chain

KEY MESSAGES

* Unless farmers supply consumers or final customers themselves, they need to work with others in the value-chain, which can only start by understanding the whole chain.

* Members of a chain are interdependent.

BACKGROUND

This activity helps participants identify the main activities in their value-chains and the chain members who perform them, and so appreciate the linkages between businesses and their interdependence. It involves mapping the chain from input suppliers to final customers and consumers in order to identify who is involved in getting product from farms to the consumers. For this activity, participants will create a map of the main people involved in a specific value-chain that represents a promising market opportunity. In agrifood value-chains the members are typically a combination of:

* input suppliers: seeds or animals, chemicals, compost, feed, equipment, advice, finance etc.;

* producers: principally involved in farming activities but, in horticulture value-chains, potentially extending to some postharvest processing;

* graders/collectors/traders/wholesalers: involved in sorting, transporting and storing;

* processers: depending on the product, this includes slaughtering animals, cleaning/storing the product, processing, packing and labelling;

* retailers: shopkeepers, stallholders, street vendors, supermarket chains, farmers selling direct, institutions (e.g. schools and hospitals), hotels and restaurants; and

* consumers: shoppers and their families.

Below are some examples of generalised value-chain maps.

VEGETABLE VALUE-CHAIN MAP

INPUTS	→	FARMER	→	RETAILER	→	CONSUMERS

Seeds
Pesticides
Manure
Water
Labour
Equipment:
  irrigation &
  spraying
Advice
		Prepare land
		Produce
		  seedlings
		Transplant
		Water
		Weed
		Pest control
		Harvest
		Grade
		Transport
		Sell
				Buy
				Transport
				Grade
				Pack and
				  label
				Store
				Sell
						Select
						Transport
						Store
						Cook

PORK VALUE-CHAIN MAP

INPUTS	PIG FARMS	PROCESSING PLANT	RETAILER	CONSUMERS
Genetics Antibiotics Feed	Housing Husbandry Breeding Feeding Growing Finishing Transport	Slaughtering Blanching De-hairing Butchering Packaging Storage Dispatch	Ordering Intake Display	Select Transport Store Cook Eat

MANGO EXPORT VALUE-CHAIN MAP

INPUTS	PRODUCERS	IMPORTER	RETAILER	CONSUMERS
Genetics/ planting material Fertilisers Pesticides Water Equipment Packaging materials Advice	Tree planting Growing crop Harvest Grading Packing Cooling/ storage Export	Intake Storage Ripening Grading Pre-packing Dispatch	Intake at warehouse Storage Distribute to stores Display	Select Purchase Transport Store Eat

MAPPING THE VALUE-CHAIN

Split participants into groups of three to five people, with each group working separately before coming together to explain and discuss their results. Ask each group to identify the inputs and activities along a vegetable value-chain serving a particular market they may wish to supply, using words or pictures on different pieces of paper or sticky notes, for example attached to flipchart paper (as shown below). Groups could be asked to look at:

* different products, exemplifying how activities vary between crops; and

* different routes to market, highlighting where the chain splits to link to different customers and consumers.

First, ask participants to write the main chain actors across the top of the flipchart paper, from inputs into farming through to consumption of the final product. Next, in the first column, identify the main agricultural inputs, one per sticky note. In the remaining columns list the main activities that the actor performs, listed vertically in the order they undertake them. An example for a vegetable value-chain is shown below.

Some activities can be undertaken by different members of the chain, and a separate activity will encourage farmers to consider opportunities to undertake more postharvest activities and so earn a larger slice of the pie.
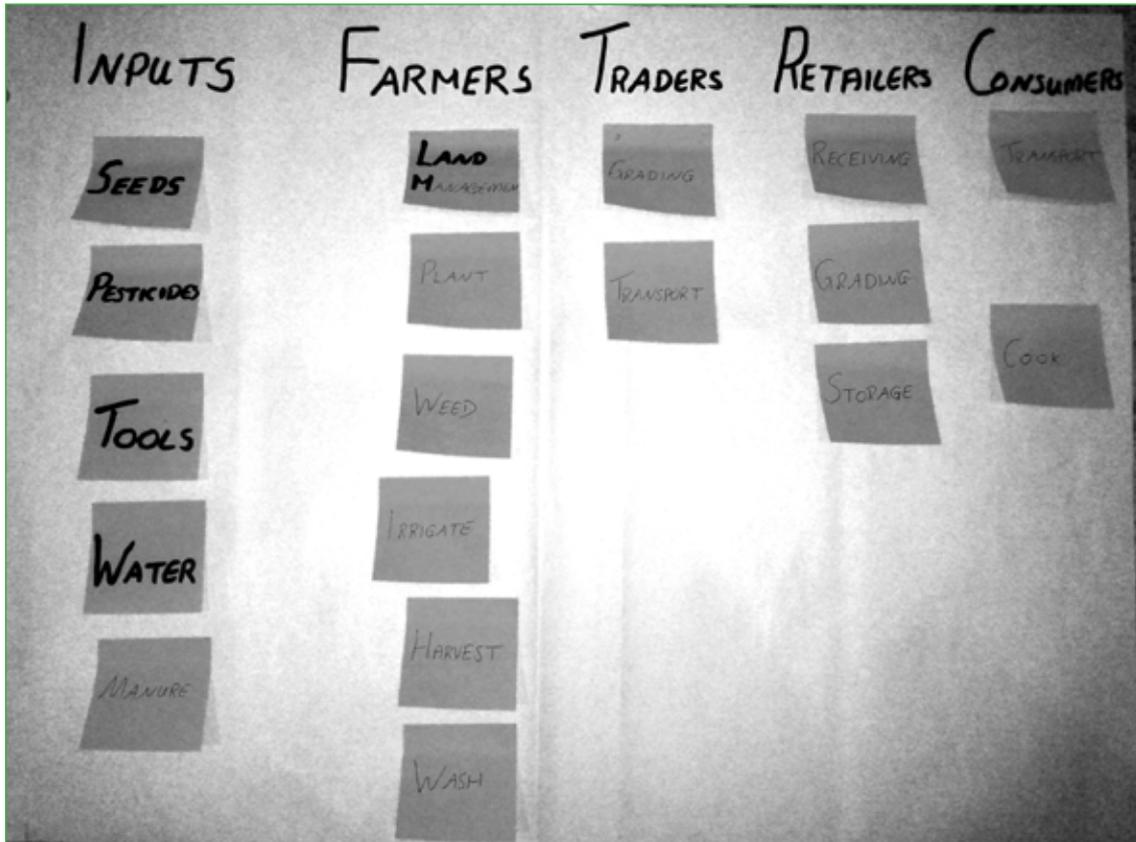
Having brought the groups back together, ask them to explain the maps they have prepared, and encourage discussions comparing value-chains for different products and markets. Can participants see any advantages in being part of particular chains compared with others?

