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INTEGRATING MICRO AND SMALL ENTERPRISES INTO VALUE CHAINS

EVIDENCE FROM GUATEMALAN HORTICULTURE AND HANDICRAFTS

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Integrating MSEs into Value Chains: Evidence from Guatemalan Horticulture and Handicrafts

ABSTRACT

Micro and small enterprises (MSEs) are key contributors to the economic well-being for many developing country households. Globalization represents both an opportunity and a threat to the long-term survival of these MSEs. It creates opportunities for MSEs to participate in international markets, which can lead to increased incomes at the household level and accelerated economic growth and development at the national level. On the other hand, globalization also leads to higher standards and heightened competition in local and national markets, the traditional strongholds for MSEs. Whether the potential benefits of globalization will be realized depends critically on how effectively MSEs adapt to new conditions and increase their competitiveness, as well as the extent to which the value chains in which they participate can remain competitive over time. Collaborative, mutually beneficial linkages between firms in the value chain, including linkages among MSEs and linkages between MSEs and larger firms, can increase efficiency, improve competitiveness, and provide a means for firms to actively participate in and benefit from increasingly global markets.

Using in-depth field interviews and a survey of buyers and producers, this study takes a “bottom-up” perspective to investigate the nature, determinants, and consequences of MSE participation in the textile handicrafts and high-value horticulture value chains in Guatemala. It empirically tests the characteristics of value chain linkages that facilitate or inhibit the formation of collaborative inter-firm relationships, both vertically (between firms at different levels of the value chain) and horizontally (among firms at the same level of the value chain). This is followed by an analysis of the impact of these vertical and horizontal relationships on MSE owners’ ability to innovate, or upgrade, their enterprise. The results indicate the importance of market information, inter-firm communication, reduced transaction costs, risk-offsetting opportunities, and effective group governance in building strong horizontal and vertical relationships that promote MSE upgrading and enhance the competitiveness of value chains.

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INTEGRATING MSEs INTO VALUE CHAINS: EVIDENCE FROM GUATEMALAN HORTICULTURE AND HANDICRAFTS

EXECUTIVE SUMMARY

Micro and small enterprises (MSEs) are key contributors to the well-being of developing country households, and on the national level play a critical role in reducing poverty through economic growth. Technological change, reduction in trade barriers, facilitation of foreign direct investment, and the proliferation of trade agreements are some of the factors that work together to integrate world markets and decentralize production. These changes create opportunities for MSEs to participate in international markets. However, these processes also threaten MSE competitiveness by creating higher standards and increased competition in local and national markets, the traditional strongholds of MSEs. Whether the potential benefits of globalization are realized depends critically on the extent to which MSEs adapt effectively to new conditions and become competitive.

In today's global economy, a firm's competitiveness cannot be separated from that of the value chain in which it participates, therefore research and intervention must focus on the entire value chain. Value chain linkages among firms, in the form of coordination and cooperation, increase efficiency and can potentially improve the competitiveness of the participating firms by providing a means for MSEs to actively participate in and benefit from increasingly global markets. This study, of the handicrafts and high-value horticulture sectors in Guatemala, uses a value chain perspective to test the characteristics of value chain linkages that facilitate or inhibit a firm's opportunity and subsequent decision to link with other firms vertically and horizontally. The study then tests the impact of these relationships on the firm owner's ability to innovate in ways that upgrade the enterprise.

This study can be summarized as a "bottom-up" investigation of the nature, determinants, and consequences of MSE participation in value chains. The distinct contribution of this report is that it presents a view from the producers' perspective based on primary research that includes interviews with over 750 MSEs. In the first stage of the study, qualitative methods were used to map the structure of the two value chains and refine key hypotheses. The qualitative research relied on individual and group interviews with firm owners at all levels of the value chains and with representatives of governmental and non-governmental support and facilitation groups. The subsequent quantitative component of the study was based on surveys of two types of firms in the value chains: MSE producers and the firms that buy their products. The survey data were used to test hypotheses on horizontal relationships, vertical relationships, and firm-level upgrading among MSEs. The findings reveal a number of factors that can be integrated into facilitation strategies for promoting the competitiveness of MSEs and the value chains in which they operate.

A substantial share of MSEs participate in value chains, but a much smaller share currently has knowledge of end market conditions or access to international markets. The vast majority of firms at all levels of the handicrafts and horticulture value chains in Guatemala are MSEs: almost all of the producers in these sectors are MSEs, and most of the firms operating at the wholesale and retail levels are MSEs. Only half of the MSE producers know into which markets their buyers sold their products, demonstrating limited knowledge of the complete value chain and the end market product requirements. The survey also shows that producers have limited access to international markets, despite expressing a preference for selling into these market channels.

Horizontal relationships, such as formal and informal producer groups, provide a means to improve MSE capacity and reduce transaction costs; these relationships can be strengthened through improved group governance and market knowledge; participation in these groups can be facilitated with cost-effective information and communication

technology (ICT) and inborn social capital. Producer groups are sources of technical and market information for group members, providing a means to improve MSE capacity and reduce transaction costs. However, participation in such groups remains limited. The study reveals a high occurrence of fraudulent and opportunistic behavior on the part of group leaders, which has the potential to erode trust and hamper collaborative action. Several organizational innovations appear to counter these problems, including directly electing the group leaders, maintaining written records, and having a paid manager. Further, greater market knowledge on the part of group members significantly reduces the likelihood that group leaders engage in fraudulent behavior. Transaction costs, especially the opportunity cost of time, are another potential constraint to the formation of producer groups. While ICT is associated with reduced transaction costs in managing producer groups, the use of cost-effective ICT by MSE producer groups and members remains very low. Further, the presence of inborn social capital is associated with greater producer group participation.

Strong vertical relationships improve MSE capacity; these relationships can be bolstered through greater personal communication and increased information to producers; participation in vertical relationships can be facilitated by reducing transaction costs. Cooperation through vertical relationships is central to value chain competitiveness, providing a means to reduce transaction costs and increase the ability of the chain to meet and adjust to consumer demands. This study identifies factors that are associated with strong vertical relationships and that have the potential to reduce transaction costs. Vertical relationships in this study are concentrated, meaning that large portions of an MSE owner's product are sold to one buyer. However, these relationships are also characterized by trust. The study identifies two factors that are associated with improved trust: 1) personal communication between buyer and producer and 2) market knowledge for MSE producers. A majority of the buyers in this study report that it is less costly to do business with producers than with intermediaries, a perception that is statistically associated with reduced reliance on intermediaries. These findings highlight the willingness of buyers to conduct business directly with MSEs when transaction costs are lower than the alternative.

Upgrading within MSEs is possible and can occur with or without assistance. This study finds that less than one third of producers have completed the major upgrades identified for the purposes of this study: sanitary and phyto-sanitary (SPS) certification for horticulture producers and the use of new designs and/or the foot loom for handicrafts producers. However, when the definition of upgrading in the horticulture sector is expanded to include the adoption of selected “good agricultural practices”, approximately half of horticulture producers could be considered as being in the process of upgrading. In the handicrafts sector, upgrading often occurs without assistance, as demonstrated by the fact that most of the handicrafts producers currently using the foot loom purchased it and learned to use it at their own expense. On the other hand, the majority of weavers using new designs had received these directly from the firm buying their products.

Upgrading can be facilitated by increasing the availability of risk-offsetting opportunities, improving producers' information about costs and benefits throughout the value chain, fostering effective horizontal relationships among MSE producers, and encouraging strong vertical linkages to buyers. This study identifies factors that are associated with MSE innovation and upgrading. Upgrading without the knowledge that their investments will pay off is risky for producers, and the study demonstrates a general lack of risk-offsetting opportunities, such as having a credible assurance of future sales. The presence of other sources of household income offsets risk and is associated with upgrading among horticulture producers. Also, this study demonstrates a general lack of knowledge among producers about the benefits of upgrading. For example, very few of the horticulture producers know buyers who pay higher prices to certified producers. Having this knowledge, however, is associated with higher levels of these types of upgrading.

Certain characteristics of vertical relationships, and to a lesser extent horizontal relationships, are found to be associated with producer upgrading. Aspects of horizontal relationships found to be associated with producer upgrading are group membership (particularly in the horticulture sector) and selling products as a group. However, the survey data indicate that there is very low group participation by MSE producers in both sectors. In addition, specific characteristics of strong vertical relationships are linked to MSE-upgrading: longer-term business relationships, personal relationships, face-to-face communication (handicrafts only), trust, and direct buyer support. Further, producers with buyers in higher value-added markets are more likely to have engaged in upgraded practices.

The findings of this study provide policy-relevant information that can be used to inform the design of value chain interventions:

- Strong vertical relationships and horizontal relationships are linked to higher levels of MSE upgrading.
- Information-based services that increase MSE owners' knowledge of markets and prices facilitate stronger vertical and horizontal relationships.
- Cost-effective ICT facilitates effective participation in producer groups and access to market information (e.g., prices, regulations, and end market preferences).
- Institutional changes that foster transparency, establish effective monitoring of group leaders, and protect participants against exploitation encourage participation in producer groups.
- Personal communication between buyers and producers strengthens vertical relationships and reduces transaction costs.
- Interventions that offer risk-offsetting incentives, such as credible assurances of future transactions, encourage upgrading investments.

I. INTRODUCTION

Micro and small enterprises (MSEs)¹ are key contributors to the well-being of developing country households, and have the potential to make significant contributions to national economic growth and poverty reduction. Under globalization, opportunities for MSEs to participate in international markets have been created by factors that work together to integrate world markets and decentralize production, such as technological change, reductions in trade barriers, facilitation of foreign direct investment, and the proliferation of trade agreements. At the same time, these processes threaten MSE competitiveness by creating higher standards and increasing competition in local and national markets, the traditional strongholds of MSEs. Whether MSEs realize the potential benefits of globalization depends critically on the extent to which they can adapt to new and changing market conditions.

Some of the issues facing MSE owners in their quest to acclimate to the modern global economy can be illustrated through a description of two very different rural Guatemalan households. The first household, identified here as the “subsistence-oriented household,” is a traditional Guatemalan farming household that deploys its land and labor in a low-risk, low-return manner. The household’s central economic activity is the cultivation of subsistence crops (primarily corn and beans) on a small landholding of one to four hectares. These crops create food security for the household, buffering it from fluctuations in the market prices for staple goods. The household also maintains a kitchen garden, a few fruit trees, and a handful of poultry and small livestock to complement the family diet. If the household is fortunate enough to produce a food surplus, or if there is some urgent need for cash due to school or health expenses, some of the food production might be sold to generate cash income through direct sales to local consumers or to wholesalers who supply the wet markets in towns and cities.

The subsistence-oriented household’s greatest asset is the labor of its members, so any surplus labor is used to generate cash and in-kind income.² Cash income typically comes from the wages earned by one or two household members who work in occasional and low-skilled jobs, such as agricultural day labor and domestic work. Relatively few households may operate a rural microenterprise, such as a small store, a corn mill, or local commodity transport. Even small amounts of time are put to productive use. In indigenous households, women use their spare hours to weave clothing and other intricate textiles on the back-strap loom; these textiles are used by the household and can be sold in local markets.

Now compare the traditional household described above with a similarly sized “market-oriented household” that relies more heavily on production for the market, taking greater risks in search of higher returns. The central economic activity for this household is the production of high-value, labor-intensive vegetables, such as snow peas, sugar snap peas, broccoli, French green beans, and baby vegetables (e.g., corn, carrots, squash). These vegetables can generate substantially more income than staple crops, but they also expose the household to a number of risks: 1) production risks because the vegetables are more prone to infestation and sensitive to climate than subsistence crops; 2) market risks because the household must make a large investment in production inputs, including hired labor, and the sales prices for high-value crops can fluctuate dramatically; and 3) food security risks because the household has a smaller buffer of subsistence crops and fewer outside income sources to turn to during periods of negative profits.

The market-oriented household’s greatest assets are its linkages to reliable buyers and access to advanced technical information. When the household has an on-going relationship with an assured buyer, it is better able to manage risks and smooth income. Insofar as the buyer has a stake in the product and its quality, the buyer may perceive an incentive to provide input advances, technical advice, or business development services where these are not otherwise available or affordable. The security provided by these arrangements facilitates the farmer’s ability to successfully grow high-value crops, and thus achieve greater productivity and higher income.

A. STUDY PURPOSE

The contrast between these two Guatemalan households highlights the potential benefits when low-income households integrate their MSEs into productive, competitive value chains. This image also serves as a guide in the design of this study by helping define its two key issues. First, this study explores key features of the linkages between the enterprises of market-oriented households and the value chains in which they participate. In today's increasingly global economy, MSEs are not best studied in isolation. Rather, it is often more fruitful to examine MSEs as part of the value chains in which they belong. Value chain linkages among firms, in the form of coordination and cooperation, increase efficiency and can potentially improve the competitiveness of the participating firms by providing a means for MSEs to actively participate in and benefit from increasingly global markets. This study, which focuses on the textile handicrafts and high-value horticulture sectors in Guatemala, uses a value chain perspective to test the characteristics of value chain linkages that facilitate or inhibit an MSE owner's opportunity and subsequent decision to link with other firms vertically and horizontally. The second issue that arises from the image of the two Guatemalan households is an examination of the factors that might encourage firm owners to innovate and upgrade to transform their low-risk, low-return MSEs into more productive MSEs that manage risks to generate higher expected returns. In particular, the study is concerned with the impact of horizontal and vertical relationships on firm owners' ability to upgrade their enterprises.

This study is based on a conceptual framework that associates value chain competitiveness with the quality of linkages among firms and the presence of firm-level upgrading. Within this framework, upgrading provides a means for MSEs to adapt to changing market dynamics, increase their efficiency and competitiveness, and actively engage in and prosper from globalization. Testing of these key connections, which are directly related to the well-being of MSEs, is outside the scope of this study. Further, this study is not concerned with identifying and recommending value chain interventions. Instead, the purpose of this research is to generate new knowledge about 1) the determinants of MSE participation in horizontal and vertical value chain linkages and 2) the effects of value chain linkages on MSE upgrading.