The maps can be used for a variety of group exercises covered in other activities in this manual. 'W's can be added to the sticky notes to highlight those activities that create waste (see 'Mapping waste' activity); and 'V's to those that create value (see 'Mapping value' activity). When exploring gender roles along the chain ('Gender equity' activity), 'F's can be added to those activities typically undertaken by females, and 'M's added for males' activities. Sticky notes can be removed to illustrate some improvements, for example eliminating storage if that causes waste. Or they can be moved around to show the opportunity for farmers to engage in postharvest processing if that would create value or strengthen their position as a preferred supplier, by moving downstream activities into the 'Farmers' column (in 'Postharvest opportunities for farmers' activity).

Activity 4.2: Market orientation

One of value-chain thinking's critical success factors is whether farmers develop greater market orientation in focusing on the target consumers' preferences when choosing what to grow and how to grow it, and then selecting customers who will enable them to exploit market opportunities. These opportunities include anywhere where higher returns may come from better products and service, less waste, stronger partnerships along the chain and/or shorter supply chains. This might include supplying supermarkets, hotels, farmers' markets, schools, branding etc. Encouraging this market orientation is the objective of this activity by first asking, 'What do consumers want?' and then 'What do customers want?'. The conclusions from these exercises can be used in the 'Mapping value' activity.

What do consumers want?

KEY MESSAGES

* Size of the pie: the total price paid by consumers determines the maximum amount of money that can be distributed upstream. So, to increase their incomes, chain members either:

  - leave the size of the pie the same, but fight on making their slice of the pie bigger by making someone else's slice smaller; or

  - grow the pie by making their products and services more attractive to consumers and then sharing the benefits, so growing the size of everyone's slice

* To increase income, farmers need to start by identifying promising market opportunities and delivering the priorities for exploiting those opportunities, thereby breaking free from the crowd and reducing the level of competition.

* Do not assume that all consumers want the same things, or that you know what they want. Ask them!

BACKGROUND

First, it is important to distinguish between customers and consumers:

* *Consumers* are individuals who eat the final product, so they determine the size of the pie. Their needs vary, so we need to know who they are in each value-chain.

* *Customers* are businesses who buy products, so they control access to consumers. Their needs usually include reliability and consistency: 'Deliver what I want, when I need it'.

Understanding consumers underpins value-chain thinking. Lack of knowledge about what influences consumers' behaviour results in squandering time and money on producing products that are not valued, and so they do not grow the pie. This includes recognising the differences among consumers: they are not all the same and they look for different things. While price is critical to many, some will be willing to buy or pay more for greater freshness, better taste or appearance, or higher nutritional benefits. Packaging matters to some shoppers, while others may favour postharvest processing that makes products more interesting or convenient to use, or extends their shelf life. This knowledge should inform farmers' decisions about what to grow, how much and of what quality, and what postharvest activities to undertake. It will also help them decide which customers to prioritise in order to target the most promising market opportunities.

EXERCISE

Trainers should explain the key messages and how improving market orientation involves:

∗ exploring what consumers and final customers want;

∗ working out how to provide those products and services; and

∗ prioritising farmers' training, money and time on those activities, suppliers and customers that will generate the best returns.

There are three options for exploring what consumers want:

1. The simplest—but least effective—approach is to have a group discussion among the trainees. The risk is that this perpetuates the idea that farmers understand the market (they often do not) and therefore base subsequent decisions on their own assumptions, which is a common and significant mistake.

2. In an informal focus group of shoppers or a field trip to meet shoppers, participants should ask about those characteristics consumers want from the products being considered, and how changes to the product would change their behaviour beneficially. This includes which stall/shop they buy from, which products they choose, how much they buy, and how much they are willing to pay.

3. Existing and new consumer research can be used as a basis for discussion.

What do consumers want?

KEY MESSAGE

∗ Getting access to market opportunities, especially to higher value consumers, means providing the product and service that the specific final customer (retailer, hotel catering manager etc.) requires—and the most valuable final customers are likely to require better service.

EXERCISE

This activity helps participants to learn about the critical issues that final customers need, for example quantity, frequency of delivery, reliability, packaging, grading, shelf life. Meeting customers helps participants to learn more about market opportunities, including where customers have demand for a product but cannot get it on the terms they want, and the most critical aspects of service that suppliers need to provide to gain access to those opportunities. Some suggested questions for participants to ask customers are provided in the box below. Tasks might include:

∗ group discussions with a range of customers (e.g. shop buyers, stallholders, catering managers, wholesalers), which would allow participants to compare the different challenges and so assess which ones would suit their own resources and capacity

∗ field trips to meet different potential customers, which would be more convenient for them

∗ role-playing, with farmers playing the part of different customers, trying to imagine what would be important to different businesses.

Suggested questions to ask customers (retailer, hotel etc.)

* How do you choose what to sell? What are you looking for in the products you buy? How do you assess quality?

* What are your shoppers/guests like? What types of consumers are more attractive and what distinguishes them? Do you know what your consumers want?

* Where and how much waste is generated in your shop/hotel etc.? Are the causes of this waste understood? What efforts have been made to reduce the waste, and with what impact; and what is preventing further reductions?

* How much variability is there in supply and demand for the product (i.e. daily, weekly, seasonally, annually)? Is it predictable? How is this managed; does it produce waste or having to sell products for less than they are worth; and what could be done to improve the situation?

* Are there problems with fulfilling orders for particular products? Are these problems to do with availability in terms of volume or quality? If some suppliers are more reliable, why is this and what should we learn from them?

* What other risks do you face that are caused, or potentially could be reduced, by your suppliers?

* Do you tend to deal with the same suppliers or swap around? Why?

* If you do not currently buy direct from farmers, would you be interested in doing so?

* Do you use formal contracts or informal/verbal agreements? If so, how far ahead do they apply?

* How do you incentivise/reward better suppliers?

* What do you look for in a good supplier?

* Do you discuss longer term plans with your suppliers?

* Do conflicts ever arise with suppliers, and how are these resolved?

Activity 4.3: Comparing wet markets with supermarkets

The aim of the activity is to identify the marketing differences between supermarkets and wet markets. Participants visit both, observing differences and asking shoppers and stallholders questions. Where possible, permission should be sought from the market organisers and supermarket managers but, if this is impractical, care must be taken not to interfere or obstruct in any way, which might upset people or get staff or participants into trouble.

Participants should compare wet markets and supermarkets in terms of:

* range of products available;

* price;

* quality;

* quantities; and

* presentation (merchandising) and intrinsic differences—those things that appeal to the senses.

Participants should note and compare strengths and weaknesses between supermarkets and wet markets. Equally, what are the differences between stalls, noting if/why some seem to be more

popular than others? While participants will naturally want to focus on the product(s) they are most involved in, they should also look at a range of other products because there might be something to learn about opportunities to influence shoppers' choices.

For this activity, organise participants into small groups of three to five. Each group should visit both wet markets and supermarkets, taking notes on what they see and hear. To begin with, they should stand in a quiet spot and observe shopper behaviour, making notes about the types of shoppers and how they seem to be making decisions about what to buy. Next, while being careful not to interfere with shoppers as much as possible, because stallholders and supermarket managers will be very sensitive about this, group members can ask shoppers:

* Why do you shop here? How do you choose (in a wet market) which stalls to buy from?

* How do you choose what you buy? Did you know before you arrived what you wanted? Has anything changed your mind once you saw what was available? Why?

* Is there anything you cannot buy here but would like to?

* If stallholders are willing, they can also be asked questions:

* Why do you think shoppers choose your stall? How then do they choose which items to buy?

* How do you choose your suppliers? Do you have any problems with them?

* Are there products where you cannot get the quality you want, or cannot get them at all?

Throughout, participants should be encouraged to think 'That's interesting, I wonder why …?'

Afterwards, each group should present their findings to the others so that they can discuss what they have learnt. Discussions should focus on the central idea of how the different retailers meet the value expectations of their shoppers.

Activity 4.4: Mapping value

KEY MESSAGE

Growing the pie requires:

* knowing what influences shoppers' and customers' behaviour/decisions; and

* focusing on those activities along the chain that create value (choice of variety, production, postharvest processing, speed to market etc.), which, unless farmers supply consumers or final customers directly, means working with others to create value and deliver levels of service that will gain access to higher value markets.

BACKGROUND

This activity builds on mapping the chain with sticky notes and market orientation activities. The latter explores product characteristics and services that are required downstream; these are listed in the final column of the value-chain maps, and are traced upstream to see how those characteristics are derived (circled in red in the example maps below).

EXAMPLES OF MAPPING VALUE

The first value map is based on the case study of the Iraq Al Amir Women's Cooperative in Jordan. In summary, the market opportunity was vegetables, in this case green/spring onions that were produced with low/safe pesticides and that guaranteed a fairer return to farmers (further details are provided in Part 1.2: Understanding Consumers and Customers). The value-chain map then shows which activities created that value and therefore helped farmers to prioritise their resources and training. For example, it was important to have uncontaminated water; use only known (labelled) and approved pesticides; cooperate with other farmers to provide the volume and length of season that consumers needed to maintain the habit of buying the product consistently; and ensure that the product was packed and labelled/branded to distinguish it clearly from vegetables that were similar but did not offer the same assurances. This branding helped consumers to find the product easily on shops' shelves.

MAPPING VALUE
LOW/SAFE-PESTICIDE SPRING ONIONS VALUE-CHAIN

INPUTS →	FARMER →	RETAILERS →	CONSUMERS
●Seeds ●Pesticides ●Manure ●Water Labour Equipment: irrigation & spraying	Prepare land Produce seedlings Transplant Water Weed ●Pest control Harvest Grade Transport Sell ●Cooperate	Buy Transport Grade ●Pack and label Store Sell	<u>What affects behaviour?</u> Food safety through minimum use of approved pesticides Higher returns to farmers

This second example shows a value-chain supplying sweetpotatoes to hotels. Only the colour of the potato (through varietal selection) is considered significant in terms of product quality, with hotel catering managers placing more emphasis on suppliers' consistency, for which harvesting and grading are important, and reliability, which needs farmers to cooperate so that the timing of orders and the quantity ordered were always met.

MAPPING VALUE

SWEET POTATO TO HOTELS VALUE-CHAIN

INPUTS →	FARMER →	WHOLESALER →	HOTEL
Seed (variety) Pesticides Fertiliser Water Labour Equipment and tools Advice	Prepare land See treatment Sow Add manure Spray Weed Water Harvest Grade Pack Store Cooperate	Buy Transport Store Sell	What affects behaviour? Yellow colour Consistency Reliability of delivery

In the next example, a pork value-chain, two distinct groups of consumers were identified as potentially offering higher returns. The first were termed 'discerning', given their willingness to pay more for a product that was tastier and juicier than standard pork. Expert advice recommended that switching to a different pig breed and choosing alternative feed would result in a more attractive product, so those inputs are ringed in red. The second group was 'healthy' consumers, who were particularly concerned about having lower fat meat produced from pigs that were not routinely fed antibiotics. Again, breed and feed were important, but so was raising/growing the pigs in less-intensive conditions that eliminated the need for routine use of antibiotics.

MAPPING VALUE

PORK TO DISCERNING AND HEALTHY CUSTOMERS VALUE-CHAIN

INPUTS →	PIG FARMS →	PROCESSING PLANT →	RETAILER →	CONSUMERS
Genetics Antibiotics Feed	Housing Husbandry Breeding Feeding Growing Finishing Transport	Slaughtering Blanching De-hairing Butchering Packaging Storage Dispatch	Ordering Intake Display	What affects behaviour? **Discerning:** Taste Juiciness **Healthy:** Low Fat Free from antibiotics
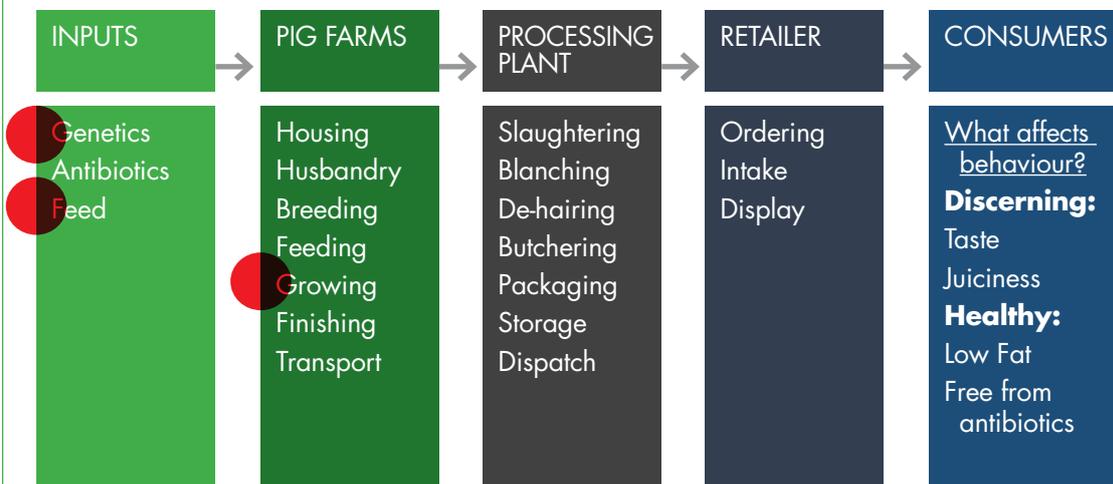
The final example explores the requirements of some retailers and consumers for tomatoes that have a longer shelf life, so reducing waste. Multiple sources of value were identified by chain members, including varietal selection, advice to improve monitoring and harvesting, and investing in shade on-farm and by stallholders.