This study can be summarized as a "bottom-up" investigation of the nature, determinants, and consequences of MSE participation in value chains. The distinct contribution of this report is that it presents a view from the producers' perspective. In the first step of the study, qualitative methods were used to map the structure of the two value chains and refine key hypotheses. The qualitative research relied on individual and group interviews with firm owners at all levels of the value chains and with representatives of governmental and non-governmental support and facilitation groups. The subsequent quantitative component of the study was based on surveys of two types of firms in the value chains: MSE producers and the firms that buy their products. The survey data were used to test hypotheses on horizontal relationships, vertical relationships, and firm-level upgrading among MSEs. The findings reveal a number of factors that can be integrated into facilitation strategies for promoting the competitiveness of MSEs and the value chains in which they operate.

B. STUDY LOCATION AND JUSTIFICATION

With approximately 12 million inhabitants, Guatemala is one of Central America's most populous countries; it is also one of Central America's poorest nations, with up to 56 percent of its population below the poverty line (CIA 2005). Given its urgent need for economic development, Guatemala was selected as the first country in which to launch the Accelerated Microenterprise Advancement Project (AMAP) Analyzing the Integration of MSEs in Value Chains (AIMVC) field study.³

The textile handicrafts⁴ and high-value horticulture value chains were selected as the focus of this study, for several reasons:

- They are significant to the Guatemalan economy. The agricultural sector accounts for about one-fourth of GDP, two-thirds of exports, and half of the labor force (CIA 2005). Similarly, textile production ranks among Guatemala's principal industries.
- Numerous MSEs participate in these value chains. An estimated 250,000 low-income households work as producers in the horticulture sector. In the handicrafts sector, at least 700,000 Guatemalans work as weavers. Most of these weavers are female members of indigenous households (Aid to Artisans and AGEXPRONT 2003a), a demographic group that includes a disproportionately large share of Guatemala's low-income households (Hall and Patrinos 2005).
- Production in both value chains is highly labor intensive, providing a potential competitive edge to small-scale producers.
- The value chains are inter-connected. Handicrafts and horticulture producers are likely members of a single household involved in a diversified set of subsistence and market-based agricultural and non-agricultural production activities. In addition, both value chains, but especially handicrafts, are connected to the tourism industry within Guatemala (Hamilton and Fischer 2003; Nash 1993; Ehlers 1993).
- Information about how MSEs contribute to and benefit from these value chains is applicable in other countries because textile handicrafts and small-scale agriculture are significant sources of income for low-income households in many countries around the world.

C. REPORT OUTLINE

This study uses qualitative and quantitative methods to investigate the textile handicrafts and high-value horticulture value chains in Guatemala in order to better understand: 1) the nature of MSE participation in these value chains; 2) the linkages between MSEs and other firms in the value chain, including both horizontal linkages among MSEs at the same level of the value chain and vertical linkages between MSEs and firms at the next higher level of the value chain; and 3) the effect of these relationships on MSE owners' ability to upgrade. The investigation is grounded in, and informed by, contextual information about trends in the market environment that are affecting overall value chain competitiveness.

To achieve these goals, the report is organized into the following sections:

- Section II reviews the conceptual issues underpinning the study.
- Section III provides background information on the textile handicrafts and high-value horticulture value chains.
- Section IV describes the methods used to investigate the two value chains.
- Section V presents the findings on MSE participation and describes the market channels through which the products of MSEs move.
- Section VI delves into the nature of horizontal and vertical relationships in which MSEs are engaged and factors that strengthen and facilitate these relationships.
- Section VII considers MSE upgrading, and analyzes how horizontal and vertical relationships, as well as other factors, might impact upgrading.
- Section VIII presents an overview of the study's findings and suggests opportunities for further research.

II. CONCEPTUAL ISSUES

The competitiveness of developing country micro- and small enterprises (MSEs) is critical but questionable given the multitude of constraints these enterprises face in an increasingly global economy. As key contributors to the well-being of developing country households (Mead and Liedholm 1998; Daniels 1999; Nichter and Goldmark 2005; Magill and Meyer 2005; IADB 1998; Larson and Shaw 2001), they must be—or soon become—competitive actors in the global economy. Microenterprises in Latin America and the Caribbean represent an estimated 80 percent of all businesses and employ between 30 and 80 percent of each country's workforce (IADB 1998). Globally, small farms are the main source of employment for the poor (FAO 2005). Because of their role in providing livelihoods and the potential for economic growth in developing countries (World Bank 2004), the future for MSEs is a critical issue.

Improving MSE competitiveness requires systematic and systemic analysis of the conditions that allow MSEs to thrive in today's global economy. Improved technology and logistics, reduced trade barriers, increased foreign direct investment, and the proliferation of bilateral, regional, and international trade agreements all work together to integrate world markets and decentralize production (Feenstra 1998). These processes create opportunities for MSEs to participate in international markets, as global and regional companies seek the benefits of outsourcing and look to developing countries for low-priced, high-quality, flexible product sources (Nichter and Goldmark 2005).

The same globalization processes also threaten MSE competitiveness. In a global economy, these businesses face higher product standards and heightened competition in local and national markets (OECD 2000). Historically, firms have competed against other firms from the same country. With globalization, industries in one country are competing against the same industry in another country. Consequently, firm-level competitiveness is no longer sufficient; the market system (value chain) that delivers a product from its inception to the consumer must be able to compete against market systems elsewhere. Market liberalization resulting from globalization has shifted the competitiveness strategy from the firm to the industry, challenging the entire value chain to constantly innovate (upgrade) to achieve and maintain competitiveness (Ernst 2004).

Since a firm's competitiveness cannot be separated from that of the value chain in which it participates, research and intervention must focus on the entire value chain. A value chain analysis can identify the opportunities for and constraints to industry growth (Kula, Downing and Field 2006) by considering the value chain actors (firms), linkages among firms, supporting markets, end markets, and the business enabling environment at all levels (international, national, and local). Linkages among firms, in the form of coordination and cooperation, increase efficiency and economy and affect the distribution of learning and benefits within the chain (Kula, Downing and Field 2006). These linkages provide a means for MSEs to actively participate in and benefit from global markets. Understanding the linkages and how they are governed provides insight into policies and interventions to facilitate value chain competitiveness, reduce MSE risk, and encourage greater productivity and a more equitable distribution of benefits.

This study is based on value chain analysis, a research approach that has been employed across a wide range of sectors such as apparel, automobiles, electronics, footwear and leather, horticulture and agriculture, furniture, and surgical instruments.⁵ The present study makes a unique contribution to this literature in that it statistically tests the characteristics of value chain linkages that facilitate or inhibit a firm's opportunity and subsequent decision to link with other firms, both vertically and horizontally, and it tests the relationship between these linkages and MSE owners' ability to upgrade. A second important contribution of this study is that it focuses specifically on the smallest firms in global value chains, and thus provides a unique, bottom-up perspective on value chain analysis along with empirically grounded information to inform the design of value chain interventions that affect MSEs.

A. FRAMEWORK FOR VALUE CHAIN ANALYSIS

A value chain is the sequence of activities required to create a product or provide a service (Schmitz 2006). There are three important features to consider when analyzing value chains:

- The activities are often carried out in different parts of the world, thus creating a value chain that is global in scope (i.e., a “global value chain”);
- Some activities are more lucrative than others and helping enterprises innovate (upgrade) to generate higher levels of value-added is an important policy concern; and,
- Some firms in the chain have power over others – they are “lead firms” that set or enforce the terms under which other firms in the value chain operate.

A value chain map is graphical representation of the types of firms in the value chain and how they are linked to each other (Kaplinsky and Readman 2001). Global value chain analysis demonstrates that the global actors that govern the value chain can exert a major influence on the upgrading and earning opportunities of local enterprises (Schmitz 2006).

B. FIRM-LEVEL UPGRADING

Upgrading is defined as “innovation that increases value added” (Dunn et al. 2006), and it occurs at both the value chain and firm levels. Upgrading is essential to the competitiveness of the value chain overall (Ernst 2004), as it ensures that the chain is able to meet consumers’ preferences for lower prices and improved quality. Firm-level upgrading by MSEs is a key component of an economic growth with poverty reduction strategy for increasing the participation, contribution, and benefits of MSEs in value chains.

Firm-level upgrading can be categorized into five types:

1. Process upgrading: increasing efficiency (more output for same level of inputs or same level of output from fewer inputs). Process upgrading reduces the cost of production and may be attributable to improved organization and management of the production process or to the use of an improved technology.
2. Product upgrading: improving product quality. As used here, “quality” is defined broadly to include extrinsic, intrinsic, tangible, or intangible changes that result in the final product being able to command a higher final price because it is more valuable to the consumer.
3. Functional upgrading: moving to a new, higher value-added level in the value chain. This moves the firm closer to the final consumer, requires the firm to take on new functions, and positions the firm to receive a higher unit price for the product.
4. Channel upgrading: selling into a new market channel within the value chain. The firm enters into a pathway that leads to a new, higher-value end market in the value chain. Firms may operate in more than one channel at the same time, and they may move in and out of channels over time.⁶
5. Chain (inter-sectoral) upgrading: moving to a new value chain. The firm uses the skills and knowledge acquired in one value chain to move into a different value chain.

Since some of these forms of upgrading can be inter-related, it is not unusual for firms to undertake more than one type of upgrading, either simultaneously or in sequence. Just as some activities in the value chain are more lucrative than others; it is also the case that some forms of upgrading generate higher returns than others.⁷ Firm owners make their upgrading decisions based on their assessment of the risk-adjusted returns to upgrading, within the context of the value chain in which they operate and their access to information and learning opportunities (Dunn et al. 2006).

C. COORDINATION AND GOVERNANCE

The concept of governance is central to value chain analysis. Governance describes the dynamic distribution of power, learning, and benefits among firms in a value chain. It evolves in part to address the three key questions of coordination (Humphrey and Schmitz 2002):

1. What is to be produced, including product design and product specifications.
2. How it is to be produced, including processes, technologies, and standards.
3. Production logistics, including when, where, and how much is to be produced.

As long as products are standard and a sufficient number of competent suppliers are available, then arms-length market transactions can represent the least-cost way to handle coordination. When products are nonstandard, however, it complicates the coordination process by increasing the complexity of information that must be exchanged between buyers and suppliers (Dolan and Humphrey 2004). Buyers must communicate their unique product specifications and process standards to suppliers. In addition, when supplier compliance with buyer standards can not be verified based solely on observation of the finished product, then buyers may need to monitor suppliers' production processes. The combined costs of monitoring production processes for these "credence goods" (Darby and Karny 1973) and communicating detailed product specifications can become so high that the most efficient way to solve the coordination problem is to combine activities into a single, vertically integrated firm.

Arms-length market transactions and vertically integrated firms represent the two extremes in a range of possible governance structures. Between these extremes are three network types of governance: modular, relational, and captive. With network types of governance, there is substantially more interaction between buyer and supplier, but they remain separate firms under separate ownership. Based on the interaction of the three variables of a) information complexity, b) the extent to which product specifications can be easily codified (codification), and c) the degree of supplier competence, the following typology of governance structures can be constructed (Gereffi, Humphrey and Sturgeon 2005):

1. Market: Buyer and supplier do not need to communicate extensively because product and process specifications are standard, and suppliers have the capability to meet the specifications without assistance or monitoring from the buyer.
2. Modular: Products are nonstandard and each buyer has unique requirements, so complex information must be communicated between buyers and suppliers. However, product and process specifications can be codified and suppliers have a high level of competence, which reduces the communication costs and makes it relatively easy for new buyers and suppliers to begin working together (i.e., switching costs are low).
3. Relational: Information complexity is high, buyers require nonstandard products, and suppliers are highly competent. However (unlike modular governance), product and process specifications can not be easily codified, so that buyers and suppliers must communicate extensively and develop idiosyncratic methods for conveying this type of information. This makes it relatively expensive for new buyers and suppliers to begin working together (i.e., switching costs are high).
4. Captive: Information complexity is high and buyers require nonstandard products but (unlike relational governance) suppliers have limited abilities to meet product and process specifications on their own. Buyers must monitor suppliers and also invest in building supplier competence. This creates a dependency relationship that buyers have a vested interest in maintaining.
5. Hierarchy: The functions of the buyer and supplier are vertically integrated under the ownership of a single firm. Coordination costs are internal to the firm.

While entire value chains are sometimes described in terms of a single type of governance, the field-based evidence from this study indicates that a single value chain can be characterized by multiple types of governance structures operating at different linkages along the chain. Examples of this are provided in section V, when the two value chains are described.

Another important feature in the governance of global value chains is the presence of lead firms that set the product specifications (“what” to produce) and technical parameters (“how” to produce) and exercise control over the actions of other firms. Lead firms can be buyers or producers (Gereffi 1994). In producer-driven value chains the key parameters are set by firms that control key product and process technologies. Conversely, in buyer-driven value chains, the key parameters are set by large retailers and brand-name firms that focus on product design and marketing to final consumers. In addition to being set by lead firms, coordination parameters can also be set by agents external to the chain, such as government agencies and international organizations that regulate design and manufacture in order to protect consumer safety and create transparent markets (Kaplinsky 2001).

D. LINKS BETWEEN GOVERNANCE AND UPGRADING

Governance structures influence firm-level upgrading through their effects on firms’ market access, learning opportunities, economic returns, and risks. Early discussion of the links between governance and upgrading focused on differences in upgrading opportunities in producer-driven and buyer-driven chains (Gereffi 1999). More recent literature has analyzed the implications of the full typology of governance (market, modular, relational, captive, hierarchy) in terms of opportunities for firm-level upgrading in developing countries (Schmitz 2006; Humphrey and Schmitz 2002).