MAPPING VALUE

LONGER SHELF-LIFE TOMATOES VALUE-CHAIN

INPUTS	FARMER	RETAILER	CONSUMERS
● Seed (variety) Pesticides Fertiliser Water Labour Equipment and tools ● Advice	Prepare land Plant Crop practices Add manure Spary Weed Water ● Monitor ● Harvest ● Shade/cool Sell	What affects behaviour? Longer shelf life Buy Transport Grade ● Shade/cool Sell	What affects behaviour? Ripeness and durability Consistency

EXERCISE

Using the same value-chain maps as produced in the 'Mapping the value-chain' activity, participants should identify where consumer value is created and what activities are critical to delivering the service the final customer needs. Back in small groups, the first step is for participants to list what consumers and customers value about the products they are considering (see 'Market orientation' activity). Then they should discuss which activities are responsible for those product characteristics or service; and who/what is involved? This might involve particular inputs; special attention to some farming practices or postharvest processing such as grading, sorting and packing; speed to market; or how retailers present the product to shoppers. Groups may find that the discussion reveals that they need to add new activities to their map. Then each important activity should be marked with a V, as shown below. Encourage groups to present their conclusions to each other and share what they have learnt.

Finally, participants can discuss how they would improve these critical inputs and activities. Would they need further training on optimising activities, or require ongoing advice from extension staff? Would they need to meet with potential seed suppliers to explore whether they can find a reliable source of the seed variety and the quality they require?

Activity 4.5: Mapping waste

KEY MESSAGES

∗   Reducing on-farm waste helps directly to cut farmers' costs.

∗   Reducing waste in partnership grows the pie—when waste occurs in one part of the chain but is caused by activities in another part, farmers need to know where it occurs downstream and what causes it.

BACKGROUND

Waste is any product that does not reach a consumer, any product that sells for a lower price than it could sell for elsewhere, making a product better than it needs to be, undertaking unnecessary activities, or applying unnecessary/excessive inputs. The factors affecting waste include:

* seeds and other inputs;

* production methods;

* speed from farm to consumer;

* packaging and handling;

* shelf life and preserving produce; and

* grading to direct the correct quantity and quality to different outlets and so ensure that as much as possible is sold.

These activities are spread across the chain, and hence explain why value-chains' ability to improve efficiency by reducing waste is dependent on concerted action across the chain.

EXAMPLES OF MAPPING WASTE

The first example is a mango export value-chain. Participants identified all the inputs (left-hand column) and main activities along the chain and who undertook them. Next, they highlighted those activities associated with waste (ringed in red on the map). For example, harvest was seen as a significant cause of waste because poor handling of the fruit at that stage would only be revealed days or even weeks later when the fruit started to show damage, by which time it was either being graded or was even on display in the supermarket.

MAPPING WASTE

MANGO EXPORT VALUE-CHAIN

INPUTS	PRODUCER	IMPORTER	RETAILER	CONSUMERS
Genetics/ planting material Fertilisers Pesticides Water Equipment Packaging materials Advice	Tree planting Growing crop Harvest Grading Packing Cooling/ storage Export	Intake Storage Ripening Grading Pre-packing Dispatch	Intake at warehouse Storage Distribute to stores Display	Purchase Transport Store Eat

The second example is a fresh tomato chain. Again, the main inputs and activities along the chain were mapped. Notably, participants identified labour as a wasteful activity because they felt that many farmers were not well trained and were not using their time and skills effectively, for example through poor planting; hence, that activity was also highlighted as a source of waste.

MAPPING WASTE

TOMATO VALUE-CHAIN

INPUTS	FARMER	RETAILER	CONSUMERS
Seed (variety)	Prepare land	Buy	Buy
Pesticides	Plant	Transport	Store
Fertiliser	Crop practices	Grade	Prepare/ cook
Water	Add manure	Store	Eat
Labour	Spary	Sell	
Equipment and tools	Weed		
Advice	Water		
	Monitor		
	Harvest		
	Sell		
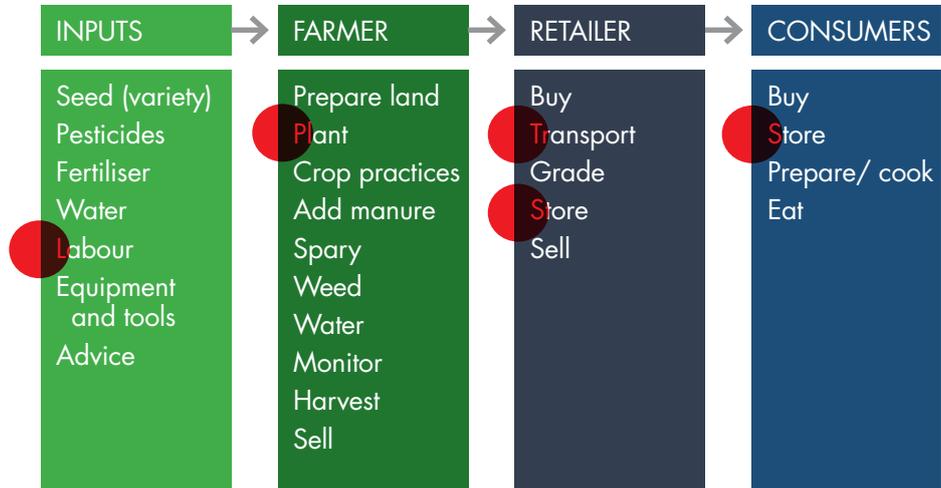
EXERCISE

Ask participants to think about where waste occurs on-farm and downstream, and then identify those activities that cause the waste. As shown below, participants should write a 'W' on those activities that are most critical to reducing waste and making the value-chain more efficient in order to grow the pie. Use the task to encourage discussion. For example: Is waste on a shelf or stall caused by poor sorting, grading or washing? Is waste on-farm caused by poor inputs or skills, and how could farmers tackle these problems? Are any activities duplicated, for example grading often occurring more than once? This is a form of waste, so ask why it happens and how the duplication could be eliminated. What are the lessons for the participants' own chains?
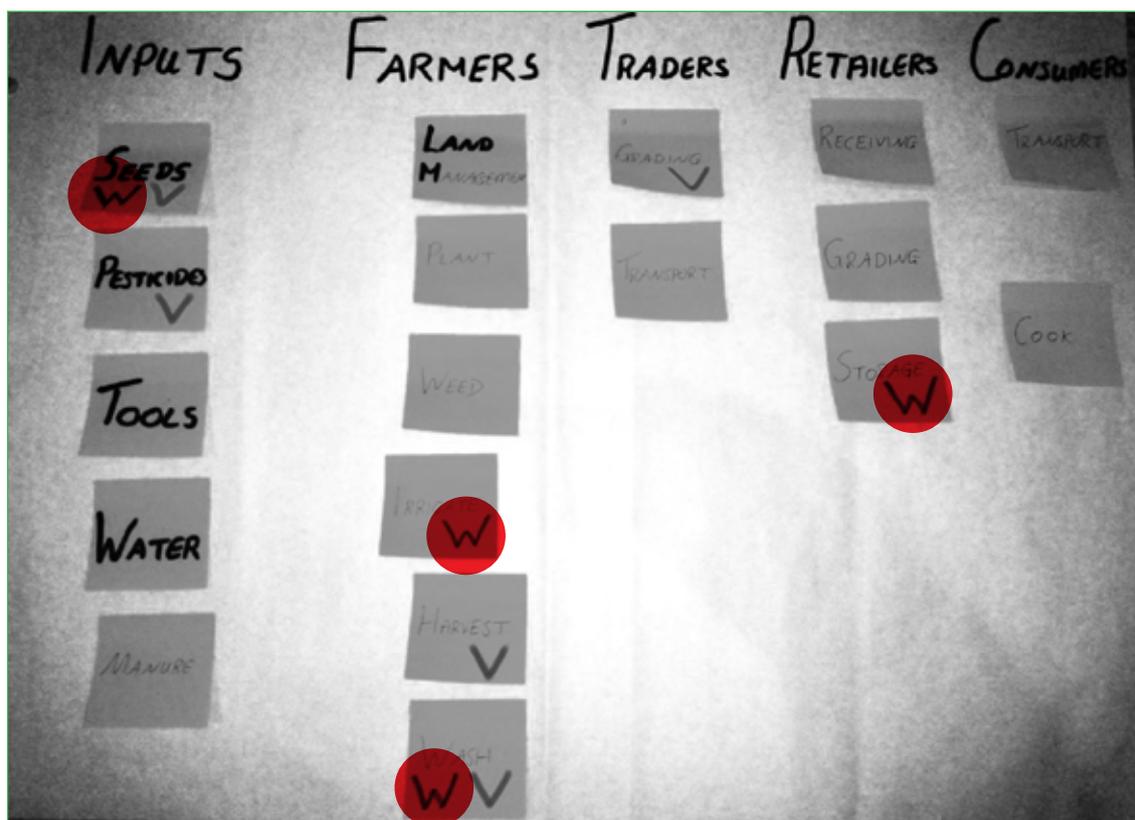
Activity 4.6: Postharvest opportunities for farmers

KEY MESSAGE

∗ Farmers should consider extending their activities downstream if this makes them more-attractive suppliers or allows them to earn a higher income.

BACKGROUND

The objective is to encourage participants to think about what postharvest activities would increase their potential income and/or make them preferred suppliers for higher value markets. This might involve doing some activities more effectively, for example grading, either because this relieves customers of tasks or because any lower grade products could be channelled to other customers or processed rather than discarded. In the example below from the Jordanian women's cooperative, the farmers decided to take on responsibility for packing and labelling. This had a number of advantages, including ensuring that their product was segregated throughout the supply chain and so maximised the chance of it selling for its true value rather than being mixed with standard green onions.

POSTHARVEST OPPORTUNITIES

LOW/SAFE-PESTICIDE SPRING ONIONS VALUE-CHAIN

INPUTS	FARMER	RETAILERS	CONSUMERS

Seeds
Pesticides
Manure
Water
Labour
Equipment:
  irrigation &
  spraying
Advice
	Prepare land
	Produce
	seedlings
	Transplant
	Water
	Weed
	Pest control
	Harvest
	Grade
	Transport
	Sell
	Cooperate
		Buy
		Transport
		Grade
		Pack and
		label
		Store
		Sell
			What affects
			  behaviour?
			Sweetness
			Ripeness
			Shelf-life

EXERCISE

Use the value-chain maps to discuss which postharvest activities farmers could do either to increase their income (recognising that most activities will increase their costs and/or require extra time) or make them more attractive suppliers to their customers, and so improve their access to higher value market opportunities. Would they need additional training or equipment?

Activity 4.7: Working as partners: how to pick partners and build relationships

KEY MESSAGES

* Value-chain thinking requires a collective decision by key chain members to:

  - focus on delivering target consumers' needs;

  - provide better service to customers; and

  - reward product and service quality, and commitment.

* Accordingly, critical partners are those who:

  - are committed and able to reduce waste and create value;

  - supply important inputs; and/or

  - provide access to higher value markets.

* Farmers need to select critical partners and then build cooperation and commitment.

BACKGROUND

Value-chain thinking involves a deliberate decision by chain members to work together to improve their returns by delivering better services to each other and the type of product their consumers want. It does not just happen and it is not easy—but it does increase incomes. Accordingly, farmers need to build relationships with those chain members who are critical to their success. In return, those partners also need to recognise their interdependence, and so develop commitment and share benefits to take advantage of market opportunities.

The foundations for strong relationships among value-chain partners are shared objectives and motivations, and then complementary resources (skills, land, finance, equipment, access to market etc.). These foundations need to be built upon by partners' attitudes and behaviours, including:

∗ understanding each other's abilities and requirements;

∗ open communication;

∗ reliability and honouring of commitments;

∗ sharing risks, costs and rewards, including through incentives; and

∗ working together to solve problems and pre-emptively preventing issues arising.