The discussion of the links between governance and upgrading has placed particular emphasis on process, product, and functional upgrading. Captive relationships are generally assumed to provide the strongest support for process and product upgrading, because buyers have a material interest in improving supplier capability. In captive relationships, buyers can be both very demanding and very supportive in assisting suppliers’ efforts to improve products and processes. On the other hand, buyers in captive relationships seek to maintain control over the design and marketing functions, thus seeking to discourage functional upgrading on the part of their suppliers (Schmitz 2006; Giuliani, Pietrobelli and Rabellotti 2005). Similarly, buyers in a relational system have incentives to support process and product upgrading among their existing suppliers, since there are high costs associated with switching to new suppliers and developing efficient communication mechanisms. By contrast, arms-length market relationships are assumed to be neutral with respect to upgrading; they neither support nor block it.

III. GLOBAL MARKETS FOR HANDICRAFTS AND HORTICULTURE

Globalization has affected economies of countries worldwide that have committed themselves to participating in the transition to an open, rules-based international trading system. Kaplinsky (2001) points out that the positive and negative attributes of globalization have been experienced at a number of different levels – from household to nation – with a heterogeneous and complex distribution pattern. Participation in global value chains does not guarantee success; it is *how* firms participate that contributes greatly to reaping benefits. In order to remain competitive and share in the benefits of global trade, Guatemalan firms must improve their competencies in areas such as product quality, branding, design, and product differentiation.

The market environment in which Guatemalan handicrafts and horticulture producers operate is the framework for determining value chain competitiveness. Changes in global value chains' structure and composition affect MSE owners' decisions to participate in the process, to link with other firms that can provide them credit, input and marketing services, and to upgrade their production processes and marketing arrangements in response to emerging market opportunities. These decisions affect overall value chain competitiveness. Some of these opportunities and challenges are presented below, to provide some insight into the conditions that Guatemalan handicrafts and high-value horticulture value chains face in remaining competitive in today's global markets.

An example of a shift in global value chains that directly affects Guatemala's micro- and small enterprises is the Central American Free Trade Agreement (CAFTA-DR) between the five Central American countries, the Dominican Republic, and the United States. CAFTA-DR will reduce barriers to entry for Guatemala's horticulture and handicraft products both within the region and with the United States by harmonizing non-tariff import requirements, such as sanitary and phyto-sanitary standards for food exports, and by gradually reducing tariff levels on products traded between Guatemala, the United States, and its regional partners. This will enable Guatemala's large population of micro- and small enterprises to gain access to the vast US consumer market and to lower their transaction costs by improving information deficiencies and scaling back tariff rates.

A. TEXTILE HANDICRAFTS

Handicrafts have demonstrated growth potential in world markets as they offer products that provide a unique, high-touch, and traditional alternative to consumers who are bombarded with technological and mass-market goods (Scrase 2003; Imhoff 1998). However, an assessment of market size and growth potential of the textile handicrafts market is difficult due to data classification issues. The World Trade Organization does not have a code for handicrafts in their Harmonized Commodity Description and Coding System (HS)⁸, making global market size and growth estimates challenging. Further complicating global estimates, textile handicrafts is one of several subcategories of the general "handicrafts" category, which is subsumed under several larger market categories such as "home textiles/soft goods" and "tabletop linens". Estimates of the home textiles/soft goods and tabletop linens markets provide some insight into the relative market size and growth potential for textile handicrafts. The home textiles/soft goods market is estimated at \$3.2 billion yearly, while the tabletop market is estimated at \$4.2 billion yearly. Both markets appear to be growing modestly at annual rates of 2-3 percent and 1.5 percent respectively.⁹ Given that demand for "cultural goods" is expected to grow with rising international tourism, we might expect handmade goods within these categories to grow faster than their non-handmade goods counterparts (Barber and Krivoslykova 2006).

A niche market opportunity for Guatemalan textile handicrafts that has demonstrated significant growth potential is branding through the fair trade movement. Between 2001 and 2002, total sales for all fair trade products in North America grew 44 percent. Coffee leads this category at 29 percent of total sales, but is followed closely by the handicrafts category at 24.5 percent¹⁰ (Fair Trade Federation 2003).

While the exact growth potential for the handicrafts category cannot be determined, given its large share of total sales for all fair trade products this growth may be used as a proxy. Growth is partly driven by product differentiation as fair trade branded handicrafts offer low-tech, high-design, unique offerings that differentiate them from mass market products with the additional value of a socially-oriented story line (Schwartz 2004). In addition to the direct benefits of sales growth, producers derive wider benefits from a principled approach to trade that includes: opportunities for economically disadvantaged populations, gender equity, transparency and accountability, capacity building, fair payment, safe and healthy working conditions, environmental sustainability, and fair trade advocacy (Fair Trade Federation 2003).

Although there is a growing world market for textile handicrafts, Guatemala's share in these markets is difficult to estimate because the Bank of Guatemala stopped requiring handicrafts exporters to register their foreign exchange earnings in 2002. In 2001, the last year for which this information exists, exports of all Guatemalan handicrafts (not just textiles) were valued at \$8.3 million¹¹, a majority of which went to the United States, Europe, Central America, Mexico, Canada, Brazil, and Japan.

Globalization has brought about increased competition, mass production of craft goods, and shifting trends in fashion, taste, and aesthetics (Scrase 2003). The growth of "big-box" stores such as Wal-Mart and Target in the US and increasingly Europe is accelerating the commoditization of handicraft production. Distribution channels are shortening as large retailers prefer to work directly with in-country producers to speed the development of goods and save costs. Product lifecycles are being reduced as retailers working directly with producers are able to shorten the time from design to shelf for rapidly changing fashions (Barber and Krivoslykova 2006). Remaining relevant to global trends requires constant design innovation with an attention to quality, information, and on-time delivery.

A key to the future competitiveness of the Guatemalan textile handicrafts value chain will be the ability to upgrade. Guatemalan suppliers will likely need to focus on high quality, differentiated products in order to compete and grow in a global market. In the global handicraft market, low-priced and high-priced segments for handmade goods are experiencing the most growth, while middle-priced segments are remaining stagnant (Barber and Krivoslykova 2006). With increased competition, particularly from China and India, considered to be Guatemala's fiercest competitors in the international market, price is becoming a challenging competitive strategy for Guatemalan producers given these countries' lower labor costs. Guatemalan handicrafts exporters, brokers, and designers who were interviewed for this study recognized the importance of quality and design improvements in order to remain competitive in the global market. Further, many Guatemalan firms reported they can no longer compete against Asian countries in terms of low-cost, high-volume production, while some are continuing with a low-price strategy. If Guatemalan products are unable to compete on price, they will have to compete on the luxury end with distinctive designs and higher quality. Guatemalan producers also indicated that although the national market is small and potentially saturated with imports, there is growth potential associated with an increasing nationalism that favors locally made products (Aid to Artisans and AGEXPRONT 2003b). These market challenges and opportunities impact value chain competitiveness as the chain must strategically upgrade to address both price and quality concerns in order to compete both locally and internationally.

B. HIGH-VALUE HORTICULTURE

Fruits and vegetables constituted 17 percent of global agricultural trade in 2001, for a total value of \$70 billion (Huang 2004). The US is the world's largest importer of fruits and vegetables (Stout et al. 2004), importing approximately \$6 billion yearly (FAO 2001). Latin American and Caribbean countries are the most important suppliers of fruits and vegetables among less-developed country suppliers (Diaz-Bonilla and Reza 2000). In Guatemala, the average annual export value of horticultural vegetables similar to

those investigated in this study has risen since 1996, totaling over \$850 million in 2005 (Bank of Guatemala 2005), with a majority of these products exported to the US.¹²

The US market for fresh vegetables has changed extensively over the last 20 years. Between 1986 and 1999 Americans increased their annual per capita consumption of fruits and vegetables by 49 pounds. An increase in demand for variety and convenience has come with the increase in consumption. In 1973 the typical grocery store carried 173 produce items; by 1998 the number of items had increased to 345. American consumers now expect fresh produce to be available year around, and they are willing to pay more for out-of-season products. Americans are also spending less time preparing meals, creating a demand for cut vegetables, ready-to-eat meals, and bagged salads. The changes in consumer demand have also led to restructuring in US grocery retailing. The late 1990s witnessed a wave of retail grocery store consolidation in order to lower procurement, marketing, and distribution costs, with the largest four food retailers making up 27 percent of grocery sales. These large retailers prefer to purchase directly from large shippers, eliminating intermediaries and lowering the per-unit costs of goods. This also allows large retailers to source large volumes of uniform products which meet stringent sanitary and phyto-sanitary standards (Calvin and Cook 2001).

Increased food safety requirements, as reflected in sanitary and phyto-sanitary (SPS) standards, are redefining the markets into which food products can be sold. These standards are especially important for minimally processed foods, such as high-value horticulture products, which present hazards from pesticide residues, microbial contamination, and adulterants. Consumers in the US and other developed countries are becoming more wary of these hazards (Unnevehr 2000). In fact, concerns regarding safety, quality, and quantity are reasons why most cruise lines source their produce from the US (Kula, Downing and Field 2006). Stringent SPS standards for US food imports have been criticized for their potential to act as non-tariff trade barriers (World Bank 2005), and the implication of this criticism is apparent when the costs of potential exclusion and of detained imports are considered. An analysis of US Food and Drug Administration (FDA) import detentions between January and May 1999 found vegetables and vegetable products to be the category most likely to be detained, with Guatemala contributing the largest number of cases in this category; filth and pesticide residue ranked among the top reasons cited for detention (Unnevehr 2000). The value of Guatemalan produce detained by the US FDA between 1984 and 1994 was estimated at approximately \$18 million (Thrupp 1995). These numbers indicate some of the macro-level implications of SPS standards for the Guatemalan horticulture value chain.

National and regional markets present an important opportunity for horticulture producers in Guatemala, as supermarkets have increased throughout Latin America and handle a volume of fresh fruit and vegetables estimated to be two to three times that which is exported (Reardon and Berdegue 2002). For example, SuperSelectos, a supermarket chain in El Salvador, sources 70 percent of its regional produce from Guatemala (Berdegue et al. 2005). As of 2000, supermarkets in Guatemala had cornered 35 percent of the country's food retail sales, although fresh fruits and vegetables lagged behind other product categories such as processed, dry, and packaged foods (Reardon and Berdegue 2002; Reardon, Timmer and Berdegue 2004). Fresh produce can provide a supermarket with a competitive edge that distinguishes it from other retailers (Cook 2004). Traditional (wet) markets continue to have an advantage on cost, so supermarkets compete with these markets on the basis of product differentiation and quality (Berdegue et al. 2003). Although quality standards in supermarket produce are predominately based on size and appearance (Berdegue et al. 2005; Berdegue et al. 2003), health and safety standards are gaining importance and some supermarket chains have developed their own SPS certification programs for suppliers (e.g., La Fragua). The move toward higher SPS standards in regional supermarkets is being speeded by the presence of fresh produce processors and distributors that are selling their products into both the regional supermarket market channel and the US/EU export market channel (Reardon, Timmer and Berdegue 2004; Alvarado and Charmel 2002).

To contain costs and become more competitive relative to traditional markets, supermarkets have instituted a number of reforms in their product procurement practices, such as sourcing from specialized distributors and instituting systems of preferred suppliers, centralized procurement through distribution centers, and private standards (Berdegue et al. 2005; Reardon, Timmer and Berdegue 2004). The emphasis on process standards, coupled with a lack of technical assistance, has the potential to exclude small-scale horticulture producers from the procurement systems of large supermarket chains, although all of the independent supermarkets and some of the small retail chains continue to rely on the traditional wholesaler system (Berdegue et al. 2005). Nevertheless, product upgrading to meet higher food safety standards is a pressing concern for firms in the high-value horticulture value chain; the pressures are currently especially strong in the export market channel but are becoming increasingly important for the national and regional market channels as well.

IV. RESEARCH METHODS

This study is the first of three related field studies that use a value chain framework and mixed methods to test a set of hypotheses about the factors affecting MSEs' vertical and horizontal linkages with other firms in the value chain and MSE upgrading.¹³ The first stage in the field study uses qualitative methods to examine the structure of the two value chains and the relationships between firms through interviews with firm owners and representatives of governmental and non-governmental support and facilitation groups. The qualitative component also explored the applicability of the study's hypotheses and identified key contextual variables for use in the surveys. A full description of the methods used in the qualitative component is provided in Dunn and Villeda (2005).

The quantitative component of the study is based on two surveys: 1) a survey of MSE producers in both the handicraft and horticulture value chains and 2) a survey of firms that buy products from MSE producers in these same value chains. An innovative sampling approach, known as respondent-driven (RDS) sampling, was used to locate MSE producers for inclusion in the study. This section provides a brief description of the quantitative methods used in the study, beginning with the study hypotheses. Additional details on the study methods, along with copies of the questionnaires, can be found in the previously published research protocol (Dunn, Bloom and Church 2005).

A. HYPOTHESES

This study was designed to address a set of research questions about the participation of MSEs in value chains. These hypotheses, which are listed below, focus on vertical relationships, horizontal relationships, and MSE upgrading. They are designed to improve our understanding of how firm owners in value chains respond to the interactions among governance, expected returns, transaction costs, social capital, and risk. The purpose of testing these hypotheses is to generate new knowledge to inform the design of effective program interventions that 1) enhance inter-firm coordination and cooperation and 2) encourage MSE owners to upgrade their businesses and enhance their contributions to the overall competitiveness of the value chain.

Vertical Relationships

- A.1. Risk in vertical relationships can be reduced by strengthening governance.
- A.2. Trust in vertical relationships can be increased by improving information.
- A.3. Buyers will be more willing to form vertical relationships with MSEs if the transaction costs can be reduced.

Horizontal Relationships

- A.4. MSE owners will be more willing to form horizontal relationships if the transaction costs can be reduced.
- A.5. Trust in horizontal relationships can be improved through organizational innovation and improvements in capital.
- A.6. Social capital plays an important role in the successful formation of horizontal relationships between MSEs.