In combination, these foundations and behaviours lead to more trust, cooperation and commitment; and less opportunism, conflict and abuse of power/dependence. Cooperation is when value-chain members collectively respond to market opportunities and threats. It increases as relationships become more committed, moving from spot market and one-off transactions to: repeated sales; formal/informal contracts between farmers, traders and retailers; and close partnerships. Building partnerships relies on farmers following the five rules of being a good supplier:

∗ *Negotiate* by selecting suppliers and customers, and negotiating price.

∗ *Commit* to building relationships and resisting opportunism.

∗ *Deliver* volume and quality (grading) consistently—be reliable.

∗ *Monitor* by constantly checking what the market and customers require, including by asking for feedback.

∗ *React* when performance differs from customer/consumer expectations, and act on the feedback.

Chain members also need information to flow to make decisions that improve the chain's performance. These flows typically reflect the nature of relationships; for example, withholding information is often a result of an abuse of power or lack of trust, while effective flows can come as mutual benefits are gradually realised. Access to information can also vary between men and women across the value-chain, potentially reducing the chain's effectiveness and diminishing the equitable division of resources and benefits. In all discussions the causes and consequences of such gender distinctions should be addressed.

Partnerships may also include cooperating with other farmers to: bulk up supplies and so increase scale and availability, attract buyers and potentially increase the price offered, and negotiate lower prices for inputs. However, such cooperation needs leadership, organisation, mutual trust and common vision to overcome the challenges. For a vegetable value-chain, farmer cooperation might include:

* coordinating times for sowing and harvesting, and sometimes sorting, grading and/or packing; and

* agreeing on varieties to suit a single market and a production schedule (rather than each farmer's preference).

In addition, women's participation in formal farmer cooperatives can be constrained by membership requirements; for example, where this is based on formal land ownership and capital, such barriers to their involvement should be removed.

There are a number of practical steps that can strengthen relationships, although it may take several years to achieve them all:

1. Develop agreed objectives and expectations in terms of focusing on consumers, final customers and improving efficiency.

2. Develop terms of trade and incentives that help to share higher returns (from growing the pie) by rewarding those behaviours and activities that contribute to create value and improve commitment, volume, reliability and efficiency.

3. Learn about each other's businesses and so appreciate what resources others bring and what risks they shoulder, which will reveal the interdependence within the chain. Conversely, ignorance and suspicion can breed distrust.

4. Solve problems, such as reducing waste, through mutual commitment of time, money, knowledge/expertise and shouldering risks. Those who do not contribute to making improvements do not earn a right to share the rewards.

5. While contracts may be formal or verbal, place emphasis on them being long-term; reward reliability and improvement. Where arrangements are vague, parties must resist the temptation to take advantage; commitments should always be honoured.

6. Communicate openly and honestly and ensure consistency between words and actions. In time, sensitive information should be shared, with the expectation that confidentiality will be respected and trust will not be abused. Even when everyone is busy with their day-to-day business, ongoing communication helps build commitment. Feedback should be given constructively and action taken in response where necessary.

7. Work with input suppliers to ensure availability to critical inputs of the necessary quality/varieties.

8. Agree what postharvest processing would grow the pie by meeting retailers' and their shoppers' needs.

9. Keep the chain's strategy under review given that the context (consumers, competition, technology, best practice etc.) is dynamic.

The value-chain map below can be used to identify critical partners. In the example of the mango export value-chain it is evident that to deliver what consumers valued—sweet and ripe fruit—it is essential that any importer ripens the fruit expertly, and carefully selects individual mangoes to send to the retailers only when they are in peak condition. Accordingly, for producers to maximise the market opportunity, they need to find the best importer with the skills and commitment to undertake these activities effectively.

WORKING AS PARTNERS

MANGO EXPORT VALUE-CHAIN

INPUTS	→	PRODUCER	→	IMPORTER	→	RETAILER	→	CONSUMERS
Genetics/ planting material Fertilisers Pesticides Water Equipment Packaging materials Advice		Tree planting Growing crop Harvest Grading Packing Cooling/ storage Export		Intake Storage Ripening Grading Pre-packing Dispatch		Intake at warehouse Storage Distribute to stores Display		What affects behaviour? Sweetness Ripeness Shelf-life

EXERCISE

Using the value-chain maps, trainers should discuss with participants which relationships are most important to farmers, including potentially with other farmers.

Trainers could help participants to arrange and conduct meetings with the critical partners in their value-chain, and to plan the discussion, which could be based around the following issues:

∗ Do the partners agree with the maps of the chain?

∗ Do they agree about what specific consumers value, and the services required by the final customer?

∗ Can they agree terms of trade that reward creating value; reducing waste; and improving quality, volume, services, commitment and reliability?

∗ What information does everyone need (quality, delivery quantities and timing etc.) and how will this information be found and shared?

∗ How can farmers ensure that they remain preferred suppliers?

∗ What are the likely levels of demand and availability? What coordination is needed of production and orders/delivery among farmers, and between farmers and customers?

Activity 4.8: Gender equity in value-chains

KEY MESSAGES

* Social norms and behaviour between genders may reduce a value-chain's performance.

* Improving the capability of women and girls to broaden their participation in value-chains and decision-making may increase the chain's effectiveness.

BACKGROUND

Men and women across the value-chain may have different attitudes to cooperation among farmers and with suppliers and customers; if women in a culture do most of the shopping, male farmers may understand less about what shoppers want; and access to resources such as training might affect genders differently.

EXERCISE

Participants should discuss the different roles of women and men in the value-chain. They can use the value-chain maps to identify the typical roles of males and females by marking each activity with an M and/or F. Then discuss how the behaviours and constraints encountered by female and male producers, processors and retailers may prevent value-chain thinking, for example through:

* access to resources (land, finance, transport etc.)

* inclusion in decision-making

* division of labour

* building partnerships

* receiving the benefits of value-chain thinking, and so encouraging the behaviour required to sustain collaboration.

They should be prompted to suggest potential solutions to improve gender equity.

It may also be helpful to have separate discussions in single-sex groups. Female participants could be asked to debate:

* How do women farmers interact with men and women among different types of value-chain members (input suppliers, traders, retailers, consumers etc.)?

* What type of constraints do women face with each of these interactions, and how does that affect the scope for value-chain thinking?

* As female farmers, how could they change behaviour to strengthen their position in the value-chain?

* Similarly, male participants could discuss:

* How do male farmers interact with men or women along the value-chain (input suppliers, traders, retailers, consumers etc.)?