MSE Upgrading

- B.1. MSE owners base upgrading decisions on their assessment of the expected returns and risks to upgrading.
- B.2. Upgrading can be encouraged by strengthening the linkages between firms.
- B.3. Lack of information is a critical bottleneck to upgrading.

B. BUYER FIRM SURVEY

The buyer firm survey collected data from several categories of firms that buy the products of MSE producers. The primary objectives of the buyer firm survey were to 1) generate a broad picture of the value chain; 2) test hypotheses on vertical relationships and MSE upgrading (A.1-A.3 and B.1-B.3); 3) identify seeds for the producer survey; and 4) provide a means to cross-check responses from the producer survey. The key sections of the questionnaire included background information on the buyer firm, the firm's business environment and market, the firm's relationships with its own buyers as well as with its suppliers, the formality of the firm's contracting relationships with its MSE suppliers, embedded services provided to suppliers, and supplier upgrading.

A total of 132 buyers were interviewed: 74 in the handicrafts value chain and 58 in the horticulture value chain (table 1). These buyers were located in Guatemala City and three departments in the Western Highlands (Chimaltenango, Sacatepéquez, and Sololá). Several approaches were used to select the buyers, depending on the information available for constructing the sample frame. The sample frames for several of the buyer categories were based on member lists provided by the Non-Traditional Products Exporters Association (AGEXPRONT).¹⁴ These lists were updated with assistance from AGEXPRONT representatives and from key informants who were interviewed during the qualitative phase of the study. The final lists were used to contact eligible buyers. The original intent was to randomly select buyers from these lists, but in practice this was not possible. The final number of eligible and responsive firms was smaller than anticipated in some buyer categories, requiring that all firms be interviewed in order to secure a sample large enough for statistical analysis.

Buyers in three categories—handicrafts artisan-brokers,¹⁵ handicrafts popular shops, and horticulture intermediaries—were selected differently because there were no lists available from which to construct sample frames. The artisan-brokers and some of the horticulture intermediaries had been referred by other types of buyers participating in the survey. The remaining horticultural intermediaries and all of the handicrafts popular shops were sampled using a random walk procedure within purposively selected marketplaces.

Table 1. Distribution of Buyer Sample by Value Chain and Sampling Method

Handicrafts	Number	Sample Source
Exporters	18	AGEXPRONT lists as modified by key informants interviews
Artisan-Brokers	18	Referrals from other buyers
Popular Shops	20	Random walk within purposively selected major markets
Exclusive Shops	18	AGEXPRONT lists as modified by key informant interviews
Total for Handicrafts	74	
Horticulture	Number	Sample Source
Exporters	18	AGEXPRONT lists, modified by key informant interviews
Distributors	7	AGEXPRONT lists, modified by key informant interviews
Intermediaries	30	1) Referrals from other buyers 2) Random walk within purposively selected major markets
Supermarkets	3	AGEXPRONT lists, modified by key informant interviews
Total for Horticulture	58	
Total Buyer Sample	132	

By interviewing buyers in all of these categories, it was possible to elicit referrals for producers operating in every market channel of the two value chains. These referrals formed the basis of the producer sample, which was drawn through respondent-driven sampling. This sampling methodology and its implementation are discussed in more detail in the following section.

C. PRODUCER FIRM SURVEY

The producer firm survey collected quantitative data from producers in the textile handicrafts and high-value horticulture value chains. The respondents were owners or principal decision makers within these MSEs. The primary objectives of the producer firm survey were to 1) generate a broad picture of the value chain; 2) test the hypotheses; and 3) provide a means to cross-check responses from the buyer survey. The key sections of the producer firm questionnaire covered marketing practices, access to information and communication technology, information about the firm’s buyers, business services received, horizontal collaboration with other producers, upgrading practices, firm characteristics, and demographic and household information.

The producer sample was selected using respondent-driven sampling (RDS), a relatively new sampling method suited to hard-to-reach populations. It employs a modified snowball, or chain-referral sampling approach. The basic methodology starts with an initial set of interviewees (seeds). These interviewees are given an incentive to be interviewed and an additional incentive to recruit other respondents for the study. The interviewees in the second round are also given an incentive to participate and an incentive to recruit more respondents. This process proceeds through a predetermined number of cycles (waves). By using two pieces of information from the respondents (the self-reported personal network size and the recruitment pattern of referrals), it is possible to infer a size estimate of the underlying population and establish the sample’s characteristics (Salganik and Heckathorn 2004). The RDS procedure was used to sample 785 MSE producers in three Guatemalan departments (Chimaltenango, Sacatepéquez, and Sololá).

The RDS sampling procedure begins with the selection of initial respondents, which become the “seeds” for the sample. These seeds were selected from referrals provided by the buyers in the buyer sample. At the end of the buyer survey interviews, respondents were asked to provide referrals for currently active MSE producers in the relevant value chain. The MSE seed producers were selected from this list of referrals in consultation with the local survey firm based on several characteristics: the category of buyer making the referral, geographic location of the producer, and firm size. The goal was to select a diverse set of initial seeds. To ensure their participation in the survey, producers were provided with a monetary incentive for their time (Q20),¹⁶ consistent with an average daily wage for an agricultural day laborer in the region. Producers were offered an additional incentive (Q15) to provide the requisite number of valid leads (referrals) to other active MSEs in their respective value chains.

Table 2. Distribution of Producer Sample by Value Chain and Wave

Wave Number	Total Respondents in Wave		Cumulative Number of Respondents	
	Handicrafts	Horticulture	Handicrafts	Horticulture
1 (Seeds)	10	15	10	15
2 (Referrals)	20	20	30	35
3 (Referrals)	40	40	70	75
4 (Referrals)	80	80	150	155
5 (Referrals)	80	80	230	235
6 (Referrals)	80	80	310	315
7 (Referrals)	80	80	390	395

After completing interviews with the initial seeds (wave 1), one or two of the referred MSE producers were randomly selected from those identified by wave 1 respondents. In subsequent waves, the number of referrals selected was dependent upon the wave in which the participant fell (table 2). However, the number selected did not exceed two, ensuring that over-sampling did not occur. Referrals to be followed up on were chosen at random from the pool of a respondent's referrals. The referred participants were then interviewed under the same incentive scheme. Each wave was completed before moving to the next wave. In total, the seed and recruitment system yielded 390 completed handicrafts interviews and 395 completed horticulture interviews (table 2).

D. DATA ANALYSIS

Statistical analyses of the data included descriptive statistics, bivariate tests, and linear and logistic multivariate regression. The statistical analyses included in this report are fundamentally cross-sectional in nature. When there is a finding in this study that something is a determinant of something else, this is not concluded from a formal impact analysis. Rather, these types of conclusions are based on a statistical association between the variables of interest and appeal to theoretical considerations or other literature to interpret the association in causal terms. The multivariate analyses all controlled for factors that might account for the relationships tested in the hypotheses. For the buyer data, the following factors were controlled for in the analyses: sector (handicrafts or horticulture), number of employees, buyer category, years operating, and location. Similar variables were controlled for when testing the hypotheses using the producer data, with several additional variables: sex of the entrepreneur, number of markets sold into, category of top buyer, and literacy. A test was determined to be statistically significant if the p-value was less than or equal to 0.05.

Several factors hindered a full analysis of all of the hypotheses for all three data sets (i.e., buyers, handicrafts producers, and horticulture producers). These factors included small sample sizes, particularly for the buyer dataset; infrequently observed variables, such as the use of intermediaries and participation in producer groups; and little variation in response. For certain hypotheses, these limitations either completely hindered testing or greatly reduced the ability of the statistical test to detect a difference. Where these factors affected the statistical tests, it is acknowledged in the presentation of the results.

Analysis of the statistical properties of the RDS sample focused on determining if the chain-referral process resulted in an equilibrium distribution and whether unbiased population estimates could be made from the sample. Reaching an equilibrium distribution would mean that the RDS methodology had penetrated the population sufficiently to yield results unbiased by the initial choice of seeds, a common problem in chain-referral sampling methods. Several respondent characteristics were examined, including sex, size of the MSE, language, education, producer group membership, age, and level of community activity. Several of these characteristics, particularly in the handicrafts sector, appeared to reach an equilibrium distribution, suggesting that the sampling methodology resulted in a more accurate sample than would have been achieved by simply using chain-referral sampling.

Further analysis was conducted using the RDS Analysis Tool to calculate estimated population proportions of these characteristics.¹⁷ Instead of directly calculating the sample population proportions from the data collected, the Analysis Tool uses linear least squares regression to estimate population distributions, taking into consideration the study participants' self-reported network sizes and transition probabilities (the probability of referring a person who is either similar or different from the referrer based on selected characteristics), thereby accounting for possible biases in the referral process (e.g., preferential referrals along certain characteristics). For the results of the analysis, see appendix B.

V. DESCRIPTIONS OF THE TWO VALUE CHAINS

This section provides a description of the Guatemalan handicrafts and horticulture value chains, based on qualitative and quantitative information collected for the study. Value chain maps are presented for both value chains, showing the sequence of firms adding value to the product as it flows through different market channels. The value chain maps also depict the linkages between firms. In addition, the governance relationships at selected linkages are discussed in the text. The section begins with a description of the nature of MSE participation in the two value chains.

A. MSE PARTICIPATION AND CHARACTERISTICS

One of the reasons that the handicrafts and horticulture value chains were selected for this study was because of the large number of MSEs operating at the production level of these two chains. This assumption was confirmed through the in-depth interviews with industry experts, who estimated that 450,000 MSEs are operating as horticulture producers and at least 700,000 MSEs are operating as weavers in handicrafts. In addition to representing the vast majority of producers in both of these value chains, MSEs also comprise the majority of firms at several other levels. In the handicrafts value chain, the majority of artisan-brokers, market vendors, and popular shops operate as MSEs. In the horticulture value chain, the majority of market vendors and intermediaries are MSEs. Areas in the value chains where MSEs predominate are indicated by dark shading in the value chain maps (figures 1 and 2).

The survey results confirm that the majority of producers in both value chains can be classified as MSEs (table 3). In addition, over half of the firms interviewed in the buyer sample are MSEs, based on the total number of people employed by the firm. These MSEs were primarily wholesalers and retailers in the two value chains. A more complex definition for MSEs based on assets or profits might exclude some of these buyers from the MSE category.

Table 3. Number of People Employed by Firms in Sample

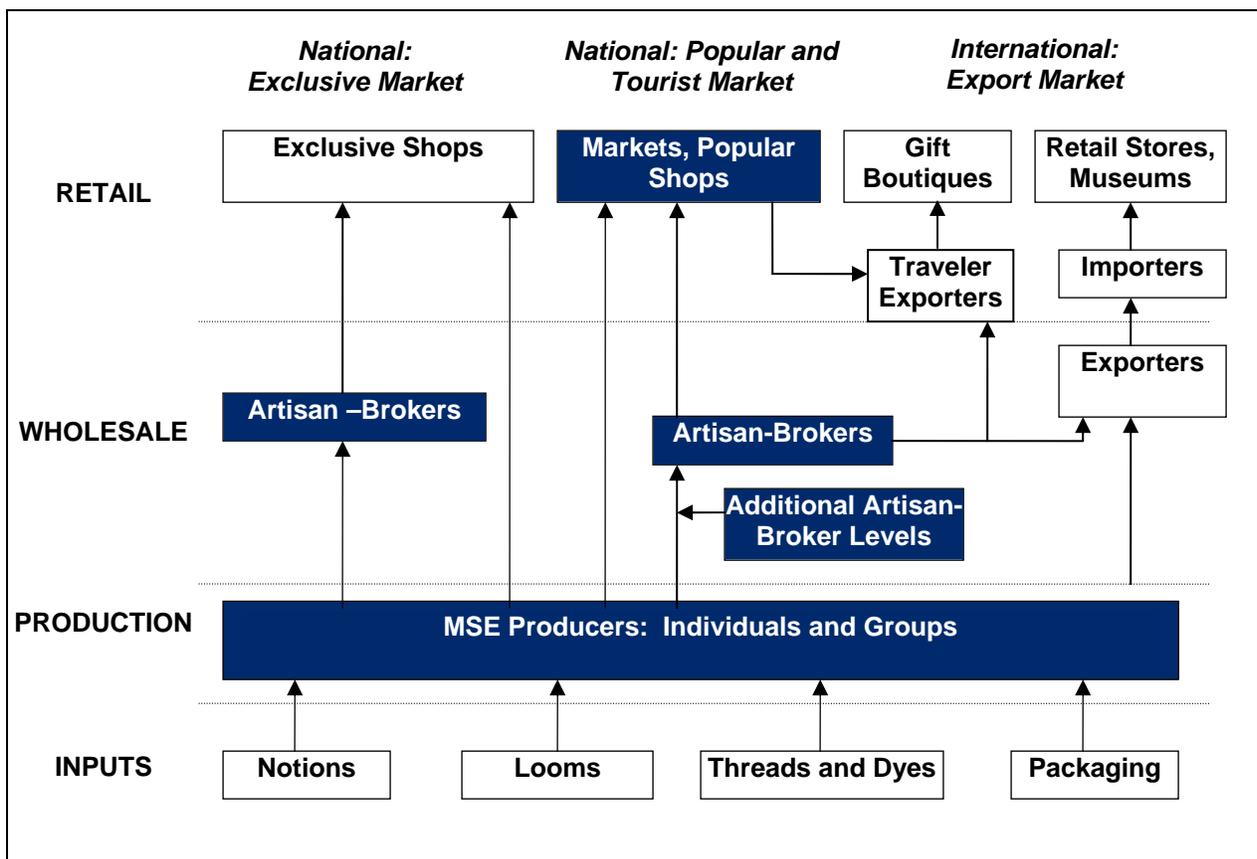
	Firm Type		
	Handicrafts Producer	Horticulture Producer	Buyer
Total Number Employed, Busy Season	(n=381)	(n=383)	(n=131)
Mean	5	6	116
Range	1 to 21	1 to 33	1 to 7000
50th Percentile	4	5	7
Household Members Employed, Busy Season	(n=388)	(n=394)	NA
Mean	3	3	NA
Range	1 to 15	1 to 9	NA
50th Percentile	2	3	NA

On average, the producers and buyers in the sample have operated their businesses for long periods of time, between 12 and 14 years (table 12). Handicrafts producers are predominately women (the estimated true population proportion is 88 percent, while the naïve sample proportion is 76 percent). Handicrafts buyers are equally likely to be male or female (table 13). The horticulture sector is dominated by male producers (92 percent) and buyers (90 percent). The horticulture producers work almost exclusively in rural areas (95 percent), compared to handicrafts producers, of which only 40 percent work in rural areas (table 14). Handicrafts buyers are almost exclusively urban (91 percent) compared to horticulture buyers (66 percent).