* How do male chain members support or marginalise women in the value-chain? What impact does this have on the value-chain's effectiveness and opportunities to grow the pie and everyone's share of that pie?

* How should male behaviour change to avoid marginalising women?

Activity 4.9: Walking the chain

This is a mentored group-training exercise through which participants learn directly from an existing value-chain, with the aim of deriving lessons to apply to their own practices. It teaches them about the different parts of a specific chain, and the practical challenges and benefits to applying value-chain thinking. The activity is known as 'walking the chain' and involves meeting chain members to ask questions about the chain's structure, what its consumers value about the product and whether/how this is reflected in practices and decisions upstream, and how relationships affect the chain's ability to grow the pie by creating value and reducing waste. Making observations is also an important part of the walking the chain learning process.

WALKING THE CHAIN

Walking the chain involves taking participants backwards, from downstream consumers to upstream farmers. Starting with consumers ensures that the focus remains on meeting their expectations; by knowing from the outset what affects consumer behaviour, participants can examine every activity along the chain through that lens to decide whether it creates or destroys consumer value. The walk then involves meeting retailers (i.e. supermarkets and/or wet markets), wholesalers and other intermediaries, postharvest facilities (e.g. packing, processing and storage facilities) and farmers. The activity can use either domestic or export chains as case studies, although the latter naturally requires greater funding and organising. Similarly, the case study chain could be supplying either retail or food-service (hotels, restaurants etc.) outlets.

PARTICIPANTS AND MENTORS

The participants can be drawn from people across value-chains as well as extension officers, policymakers and researchers. This ensures that, after the activity, participants can work together to upgrade their own chains and pass on the lessons to their peers who did not take part.

Similarly, mentors should be experts in a variety of value-chain management disciplines, including systems thinkers, business managers, postharvest technicians, production scientists, marketers and human resource managers.

SCHEDULE

The activity begins with a briefing program, which might include an introduction to value-chain thinking (as detailed elsewhere in this manual). At this stage each participant should be given a workbook to note all their observations and learning as they go, and so at the end of the activity they can write up how they will apply the lessons to their own business or role in government/NGOs. It is important that everyone is well prepared with questions, and this session should include preparing specific questions, although these should be reviewed throughout the activity so that, as particular issues emerge, they are pursued during subsequent interviews.

The activity's precise structure will depend upon the chain being examined, but there may be up to six steps.

1. *Meeting shoppers*: This is the first exercise, with participants visiting wet markets or supermarkets, and using semi-structured conversations to investigate what attributes shoppers are looking for when they make decisions about what to buy within the category that participants are learning about. They need to ask a range of shoppers so that they learn how the importance of attributes may vary, as an illustration of market segmentation. Afterwards, participants should consider which segments are most attractive and what are that segment's priorities. Finally, they should purchase examples of the type of product that seems most attractive, which can be analysed objectively to identify key characteristics.

2. *Interviewing stallholders, supermarket category managers or catering manager*s: This step examines how retailers create value for their shoppers, select suppliers and determine whether to retain them, and build relationships. It also involves observing how the product is handled through distribution centres and in-store, allowing participants to assess retail practices/merchandising, where and why waste is generated, and supplier relationships and management. Some examples of the types of questions they can pose are given in the box below.

Example questions for a final customer (retailer, stallholder, hotel catering manager etc.) selling vegetables

* How do you choose what to sell? What are you looking for in the products you buy? How do you assess quality?

* What are your shoppers/guests like? What types of consumers are more attractive, and what distinguishes them? Do you know what your consumers want?

* Where and how much waste is generated in your shop/hotel etc.? Are the causes of this waste understood; what efforts have been made to reduce the waste, and with what impact; and what is preventing further reductions?

* How much variability is there in supply and demand for particular vegetables (i.e. daily, weekly, seasonally and annually)? Is it predictable? How is this managed; does it produce waste or require selling products for less than they are worth, and what could be done to improve the situation?

* Are there problems with fulfilling orders for particular vegetables? Are these problems to do with availability in terms of volume or quality? If some suppliers are more reliable, why is this and what should we learn from them?

* What other risks do you face that are either caused, or could be reduced, by your suppliers?

Suppliers

* Do you tend to deal with the same suppliers or swap around? Why?

* If you do not currently buy direct from farmers, would you be interested in doing so?

* Do you use formal contracts or informal/verbal agreements? If so, how long ahead do they apply?

* What are the usual payment terms?

* What do you look for in a good supplier?

* How do you incentivise/reward better suppliers?

* Do you discuss longer term plans with your suppliers?

* Do conflicts ever arise with suppliers, and how are these resolved?

Conclusions

* Do you have any other frustrations with sourcing vegetables, and how could they be eliminated?

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3. *Interviewing wholesalers/importers*: Here the topics should include technical (e.g. product quality, supply/inventory management, packaging and storage), relational (e.g. supplier and customer management) and financial (e.g. costs, margins, waste and, for importers, exchange rate risks) questions. The product should be inspected at all stages of handling, with further quality measurements taken.

4. *Interviewing freight forwarders and exporters*: For export-chain case studies, this provides the opportunity to identify the role played by freight forwarders and exporters, and ask how they identify market requirements, maintain product quality, meet market access requirements and manage inventory. Do they outsource any functions? What can go wrong and how are these risks reduced? How are suppliers selected and what do they need to do to meet market and customer expectations? How do different parties communicate, especially internationally, and is this effective?

5. *Interviewing wholesalers/packhouses/abattoirs etc.*: The type of business visited will depend upon the product and whether it is exported. Where appropriate and with due training and care, participants can get hands-on experience, for example in grading and packing. This can be valuable in learning how activities on the farm can create problems downstream, for example variability in product quality due to production or harvesting practices. Participants should also ask about the downstream consequences of good and bad supplier practices, such as the reliability of deliveries.

6. *Interviewing farmers:* Participants should discuss all on-farm activities. How do the farmers make decisions about which crops to grow or animals to raise, which inputs to use, when and how to harvest, and to whom they should sell? What understanding do they have of the rest of the chain and how could the lessons the participants have learned help the farmers in the case-study chain?

Examples of general issues to be pursued during all chain interviews

∗ Do suppliers and their customers agree on objectives and expectations in terms of focusing on consumers, final customers and improving efficiency? How do chain members ensure that they remain preferred suppliers?

∗ Do the terms of trade and incentives help to share higher returns (from growing the pie) by rewarding those behaviours and activities that contribute to creating value and improving commitment, volume, reliability and efficiency?

∗ Do chain members understand each other's businesses, and so appreciate what resources others bring and what risks they shoulder, which will reveal any interdependence within the chain?