B. MARKET CHANNELS AND GOVERNANCE IN HANDICRAFTS

The handicrafts value chain has three main market channels (figure 1). For two of the market channels, the retailing of textile handicrafts occurs within Guatemala, in exclusive shops and in popular and tourist markets. There are approximately 30 exclusive shops within Guatemala, mostly concentrated in Antigua. Although their customers are primarily upper-middle and upper class Guatemalans, these shops also sell to tourists from Central America, the US, Europe, and Japan. Exclusive shops offer high-quality products, often based on unique designs¹⁸ created by the shop owner. Some of the most successful firms in this market channel operate under hierarchy governance, in which the production, design, and retailing functions are all vertically integrated in a single firm. Other shops work with a small number of long-term MSE suppliers, communicating product design information under a relational governance system.

Figure 1. Guatemalan Textile Handicrafts Value Chain Map



The second domestic market channel for Guatemalan handicrafts leads to the popular and tourist markets. This market channel includes traditional market places, small shops, and street vendors. There are several thousand firms in this category. In some cases, weavers market their own products. The owner of a small shop or market stall might sell some self-produced handicrafts alongside products purchased from other artisans. The larger shops in the popular markets sell products made by many different producers. Governance relationships in this channel tend to be market-based.

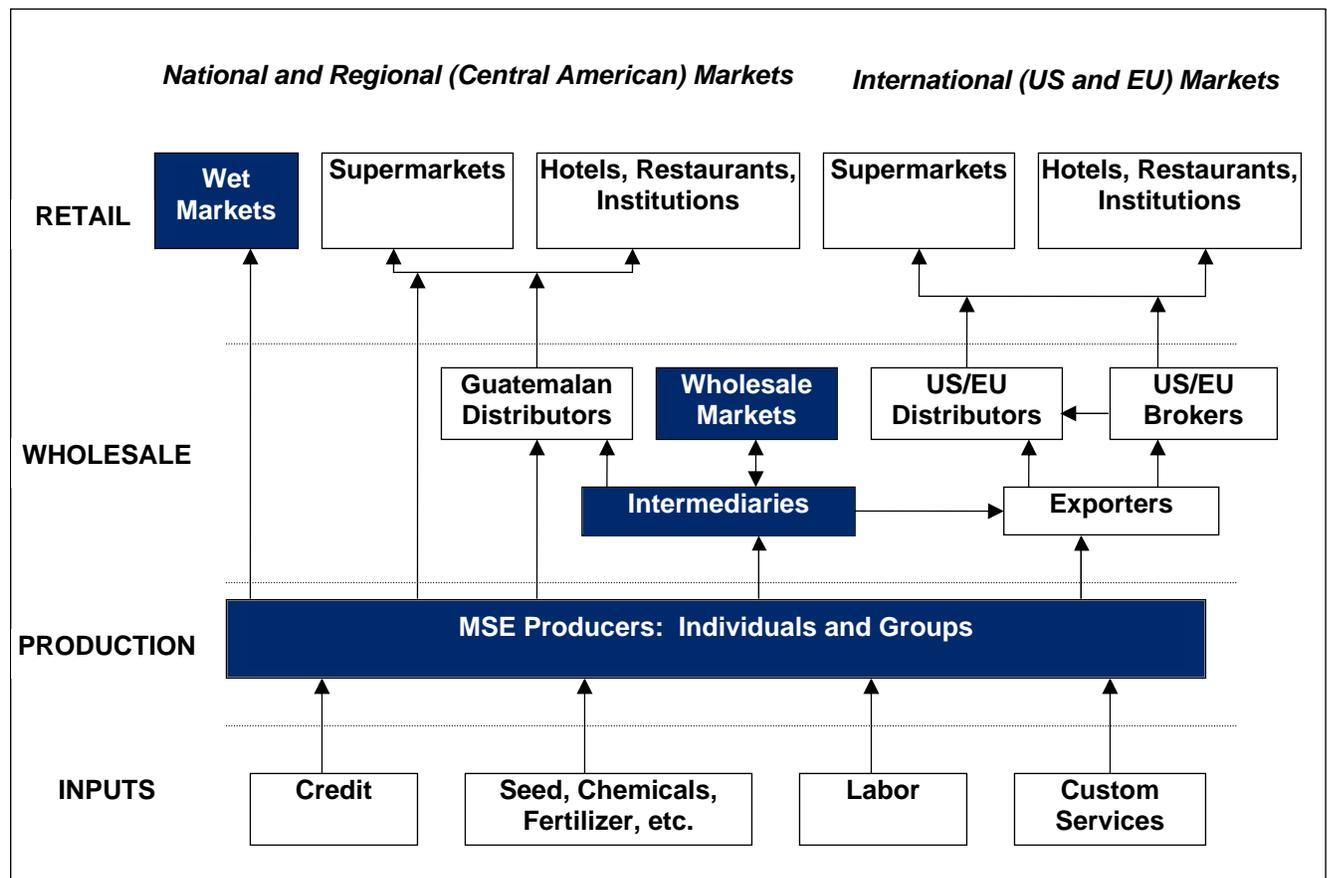
In the third market channel, textile handicrafts are exported and sold in retail outlets internationally. Most of these exports are handled by approximately 50 full-time exporters who reside in Guatemala and

sell their products to foreign importers. In general, exporters (as well as domestic retailers) who market relatively small product volumes will purchase them directly from the weavers who produce them. For larger volume purchases, the exporter or retailer will usually work through a handful of intermediaries, which are usually either specialized artisan-brokers or leaders of producer groups. Governance in the export channel is characterized by relational systems in which buyers and sellers establish long-term relationships and communicate extensively on product specifications. A second type of exporter is the “traveler-exporter” who lives outside of the country, but comes to Guatemala one or more times a year to purchase handicrafts in arm’s-length transactions and ship (or hand carry) them home. Some traveler-exporters buy inventory to stock their own stores, and others sell the handicrafts to small retail outlets and boutiques.

C. MARKET CHANNELS AND GOVERNANCE IN HORTICULTURE

There are two main market channels in the high-value horticulture value chain: one that markets to Guatemalan and Central American consumers (principally in El Salvador, Honduras, and Nicaragua), and a second channel focused on exports to the US and EU. In the first market channel, Guatemalan and Central American consumers buy horticultural products in 1) traditional wet markets; 2) supermarkets; or 3) hotels, restaurants, and institutions (e.g., schools, hospitals). Products reach the retail level through regional distributors,¹⁹ intermediaries, or direct self-marketing by producers. Sales by MSE producers in this channel tend to be arm’s-length transactions, although the situation with supermarkets was evolving rapidly at the time of the field study.

Figure 2. Guatemalan High-Value Horticulture Value Chain Map



In the second market channel, horticultural products are exported and sold in retail outlets in the United States and Europe. Exporters²⁰ sell to US/EU distributors or to brokers,²¹ and buy their products from intermediaries or directly from producers. Exporters prefer to buy directly from producers, since it is the best way to ensure that SPS standards, including traceability, can be met. To improve MSE producers' capabilities to meet these standards, exporters provide them with extensive embedded services (i.e., training, technical assistance, and inputs on credit) while monitoring producers rather closely. These buyer-supplier relationships are characterized by captive governance structures.

D. MSE PRODUCT FLOWS

According to the survey, producers in both value chains sell into an average of two market channels. In the handicrafts sector, almost half of the producers earn their largest sales revenue from selling directly to a final consumer, such as a local consumer or a tourist. These sales are made on the street, from market stalls, or in small shops in regional market centers. Slightly more than half of the horticulture producers receive their largest sales revenue from sales to intermediaries or buyers' representatives (table 15). Importantly, only half of the MSE producers know into which market these buyers re-sell their products, demonstrating limited knowledge of the complete value chain.

Producers in both value chains express a preference for selling their products into export markets. However, only 7 percent of the handicrafts producers in the survey and 24 percent of the horticulture producers receive their largest sales revenue from sales to exporters and foreign importers. This indicates that, especially in handicrafts, there is a large amount of untapped production capacity that potentially could be mobilized for expanding the volume of Guatemalan exports.

Only one percent of the horticulture producers report receiving their largest sales revenue from supermarkets. A much larger percentage had been anticipated given the recent proliferation of supermarkets throughout Guatemala and Central America (Reardon and Berdegue 2002; Reardon, Timmer and Berdegue 2004) and supermarket preferences for more direct preferred supplier relationships (Reardon, Timmer and Berdegue 2005). The lack of MSE participation in this potentially more stable and lucrative market channel supports the claim that the reengineered supermarket procurement methods and higher quality standards favor medium and large producers over MSEs. Larger producers can absorb the added costs of transport to regional or central distribution centers as well as the investments in upgrading needed to meet quality standards (Schwentenius and Gomez 2002; Dolan and Humphrey 2000).

VI. NATURE AND DETERMINANTS OF HORIZONTAL AND VERTICAL LINKAGES

This section expands on the descriptive information about the two value chains to explore the characteristics of MSEs' horizontal and vertical linkages with other firms in the value chain and to identify factors that influence the formation of these linkages. Section VII extends the analysis by investigating MSE upgrading and the impacts that value chain linkages, as well as other factors, may have on upgrading.

A. HORIZONTAL RELATIONSHIPS

Horizontal relationships—such as associations, cooperatives, and other types of formal and informal producer groups—are of interest because they hold the potential for improving value chain efficiencies by reducing the transaction costs of integrating large numbers of small firms into value chains while developing their upgrading capabilities. In the handicrafts sector, the main alternative that producers have to selling to artisan-brokers is to sell their products through their own producer groups. Producer groups can arise in response to a number of situations. They might be an attempt to eliminate a layer of intermediaries, offering producers the chance to engage in functional upgrading and earn higher returns. Producer groups might also be formed as a way to lower the costs of inputs, marketing, and business services. Horizontal linkages can reduce the cost of obtaining and sharing technical and business information. Horticulture producers often band together during labor-intensive periods of planting, cultivating, and harvesting to assist each other in crop management on a shared labor basis. This type of labor-sharing arrangement may evolve into more formal joint output marketing and input purchasing arrangements, with the goal of increasing marketing power to obtain better prices.

A.1. Characteristics of Horizontal Relationships

This study illuminated conditions that affect the individual producer's ability to harness the benefits of horizontal linkages as well as key disincentives to producer group participation. According to the qualitative results, horizontal relationships among producer group members are reputed to be problematic and characterized by fraudulent, opportunistic, and rent-seeking behavior. These problems reportedly occurred even when group members shared the same ethnicity and lived in close proximity to each other. This fact might account for the low levels of producer group participation found in this study. Only 12 percent of the handicrafts producers and 20 percent of the horticulture producers reported being a member of a producer group. Some 40 percent of producer group members reported fraudulent or opportunistic behavior on the part of their group leaders, although 83 percent reported that group members generally trusted their leader to make decisions that benefited the group (table 4). Many buyers also recognize the shortcomings of producer groups: 43 percent felt that it was easier to deal with individual producers than it was to deal with producer groups.

Table 4. Horticulture Producers' Experiences with Group Leaders

	Percent	Number
Members of the group generally trust the leaders to make decisions that will benefit the group	83	52
Leaders did not share orders or advances fairly	38	24
Leaders exhibited fraudulent behavior (withholding information, lying, stealing, threatening)	40	25

A.2. Strengthening Horizontal Linkages – Improved Group Governance and Market Knowledge

Several organizational innovations addressed the problems associated with producer groups, highlighting opportunities for improving their functioning. Organizational innovations such as directly electing the group leaders, maintaining written records, and having a paid manager significantly increased the likelihood that group members trusted their top leaders to make decisions that benefited the group. Further, the likelihood that group leaders had engaged in fraudulent behavior was significantly lower when producers in the group had more extensive knowledge about the market. Other factors that were tested but found not to be statistically associated with improved trust or a reduction in the likelihood of fraudulent behavior were 1) the frequency of leadership rotation, 2) the availability of financial information, and 3) the proportion of group members who could read or speak Spanish. These null findings should be interpreted with caution as they were based on very small sample sizes that resulted from an overall lack of producer group participation. Due to small sample sizes throughout, these analyses were restricted to the horticulture producers, so these generalizations are not reflective of the handicrafts value chain.

A.3. Facilitating Horizontal Relationships – ICT and Inborn Social Capital

Transaction costs, especially the opportunity cost of time, represent a potential constraint to the formation of producer groups. Given the potential benefits of producer group participation, and knowledge of several ways that producer group shortcomings might be overcome, it is important to identify factors that facilitate producer group participation. This study found that the use of cost-effective information and communication technology (ICT) and the presence of inborn social capital are two such factors.

The qualitative study, particularly in reference to the horticulture sector, highlighted the importance of cellular telephones in arranging transactions and obtaining knowledge about market prices. Cost-effective ICT is also a mechanism for reducing the transaction costs associated with group participation. On average, producer group members spent between 6 and 7 hours per month on group-related activities. Although access to cost-effective ICT was low among producers in this study (table 23), those who used cellular telephones, landline telephones, or email/Internet were statistically more likely to report that the amount of time they spent on group activities was acceptable. Also tested, but not found to be statistically significant, was the relationship between formalized organizational structures (written business records and a paid manager) and time spent on group-related activities. These tests were hampered by very small sample sizes and very little variation in the responses. Therefore, the null findings should be interpreted with caution.

Social capital, defined here as speaking the same language as a majority of the community, likely has an impact on producer group formation. A vast majority of the producers in both sectors (97 percent of the handicraft producers and 91 percent of the horticulture producers) spoke the same language as the other members of their communities. Although statistical tests were hampered in the handicrafts sector, social capital was associated with a statistically greater likelihood of producer group participation among horticulture producers.

A.4. Inhibiting Horizontal Relationships – Bonding Social Capital

Very high levels of bonding social capital, which refers to close ties among family members, close friends and neighbors, may hurt value chain competitiveness by interfering with the MSE owner's ability to invest in bridging social capital or physical capital (Woolcock 2001). Bridging social capital, such as having a personal relationship with a buyer or linking to other producers, is an investment in a more

competitive value chain. Investing in physical capital improves the firm's ability to more efficiently and effectively meet buyers' demands, with gains throughout the value chain. Extensive obligations to the community divert resources away from the MSE owner's business, where they could be used to invest in larger networks, stronger vertical relationships, and better physical capital.

In this study, participation in community activities was high, averaging 5 instances per month for handicrafts producers and 9 for horticulture producers. Horticulture producers with higher levels of community participation were statistically less likely to have a personal relationship with their top buyer, more likely to have smaller networks, and marginally less likely to be certified -- certification being the physical capital investment measured in this study. These findings provide strong support for the relationship between high levels of bonding social capital and reduced investment. However, the study found contradictory results in the handicrafts sector. Handicraft producers with higher levels of community participation were also statistically more likely to have a personal relationship with their top buyer and to have larger producer networks. Although extensive levels of bonding social capital may interfere with investments that improve the value chain's competitiveness, this effect appears to be sector dependent and requires further investigation.

B. VERTICAL RELATIONSHIPS

Cooperation through vertical relationships is central to value chain competitiveness (Dyer and Singh 1998) and forms the basis of value chain coordination and governance (Goldmark and Barber 2005). Closer coordination and cooperation enhance value chain competitiveness by reducing transactions costs and increasing the ability of the chain to meet and adjust to consumer demands (Galizzi and Venturini 1999). Long-term competitiveness is associated with long-term relationships, which have been shown to depend in part on trust (Ganesan 1994). Trust is also central to sustaining cooperation (Morris and Barnes 2004; Galizzi and Venturini 1999) and reducing transaction costs (Levi 2000), which demonstrates the cyclical and reinforcing benefits to value chain competitiveness of trust, cooperation through vertical relationships, and reduced transaction costs.

B.1. Characteristics of Vertical Relationships

The vertical relationships analyzed in this study can be characterized as concentrated. On average, respondents in the buyer survey sold 47 percent of their products to a single buyer. Producers' sales were even more concentrated (table 19); 80 percent of handicrafts producers and 98 percent of horticulture producers sold half or more of their output to their top buyer.²² Producers had conducted business with their top buyers for an average of 6 years in both sectors (table 20). Buyers reported conducting business with their suppliers for an average of 8 years. Despite long average business relationships, personal relationships were rare. Only 37 percent of the buyers reported a personal relationship with their producers and even fewer (10 percent) reported a personal relationship with their intermediaries. Approximately half of the producers had some personal connection to their top buyer, with a personal connection defined as any of the following: a relative or family member, neighbor, church member, group or association member, or friend.

Although these relationships were largely not personal relationships, particularly from the buyer's perspective, they did involve a considerable amount of personal communication and face-to-face interaction. A vast majority of the buyers (96 percent) reported that they typically communicated face-to-face with their producers, and evidence from the producers supports this finding. A full 95 percent of the handicrafts producers and 92 percent of the horticulture producers reported that they had personally communicated with their top buyer in the previous 12 months and had met face-to-face with their top buyer, on average, 8 times over the course of the previous year. Face-to-face communication was the predominate mode of communication for both producers and buyers (tables 21 and 22). In fact,

very few producers relied on other methods of communication. The second most frequently used form of communication between producers and their top buyers was cellular telephones, which only 11 percent of handicrafts producers and 13 percent of horticulture producers reported using in the previous 12 months. Buyers, however, reported using cellular telephones and other forms of communication more frequently.

Table 5. Type of Buyer Making Majority of Purchases from Producer Respondents

Horticulture Producers	Percent (n=391)
Local Retailer / Wholesaler	13
Intermediary / Buyer Representative	61
Exporter / Foreign Importer / Supermarket / Other Institution	26
Total	100
Handicrafts Producers	Percent (n=295)
Local Retailer / Wholesaler / Shopkeeper in Popular Store	57
Intermediary / Buyer Representative	12
Exporter / Foreign Importer / Owner of Exclusive Shop	31
Total	100

The predominance of personal forms of communication indicates that producers have very little access to cost-effective communication technologies (table 23). Until this access is improved, buyer-supplier relationships will require personal contact, which itself may be necessary to foster trust. For example, handicrafts exporters in Guatemala recognized personal communication as essential to business relationships with producers; more direct, personal relationships were based on traditional values such as trust and personal acknowledgement and were considered positive by the exporters who participated in the research (Schwartz 2004).

Trust was high among both producers and buyers in this study. On a scale of 1 to 7, where 1 represents “not trustworthy to meet agreed upon conditions” and 7 represents “trustworthy to meet agreed upon conditions”, 65 percent of buyers ranked producers as trustworthy, giving them a score of 5, 6, or 7. The producers were even more trusting of their top buyers; 86 percent of handicrafts producers and 85 percent of horticulture producers trusted their top buyers to meet agreed upon conditions (table 24). In addition, 76 percent of producers in both sectors trusted their top buyer to look out for their interests in business deals, and 78 percent of the handicrafts producers and 59 percent of the horticulture producers trusted their top buyer to be fair. Trust may be even more important to functional vertical relationships, as only 13-22 percent of the buyers and producers used formal contracts (table 25) and half of the buyers who used contracts had no means to enforce a written contract if it went unfulfilled. Many buyers and producers surveyed relied on unwritten contracts, and the ability to enforce these contracts was even more precarious. Only 26 percent of the buyers who relied on unwritten contacts felt they had any means to enforce it. The problems created by inability to enforce contracts are compounded by the fact that lead firms and suppliers are often separated by physical, cultural, and social differences. In these circumstances, the transaction costs associated with monitoring and enforcing agreements are closely linked to trust issues (den Butter and Mosch 2003).

B.2. Strengthening Vertical Linkages - Reducing Contract Failure

Contract failure affects the level of trust between firms in vertical relationships as well as the value chain’s ability to meet its product procurement goals. Producers and buyers in this study who had not experienced contract failure were more likely to trust the other party in the vertical relationship. Contract failure in this study was high from the buyer’s perspective (table 6). Over 40 percent of the

buyers reported experiencing a contract failure in that at least one of their suppliers had failed to meet written or unwritten agreements in the preceding 6 months. Contract failure from the producer's perspective was much lower. Between 19 and 24 percent of the producers reported that their top buyer had failed to meet agreed upon conditions in the past 12 months. Some 16 percent of handicrafts producers reported that they had failed their top buyer in the same time frame. Horticulture producers reported fewer personal failures; only 6 percent reported that they had failed their top buyer in the past 12 months.

Table 6. Contract Failures Reported by Buyers and Producers

	Percent	Number
Buyer Reported (past 6 months)		
Supplier failed to meet contract	41	52
Handicraft Producer Reported (past 12 months)		
Top buyer failed to meet contract	19	56
Producer (self) failed to meet contract	16	46
Horticulture Producer Reported (past 12 months)		
Top buyer failed to meet contract	24	91
Producer (self) failed to meet contract	6	24

This study tested whether the risks of contract failure could be reduced by strengthening governance in vertical relationships through 1) developing linking social capital, 2) increasing the formality of contracts, 3) improving the enforcement of contracts, and 4) developing stronger coordination through greater dependency of the producer on the buyer.

Higher levels of linking social capital between the buyer and producer did not reduce the likelihood that a buyer or producer had experienced contract failure. Linking social capital was measured by the length of the relationship, the number of face-to-face meetings, and the presence of a personal connection between the two parties. From both the buyers' and the producers' perspectives, the hypothesis on linking social capital and reduced contract failure was not borne out, although the small sample size for the buyer data precludes definitive conclusions. From the producer's perspective, particularly in the handicrafts sector, longer-term relationships were associated with a statistically higher likelihood of having experienced a top buyer contract failure. This may be simply due to the fact that a longer period of time has elapsed during which a contract failure could occur. In addition, larger numbers of face-to-face meetings over the past 12 months were associated with a statistically greater likelihood of top buyer contract failure in the horticulture sector. This may indicate that a greater number of face-to-face meetings signify a problem and not a stronger relationship. Further, horticulture producers were statistically more likely to have reported their own contract failure if they had a personal connection with their top buyer.

Neither formal contracts nor the ability to enforce them reduced the likelihood of experiencing contract failure. Formal contractual relationships were defined as those characterized by the use of written contracts between the buyer and the producer. Contract enforcement was defined as the buyer's ability to pursue a remedy for an unfulfilled contract, whether written or unwritten. The statistical analysis found no relationship between contract failure and the use of written contracts or having access to a remedy for an unfulfilled contract. Similarly, greater producer dependency in the governance relationship, as indicated by a greater proportion of sales going to the top buyer, did not affect the likelihood of experiencing contract failure. The amount of sales going to the top buyer was not statistically related to the likelihood of experiencing contract failure on the part of either handicrafts or horticulture producers.

B.3. Strengthening Vertical Linkages - Bolstering Trust

Trust is a key element in vertical relationships, particularly where transactions involve advance credits for inputs in exchange for future products, and there is a general absence of enforceable contracts to secure these agreements. In this study, several variables were hypothesized to improve trust by increasing the amount of information that firms have about each other: 1) building information over time about the trustworthiness of firms; 2) increasing the amount of face-to-face interaction between firms; 3) increasing transparency about the distribution of rents in the value chain; and 4) increasing transparency about the risks faced by firms in the value chain.

Building information over time, as measured directly and using proxies, was not associated with greater trust among firms in vertical relationships. As measured directly, 62 percent of the buyers reported that they started with small orders when working with a new supplier until trust had been built; 67 percent of the buyers used the same technique when making purchases from intermediaries. This approach, however, did not have any effect on the buyer’s perceptions of the trustworthiness of producers to meet agreed upon conditions. Proxy measures, such as the length of the producer/buyer relationship and the producer’s change in sales over time (table 7) did not support the hypothesis.

Table 7. Trend in Producers’ Sales to Top Buyer

	Handicraft Producer (n=288)	Horticulture Producer (n=389)
Trend in Sales to Top Buyer Over Time	Percent	Percent
No Change	64	59
Increased	12	23
Decreased	24	18
Total	100	100

Longer relationships between producers and their top buyers did not increase trust; horticulture producers with longer-term relationships with their top buyers were statistically less likely to trust these buyers to look out for their interests when compared to producers with shorter-term relationships with their top buyers. Horticulture producers whose sales to their top buyer increased over time were more likely to have rated their top buyer as untrustworthy to look out for their interests or to meet agreed upon conditions, thus contradicting the hypothesis.

On the other hand, personal communication between horticulture producers and their top buyers was associated with greater trust. Face-to-face interaction was not. Instances of personal communication and face-to-face interaction were high among the buyers and producers in this study, as discussed above. The number of face-to-face meetings was not associated with the level of trust between buyers and producers in either sector; however, small sample sizes and little variation in responses in the buyer survey preclude definitive conclusions about the relationship between face-to-face communication and trust. Personal communication was associated with a greater likelihood of trusting the top buyer, but only among horticulture producers. Horticulture producers who had communicated personally with their top buyers in the previous 12 months were statistically more likely to trust their top buyer to meet agreed upon conditions and to look out for the producer’s interests.

Transparency in the distribution of rents was associated with greater trust between producers and their top buyers. It was measured in the producer survey through producers’ knowledge of the location at which the top buyer sells their goods and the price the top buyer charges for these same goods. Close

to half of producers were generally unknowledgeable about the location that their top buyer sold their products. Only 52 percent of the handicrafts producers and 53 percent of the horticulture producers knew where their top buyer sold their products (table 28). Even fewer knew the prices their top buyers charged for their products -- 31 percent of handicrafts producers and 18 percent of horticulture producers. Producers who had this information were more likely to trust their top buyers to look out for the producers' interests and to be fair, although it was not associated with trusting the buyer to meet agreed upon conditions. The qualitative component of this study supports this finding in the handicrafts sector, wherein a lack of knowledge fostered mistrust of other actors in the chain.

Transparency about the distribution of rents was determined slightly differently for the buyers, who were instead asked about their knowledge of the profit obtained by their suppliers (table 29). Over 60 percent of the buyers had no information on the profits of intermediaries, although not all buyers responded to the question about intermediaries because very few (23 percent) made purchases through intermediaries. The percentage of buyers with no information about suppliers' profits dropped to 44 percent when buyers were asked about the profits of the producers. The statistical tests found no relationship between knowledge about suppliers' profits and increased trust. In fact, knowing intermediaries' profits was associated with decreased trust of producers. However, this test is based on a small sample size (48), which represents only 36 percent of the entire buyer sample.

Table 8. Producers' Knowledge of Retail Prices for Their Products

	Handicraft Producer (n=389)	Horticulture Producer (n=392)
Producer Knows Retail Price to Consumer	Percent	Percent
Yes	43	31
No	57	69
Total	100	100

Transparency in the distribution of risk was associated with greater trust between handicrafts producers and their top buyers, but hindered trust in the horticulture sector. Tested only in the producer surveys, transparency about risks was measured by the knowledge that the producers had about the end market (i.e., whether they knew the final retail price that consumers paid for their products). Only 43 percent of handicrafts producers and 31 percent of the horticulture producers knew the price that consumers paid for their products (table 8). The impact that this knowledge has on trust varies by sector. For the handicrafts producers, knowing the final price statistically increased the likelihood that they trusted their top buyer to look out for their interests and to be fair, although this relationship was of borderline significance. This knowledge had no effect on whether they trusted their top buyer to meet agreed upon conditions. By comparison, horticulture producers with this same knowledge were statistically less likely to trust their top buyer to look out for their interests and to meet agreed upon conditions. This knowledge had no effect on whether they trusted their top buyer to be fair.