∗ Are there examples of solving problems, such as reducing waste, through mutual commitment of time, money, knowledge/expertise and shouldering risks?

∗ While contracts may be formal or verbal, do they emphasise longer term relationships, and rewarding reliability and improvement? Have there been examples of vague arrangements leading to parties being tempted into opportunistic behaviour?

∗ Is communication open and honest? Is there consistency between words and actions? Is sensitive commercial information shared? Has such trust ever been abused? Is feedback given constructively and is action taken in response where necessary?

∗ What are the likely levels of demand and availability? What coordination is needed of production and orders/delivery among farmers, and between farmers and customers? What information does everyone need (quality, delivery quantities and timing etc.) and how will this information be found and shared?

ACTIVITY'S CONCLUSIONS

To maximise the activity's impact, it is essential that each participant reviews their workbook and translates it into a personal action plan (see box below). If any certificates are awarded to participants for undertaking the activity, these should not be presented until their action plan is completed and has been reviewed. Wherever possible, further mentoring should be provided to help participants implement their plan and share their findings with peers.

Characteristics of a value-chain thinking action plan.

1. It draws on the specific lessons from walking the chain.

2. It is market orientated by identifying market opportunities and what that means in terms of delivering consumers' needs, so that produce is pulled through the chain to meet their demands rather than pushed through the chain based on what is produced upstream.

3. It fits the size of market opportunities with available volumes. For example, if a farmer is only willing to work alone, she/he will be able only to serve a small market opportunity. Even working cooperatively, farmers need to balance ambition with their capacity to meet customers' requirements in terms of volume and reliability, especially given the inherent uncertainties of agricultural production.

4. It reflects each participant's training needs, interests, skills and capacity. For example, for farmers, it needs to balance their personal aspirations in terms of production of crops for:

    a. consumption—for the farmer's own family;

    b. cash—usually a standard/commodity crop that provides a relatively predictable, if low, return to meet farmers' needs for income and cash flow; and

    c. value—which offers higher returns based on value-chain thinking.

5. It justifies what to produce, how and for what route-to-market, based on market opportunities and the participant's own resources (land, time, initial finance, inputs, skills, support from family etc.).

6. It prioritises those inputs and activities that are most critical to both creating value and reducing waste on-farm and downstream.

7. It targets critical partners based on who creates value, reduces waste or provides access to market opportunities, and sets out specific actions needed to become a preferred supplier to those critical partners.

8. It identifies what information will be needed before, during and after production, and how that information will be gathered and used.

9. It understands, and ensures where appropriate to do so, that gender norms do not prevent the value-chain improving its efficiency and effectiveness, or distributing the resultant benefits.

10. It lists what external support will be needed and how it will be obtained.

11. It is dynamic and capable of adaptation to experience and changing market opportunities.

Activity 4.10: Preparing an action plan

KEY MESSAGES

*   To increase their income, farmers need to decide:

    -   what and how to grow/raise, and how to improve their returns by reducing waste and creating the quality of product to suit particular market opportunities;

- how to be preferred suppliers by delivering the service needed by the final customers, who provide access to those market opportunities;

- whether to undertake additional postharvest activities, such as processing or grading; and

- how to pick partners and build relationships.

* What must farmers excel at? Their action plan should focus training, time, skills, advice and money on being excellent at those activities that contribute most to distinguishing them from the crowd, and so increasing their income.

* Having identified critical activities, farmers need to ensure that the action plan includes:

- prioritising further production/postharvest training and advice; and

- identifying critical inputs and then seeking advice on getting the type/quality needed, for example from extension staff, and meeting with critical suppliers.

BACKGROUND

An action plan should bring together participants training in production, postharvest processing and value-chain thinking. The aim is to focus on the activities that farmers can undertake to differentiate themselves from their competitors in serving higher value market opportunities. If a farmer does not prioritise what will be attractive downstream (i.e. more value, less waste, stronger partnerships), they are doomed to compete on price because they cannot distinguish themselves in any other way from competing farmers.

Trainers need to ensure that each participant's action plan is based on value-chain thinking. This means that the plan:

* is market oriented by identifying market opportunities, and what that means in terms of delivering consumers' needs, so that produce is pulled through the chain to meet their demands rather than pushed through the chain based on what is produced upstream;

* fits the size of market opportunities with available volumes. If a farmer is only willing to work alone, she/he will only be able to serve a small market opportunity. Even working in cooperation, farmers need to balance ambition with their capacity to meet customers' requirements in terms of volume and reliability, especially given the inherent uncertainties in agricultural production;

* reflects each farmer's training needs, interests, skills and capacity. In particular, it balances each farmer's aspirations in terms of production of crops for:

- consumption—for the farmer's own family;

- cash—usually a standard/commodity crop that provides a relatively predictable, if low, return to meet the farmers' need for income and cash flow; and

- value—which offers higher returns based on value-chain thinking;

* justifies what to produce, how and for what route-to-market, based on market opportunities and the participant's own resources (land, time, initial finance, inputs, skills, support from family etc.);

* prioritises those inputs and activities, including postharvest, that are most critical to both creating value and reducing waste on-farm and downstream;

* targets critical partners based on who creates value, reduces waste or provides access to the market opportunities, and sets out specific actions on how to become a preferred supplier to those critical partners;

* identifies what information will be needed before, during and after production, and how that information will be gathered and used;

* ensures that gender norms do not prevent the value-chain improving its efficiency and effectiveness, or distributing the resultant benefits;

* lists what external support will be needed and how it will be obtained; an

* is dynamic and capable of adaptation to experience and changing market opportunities.

EXERCISE

Using the maps and conclusions created in other activities, discuss those on-farm activities and inputs that have most influence on reducing waste, creating the quality of product the target consumers want, and providing the service the customers need. These should be indicated with 'V's and 'W's on the map. There may also be some postharvest activities immediately downstream that farmers could undertake, but only if they would enable them to capture more value. If there are no 'V's and no 'W's in a farmer's list of activities, and they do not build partnerships, they can only compete on price, which constrains their potential income.

Farmers need to focus on these critical activities, so discuss with them what additional production and postharvest training would help them excel at these activities. Similarly, having identified key inputs, what advice can they get on how to optimise them, for example from extension staff or from meeting with potential input suppliers? Build the answers into the action plan, bringing in experts in finance, nutrition, production, postharvest processing and retailing if necessary, and use them to prioritise additional training.

Trainers should also discuss with female participants what constraints they may face in implementing their action plan and how these could be avoided.