B.4. Facilitating Vertical Relationships – Reducing Transaction Costs

Transaction costs are a major constraint to the formation of vertical relationships with MSEs because buyers, whether intermediaries in the case of horticulture or small retailers in the case of handicrafts, must purchase from multiple small suppliers. In this study, the buyers had dealt with, on average, 495 producers in the previous 12 months. This number is high, influenced by a few buyers who reportedly dealt with very large numbers of producers. The 50th percentile is a more accurate estimate of the number of producers from whom the buyers purchased (table 28). This stood at 20 producers, similar to the average number of intermediaries (15) from who purchases had been made in the past 12 months. Only 23 percent of the buyers purchased any of their products from intermediaries and 3

percent relied exclusively on intermediaries. The remaining 77 percent relied exclusively on direct relationships with producers. Although in the qualitative component handicraft artisan-brokers were found to successfully link producers to buyers, buyers in both sectors preferred to reduce their reliance on intermediaries. This is especially true in the horticulture sector, in which dealing directly with producers is a means for the buyer to ensure compliance with SPS standards.

Lower transaction costs in conducting business with producers were associated with reduced reliance on intermediaries. Approximately half (56 percent) of the buyers surveyed felt that conducting business with producers was less time-consuming than dealing with intermediaries (table 29). A much higher percentage (78 percent) felt that dealing with producers was less costly than dealing with intermediaries. Not surprisingly, buyers who believed that producers were less costly relied more heavily on producers to fill orders.

Buyers' perceptions about producer organizations and the relative ease of dealing with producer groups did not impact buyers' use of producers versus intermediaries. Although slightly more than half (57 percent) of the buyers in the sample reported some degree of organization among their producers and 37 percent reported that it was easier to purchase from producer groups, neither of these factors had any bearing on the relative proportions of producers and intermediaries in a buyer's total supplier base.

Similarly, the buyer's use of cost-effective ICT in communicating with producers did not increase the buyer's reliance on producers versus intermediaries. Opposite to what was expected, access to cost-effective ICT such as a cellular telephone and the use of cost-effective ICT with producers was statistically associated with purchasing from proportionally fewer producers. This may be because buyers who had become more ICT-oriented were already more successful and had less need to buy from small producers.

VII. NATURE AND DETERMINANTS OF MSE UPGRADING

This section provides an overview of MSE upgrading in the handicrafts and high-value horticulture value chains. It builds on the discussion of the characteristics of value chain linkages from the previous section in order to examine the impacts that inter-firm linkages, as well as risk and information, may have on upgrading. Finally, this section provides a brief review of the benefits reported from upgrading activities.

A. IDENTIFICATION OF UPGRADING OPPORTUNITIES

A.1. Upgrading in Horticulture

In Guatemala's horticulture sector, food safety standards are becoming more important to buyers, leading to an increased need for producers to undertake product upgrading in order to stay competitive. In particular, value chain participants described the pressure they felt to increase SPS standards. These standards not only improve food safety and reduce transactions costs, but are also being used as a "strategic instrument of competition" in differentiated product markets (Reardon et al. 1999). Product upgrading to the much higher standards found in the US and EU creates opportunities for MSEs to participate in the export market. However, at some point in the future, upgrading to good agricultural practices may be necessary for survival and not simply a means to participate in the higher value-added markets. At the moment, enforcement of food safety standards for fresh fruit and vegetables is lax in Guatemala (Berdegue et al. 2005). If regulations are enforced, MSE owners who have not upgraded may find themselves excluded from all market channels. In addition, MSE owners must adapt to the proliferation of private quality and safety standards (Henson and Reardon 2005), particularly by supermarkets (Berdegue et al. 2005). MSE owners who cannot comply with these standards may find their market choices even further diminished.

Table 9. Upgrading Practices in Horticulture

Horticulture Producer	Percent (n=395)	Number (n=395)
Knowledge of approved agrochemicals	96	379
Use of major Good Agricultural Practices	54	203
Certification in Good Agriculture Practices	11	40
Sales of other producers' products	6	24

For the horticulture sector, this study considered three types of product upgrading and one type of functional upgrading (table 9). Upgrading in the horticultural sector was tested in the following ways:

- The most restricted definition of product upgrading was whether the producer had some form of certification in the use of "good agriculture practices" (GAP). The survey results indicated that only 11 percent of the producers were GAP certified.
- Practices such as maintaining a written record of pesticide use, maintaining a written harvest registry, and testing for microorganisms in the water used for agricultural irrigation were also considered forms of product upgrading, because they demonstrate that the producer meets at least some of the major requirements for certification. Over half (54 percent) of the producers were using at least one of these practices.
- Producers' knowledge of the agrochemicals approved by the US FDA for use on their crops was considered as a signal for having some of the knowledge needed for product upgrading. Almost all (96 percent) knew the approved agrochemicals for their crops.
- Selling other producer's products was considered a form of functional upgrading, because it signals that the producer is moving into some wholesale functions. Only 6 percent of the horticulture producers sold any products that they did not produce themselves.

A.2. Upgrading in Handicrafts

The case for upgrading in the handicrafts sector is more nuanced. In terms of competitiveness strategies, Guatemalan exporters appear to be heading down two distinct paths. One path focuses on price competition and seeks to lower costs by increasing the speed with which a weaver can produce a given amount of cloth. Here the emphasis is on developing low-end products that can be produced more quickly at less cost. The second path focuses on quality-based competition targeted at the high end of the market. This strategy is focused on developing prestige product lines, branding identity, and fashionable designs.

In this study, producers are considered to be upgrading along the price competition path if they use the foot loom,²³ a more efficient mode of production, instead of (or in addition to) using the back-strap loom.²⁴ The foot loom is more efficient in terms of labor productivity, and it can produce wider pieces of cloth. However, it also has several disadvantages: the foot loom is considerably larger than the back-strap loom, is immobile, and requires a large initial investment. Weaving techniques on the foot loom are not as well known as those for the back-strap loom, and the foot loom is not as well suited for the production of intricate designs. It is perceived by some as a technology that is biased against women, as some women may not be large enough to utilize the maximum width capacity of the machine.

Producers are considered to be upgrading along the quality competition path when they collaborate with the buyer in the creation of new and innovative product lines aimed at higher value-added markets. This type of product upgrading can take the form of new textile designs or new products in which textiles are only one component, such as decorative boxes, women's leather purses, and dolls. Innovative product lines can be used to attract buyers attending international trade fairs, such as the New York International Gift Fair. However, the development of new product lines can be costly, and there is a risk that they will not generate enough sales to pay for their development costs. A less risky alternative from the perspective of an exporter is to contract with an international buyer to supply custom-made products based on the international buyer's own unique design specifications.

Table 10. Upgrading Practices in Textile Handicrafts

Handicraft Producer	Percent (n=390)	Number (n=390)
Use of the foot loom	31	120
Use of new designs provided by buyer in past 12 months	33	130
Sales of other producers' products	9	35

This study measured three types of upgrading in the handicrafts sector (table 10):

- Use of the foot loom is used as a proxy for process upgrading along the price competition path. While 31 percent of handicrafts producers in the sample were using the foot loom, this number was probably affected by the male bias of the sample, and the true population parameter for use of the foot loom is probably significantly lower.
- Use of new designs provided by the buyer is used to indicate product upgrading along a quality competition path. Among the handicraft producers in this study, 33 percent had used a new design provided to them by their buyer in the past 12 months.
- As was the case with horticulture producers, a very small percentage (9 percent) had functionally upgraded by selling products that they had not produced themselves.

Given the fact that buyers in this study reported quality to be at least as important as price, there is not a clear case for MSE producers to pursue a price-based competitiveness strategy based on use of the

foot loom. Only 7 percent of the handicrafts buyers report that they make their purchasing decisions based on price over quality. Instead, the vast majority made decisions that ranked quality at least as important as price (table 16). Given the intense price competition from goods produced in India and China, one might expect that Guatemala's best long-term competitive strategy may lie in continued reliance on the intricate designs created on the back-strap loom or in combining these prestige products with lower-cost foot loom products.

B. IMPACTS OF FIRM LINKAGES ON UPGRADING

This study tested the relationship between horizontal and vertical linkages and producers' use of upgraded practices. Horizontal relationship characteristics in the producer survey included: size of the producer's network, participation in producer groups, and selling as part of a group in the previous 12 months. Vertical relationship characteristics included: length of the relationship between the producer and their top buyer, presence of a personal connection between the producer and their top buyer, number of face-to-face meetings between the producer and their top buyer in the previous 12 months, portion of sales that went to their top buyer, three measures of trust investigated in this study, and forms of support received. Similar measures were examined in the buyer survey.

Value chain linkages are potential sources of learning and technical assistance (Morris and Barnes 2004; Goldmark and Barber 2005; Humphrey and Schmitz 2002), benefits that could facilitate MSE upgrading. Among producers participating in producer groups, approximately half of those in the horticulture sector and almost three quarters of those in handicrafts sector reported that group members provided each other with technical advice. Groups also sought technical advice entities outside of the group, as reported by 66 percent of the handicrafts group participants and 39 percent of the horticulture group participants (table 30). In addition, half of the horticulture producers reported that their buyers or employees of their buyers were their most important source of information on approved agrochemicals. For another 40 percent of horticulture producers, input suppliers were the most important source of this information. These findings highlight the importance of backward and forward vertical linkages as well as horizontal linkages as sources of learning.

B.1. Horizontal Linkages and Upgrading

The study found horizontal linkages to be important to the producers' use of upgraded practices. Producers with larger networks were more likely to be using the foot loom and to be selling other producers' products (functional upgrading) in the handicrafts sector. Horticulture producers with larger networks were statistically more likely to be certified. Membership in a producer group was statistically associated with a reduced likelihood of using the foot loom. However, group membership in the horticulture sector was statistically associated with taking steps towards product upgrading and becoming certified. Selling products as part of a group was statistically associated with functional upgrading in the handicrafts sector and taking steps towards product upgrading for certification in the horticulture sector. Despite these findings, an important caveat is that sample indicated very low group participation by MSE producers in both the handicrafts and horticulture sectors, making strong conclusions about the association between horizontal linkages and upgrading difficult.

B.2. Vertical Linkages and Upgrading

Because the competitiveness of individual firms is linked to the competitiveness of the entire value chain, buyers and lead firms have a financial interest in the ability of suppliers to meet the quality, price, and safety demands placed on the chain by end markets. Where MSEs lack the current resources to make profitable upgrading investments, and credit markets for these investments are not well developed, then the risk of supplier failure may be high the ability of buyers to obtain consistent supplies of high-quality,

low-priced products may be jeopardized. In order to ensure their access to a reliable product supply, buyers may be motivated to provide their suppliers with cash or in-kind credit, technical assistance, training, or other forms of assistance as embedded services within the vertical relationship (Dunn et al. 2006; Humphrey and Schmitz 2002).

Buyers reported that, on average, they provided less than half of their producers with any of the forms of embedded services listed in the survey (table 11). The most frequently reported form of support was advance contracts in which the buyer commits to purchase the product before it is produced; the buyers on average provided this form of support to 47 percent of their suppliers. This form of support was not mentioned in the producer surveys.

There were sectoral differences in the producers' perspectives on forms of support received most frequently. Handicrafts producers reported receiving assistance or advice with new designs from their top buyer (34 percent), followed by cash advances or credit (26 percent), and advances of supplies, materials, or equipment (21 percent) (table 11). Advances on agricultural inputs were the most frequently reported form of support among horticulture producers (63 percent). During the qualitative phase, horticulture exporters explained that, by providing their suppliers with good quality seeds and approved agrochemicals, they had greater assurance that the final product would meet export standards. Over a third (34 percent) of the horticulture producers reported receiving training in production technology and 22 percent reported receiving a cash advance or credit. Credit for personal needs, although not often provided, was more likely to be received by a handicraft producer (14 percent) than a horticulture producer (2 percent).

Table 11. Embedded Services from Buyers to Producers

	Producers Report Services Received from Top Buyer in Past 12 Months		Buyers Report Proportion of Producers to Whom Services Provided (percent)
	Handicrafts Producers (percent)	Horticulture Producers (percent)	
Cash advances or cash credit for production	26	22	33
Advances of supplies, materials, and/or equipment	21	63	41
Assistance or advice with new designs	34	NA	44*
Training in production technology	NA	34	NA
Training in the use of foot loom	1	NA	NA
Assistance with certification	NA	9	NA
Advance purchase commitment	NA	NA	47
Other technical assistance or advice	2	2	NA
Marketing assistance or help finding other buyers	2	1	17
Management and/or business training	2	NA	15
Training in group management or leadership skills	1	2	NA
Credit for personal needs or emergencies	14	2	NA

* Handicrafts buyers only.

Sector-specific forms of support were also addressed in the horticulture producer survey and the buyer survey. Producers most often reported that their buyers provided assistance to find other buyers or markets for certified producers (21 percent), which corresponds to approximately the percentage of buyers who reported providing this form of assistance (table 31). However, for all forms of support, the buyers reported that they provided support more frequently than producers reported receiving it.

Buyers often deal with multiple producers and may not provide support to all of them, which may be the cause of the differing views of buyers and producers. Less than half of suppliers received any of the forms of support listed in table 31. Information on some handicrafts-specific forms of support is available only from the buyer survey, as similar questions were not asked of the handicrafts producers. Results from the buyer survey indicate that between 13 and 18 percent of buyers handicrafts buyers provided some form of support (table 32).

On balance, all of the vertical relationship characteristics that were tested were strongly associated with at least one form of upgraded behavior. This study highlighted the importance, from the producer's perspective, of strong network-style governance structures in enhancing the ability of MSEs to use upgraded practices. Receiving buyer support, longer duration of business relationships, more occurrences of face-to-face communication, personal relationships with top buyers, and trusting the top buyer to be fair were each associated with at least one form of producer upgrading. Several relationships, however, were contrary to what was expected. Although greater numbers of face-to-face meetings were associated with using new designs and using the foot loom in the handicrafts sector, this same phenomenon was marginally associated with a reduced likelihood of certification in the horticulture sector. This may be because certification reduces the need for the buyer to monitor the supplier as closely (Dolan and Humphrey 2004). In addition, producers who sold more of their products to their top buyer were significantly less likely to use new designs or to have knowledge about the agrochemicals approved for their crops, both of which are forms of product upgrading.

The buyers' survey supports several findings of the producer survey with respect to vertical relationships and upgrading behavior among producers. Handicrafts buyers who provided training or foot looms to their producers were statistically more likely to have more producers who used the foot loom. Among the horticulture buyers, those who subsidized the cost of certification or provided certified producers preference in raw materials had statistically higher average numbers of certified producers. It is also interesting to note that horticulture buyers who reported having received assistance from their own top buyer also reported working with higher percentages of certified producers.

One finding in the handicrafts sector was contrary to what was expected: buyers who reported providing management/business training and sales/marketing support to a larger percentage of their producers also reported statistically lower percentages of producers using the foot loom. This finding may be explained by the study's inability to ascertain the direction of causality (i.e., which factor came first, the support or the upgraded practice—or lack thereof). Fundamentally, the study can not test whether any of these forms of support caused upgrading or lack thereof; the study can only demonstrate, as it does rather strongly, that on balance, providing and receiving support is associated with a greater incidence of upgraded practices among producers.

C. IMPACTS OF RISK AND INFORMATION ON UPGRADING

C.1. Risks, Investment and Upgrading

Risks are important to MSE owners when considering whether to upgrade. One way for the risk to be lowered is for the MSE to have an assurance that it will be able to sell the upgraded product. In this study, having a credible assurance of future transactions, represented by a longer-term relationship with a top buyer, was statistically associated with using new designs in the handicrafts sector, but was not associated with upgrading in the horticulture sector. Another measure of credible assurance of future transactions, having buyers who give purchase preferences to certified buyers, was so infrequently reported by horticulture producers (3 percent) that it could not be formally tested. This indicates that although longer-term relationships may be an incentive to upgrade, explicit assurances are lacking.

Additional sources of income provide one means of offsetting the risk associated with investments in upgraded practices. A full 64 percent of the handicrafts producers and 75 percent of the horticulture producers had additional sources of income (table 17), a finding supported by the qualitative research. Having an additional source of income was associated with taking steps toward upgrading practices, although not with certification by the horticulture producers or with upgrading practices in the handicrafts sector. Descriptive data from the survey point to a lack of investment capital as an obstacle to upgrading. Of the handicrafts producers who were not using the foot loom, expense was the most frequently cited obstacle (34 percent) to doing so (table 18). Further, among those who were using the foot loom, 83 percent reported purchasing it at their own expense. This clearly indicates a need for interventions that offset the financial risks to upgrading, particularly the financial investment.

C.2. Information and Upgrading

MSE owners in developing countries often lack the information that would allow them to understand the possible advantages to upgrading. The findings of this study highlight the importance of knowledge about the benefits from and possibilities for upgrading. One possible benefit to upgrading is the opportunity to garner a higher price for the product. Although only 8 percent of the horticulture producers were aware of buyers in their area who paid higher prices to producers who use good agricultural practices, those who did have this knowledge were more likely to be using upgraded practices. This study also hypothesized that MSE owners would be more likely to use upgraded practices if they observed successful examples of upgrading among MSE owners with whom they share bonding social capital. This hypothesis was tested only in the horticulture producer survey and was measured by the producer's knowledge of producers similar to him/herself who were certified. Only 5 percent of the producers knew other producers who were certified. Nevertheless, this knowledge was statistically associated with knowledge of approved agrochemicals, using practices that signal future upgrading, and being certified.

D. BENEFITS TO MSE UPGRADING

The information presented thus far has demonstrated the positive impact of horizontal and vertical linkages, as well as other factors, on MSE upgrading. While not the main focus of our study, ultimately one of the most important considerations is whether MSEs benefit from upgrading. As a proxy measure of the potential benefit of upgrading, this study tested the relationship between upgrading and having a buyer in a higher value-added market channel (i.e., exporters, foreign importers, owners of exclusive shops, supermarkets, and other institutional buyers).

The results indicate that the use of new designs from the top buyer (in handicrafts) and being GAP certified (in horticulture) were both associated with linkages to one of the higher value-added buyers. In addition, having a buyer in one of these higher value-added market channels was associated with reduced risk of contract failure (handicrafts only), increased trust, greater likelihood of a personal relationship (handicrafts only), and greater likelihood of producer group participation (horticulture only), as the type of top buyer was a significant control variable throughout the relationships examined above. These findings point to the importance of linkages to buyer in higher value-added market channels for promoting MSE benefits and value chain competitiveness.

VIII. SUMMARY AND CONCLUSION

A. Summary of Findings

1. A substantial share of MSEs participate in value chains, but a much smaller share currently has knowledge of market conditions or access to international markets.

The vast majority of firms at all levels of the handicrafts and horticulture value chains in Guatemala are MSEs: almost all of the producers in these sectors are MSEs, and most of the firms operating at the wholesale and retail levels are MSEs. Only half of the MSE producers know into which markets their buyers sold their products, demonstrating limited knowledge of the complete value chain and the end market product requirements. The lack of knowledge limits their ability to negotiate more competitive prices and their exposure to changing consumer preferences in regional and global markets. The survey also shows that producers have limited access to international markets, despite expressing a preference for selling into these market channels.

2. Horizontal relationships provide a means to improve MSE capacity and reduce transaction costs, but participation remains limited due to fraudulent and opportunistic behavior.

Producer groups are sources of technical and market information for group members, providing a means to improve MSE capacity and reduce transaction costs. However, participation in such groups remains limited. The study reveals a high incidence of fraudulent and opportunistic behavior on the part of group leaders, which has the potential to erode trust and hamper collaborative action.

3. Group governance and market knowledge can strengthen horizontal relationships, while inborn social capital and cost-effective information and communications technology (ICT) can facilitate and promote participation in producer groups.

The study reveals numerous mechanisms for strengthening horizontal relationships. Several organizational innovations appear to counter problems of fraudulent and opportunistic behavior in producer groups: directly electing the group leaders, maintaining written records, and having a paid manager. Further, greater market knowledge on the part of the group members significantly reduces the likelihood that group leaders engage in fraudulent behavior. The use of ICT is associated with reduced transaction costs of managing producer groups, although current rates of ICT use by MSE producer groups and members remains very low. Further, the presence of inborn social capital is associated with higher producer group participation.

4. Strong vertical relationships can be bolstered through greater personal communication and increased producer knowledge, while the transaction costs of vertical relationships between large buyers and MSEs may be relatively lower than the alternatives.

This study provides evidence of factors that are associated with strong vertical relationships and that have the potential to reduce transaction costs. Vertical relationships in this study are concentrated, meaning that large portions of an MSE owner's product are sold to one buyer. However, these relationships are also characterized by trust. The study identifies two factors that are associated with improved trust: personal communication between buyer and producer and market knowledge. A majority of the buyers in this study report that it is less costly to do business with producers than with intermediaries, a perception that is statistically associated with reduced reliance on intermediaries. These findings highlight the willingness of buyers to conduct business with MSEs when transaction costs are lower than the alternative.

5. Upgrading within MSEs is possible and can occur with or without assistance.

This study finds that less than one-third of producers have undertaken the major upgrades included in the study. However, when the definition of upgrading in the horticulture sector is expanded to include good agricultural practices, approximately half of the horticulture producers could be considered as being in the process of upgrading. In the handicrafts sector, upgrading often times occurs without assistance, as demonstrated by the fact that most of the handicrafts producers currently using the foot loom had purchased it at their own expense.

6. Upgrading can be facilitated by fostering horizontal relationships with producer groups and encouraging strong vertical linkages to buyers.

Certain characteristics of vertical relationships, and to a lesser extent horizontal relationships, are found to be associated with producer upgrading. Aspects of horizontal relationships found to be associated with producer upgrading are group membership (particularly in the horticulture sector) and selling products as a group. However, in Guatemala there is very low group participation by MSE producers in both sectors. In addition, this study identifies specific characteristics of strong vertical relationships linked to MSE-upgrading: longer-term business relationships, personal relationships, face-to-face communication (handicrafts only), trust, and direct buyer support. Further, producers with buyers in higher value-added markets are more likely to have engaged in upgraded practices.

7. Upgrading can be facilitated by increasing the availability of risk-offsetting opportunities and improving producers' knowledge of costs and benefits.

To invest in upgrading without the knowledge that it will generate positive returns is risky for MSEs, and the study demonstrates a general lack of risk-offsetting opportunities such as having credible assurances of future sales. The presence of other sources of household income offsets risk and is associated with upgrading among horticulture producers. Also, this study demonstrates a general lack of knowledge among producers about the benefits of upgrading. For example, very few of the horticulture producers know buyers who pay higher prices to certified producers. Having this knowledge, however, is associated with upgrading.

B. Future Research

The evidence provided in this study serves as a useful foundation for understanding how MSEs can remain competitive in today's global markets by investigating the determinants of value chain linkages, as well as their impact on opportunities for upgrading. This study focuses on the handicrafts and high-value horticulture value chains in Guatemala, but additional research in different regions or value chains will be critical to continue to flush out the hypotheses tested in this study. Future investigations may draw out sectoral and regional differences which might ultimately enrich policy implications. Currently, a similar field study is underway in the high-value horticulture sector in Tanzania under the Analyzing the Integration of MSEs in Value Chains (AIMVC) initiative of AMAP BDS Knowledge and Practice IQC. Also, there will be a third country and value chain(s), which has yet to be selected. Once this third study is completed, the findings from the three studies will be compared and contrasted in order to draw more general conclusions about the nature of MSE participation in value chains, the determinants of value chain linkages, and their impacts on MSE upgrading.

C. Globalization and the Future for MSEs

The results from this study make it evident that MSEs participate actively in global and regional value chains, but they tend to have fewer linkages to higher value-added markets. The literature suggests that facilitating MSE upgrading can help them connect to higher value-added markets and assimilate into the global market by increasing their competitiveness. This study finds that promoting and strengthening vertical and horizontal linkages can be a mechanism used to facilitate MSE upgrading.

At the same time, the literature makes clear that value chain governance can contribute either to improved opportunities for small firms or to their marginalization, given the increasingly stringent demands of end markets and the often inability of small producers to meet these demands. Under captive governance, for example, MSEs may find opportunities when the market and value chain are relatively nascent in terms of development. However, as these markets mature and end market demands increase in terms of standards, on-time delivery, packaging, and the like, MSEs are typically pushed out as they are unable to upgrade and overcome many of the limitations of small size. A key question for AMAP is whether MSEs—through upgrading, organizing to overcome the limitations of small size, and strategic insertion in value chains where the governance structure is more balanced—can in fact be meaningful participants in globalization.

Linking MSEs to regional and global markets has been heralded as a means to promote broad-based growth. The challenge is to enable MSEs to benefit from the opportunities of globalization, thereby promoting pro-poor growth. The question is no longer “*whether* to participate in global processes, but *how* to do so in a way which provides sustainable income growth for poor people and for poor countries” (Kaplinsky 2001). A new study of the Brookings Global Economy and Development program entitled, “The Impact of Globalization on the World’s Poor,” offers some interesting perspectives on this challenge. It argues that pro-poor globalization requires a long-term vision for upgrading toward high value-added activities through learning and adaptation, thus suggesting a strategy of “small riskable steps” toward upgrading as coined by Hubert Schmitz. The Brookings study also argues that the poor need to strategically position themselves into globalized value chains. This calls for a clear understanding of value chain governance and the pros and cons of different types of governance structures. While captive chains may offer MSEs good opportunities and access to learning in the short run, over the long run MSEs may best be served by positioning themselves in value chains where the governance structure is more balanced, small producers have more leverage, and upgrading is likely to be more remunerative. This study of the handicrafts and high-value horticulture value chains has focused on Kaplinsky’s question of “how should the poor participate in global markets,” by using a bottom-up value chain perspective to test critical questions about MSE participation in value chains. The key findings of this study provide policy-relevant information that can be used to inform the design of interventions that facilitate MSE participation in competitive value chains.

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APPENDIX A: ADDITIONAL TABLES

Table 12. Number of Years Firm in Operation

Years Operating	Handicrafts Producer (n=385)	Horticulture Producer (n=395)	Buyer (n=130)
Mean	14	12	12
Range	1 to 70	1 to 35	1 to 76
50th Percentile	11	10	11

Table 13. Sex of Respondent

	Handicrafts Producer (n=390)	Handicrafts Buyer (n=74)	Horticulture Producer (n=395)	Horticulture Buyer (n=58)
Sex	Percent	Percent	Percent	Percent
Male	24	51	92	90
Female	76	49	8	10
Total	100	100	100	100

Table 14. Firm Location

	Handicrafts Producer (n=390)	Handicrafts Buyer (n=74)	Horticulture Producer (n=395)	Horticulture Buyer (n=58)
Location	Percent	Percent	Percent	Percent
Urban	60	91	5	66
Rural	40	9	95	34
Total	100	100	100	100

Table 15. Type of Buyer Providing Largest Sales Revenue (past 12 months)

Buyer Category	Handicrafts Producer		Horticulture Producer	
	Percent	Number	Percent	Number
Final consumers (direct)	46	179	5	19
Owners of exclusive shops	13	50	NA	NA
Vendors in wholesale markets	11	44	8	30
Vendors in local retail markets	10	40	3	11
Intermediaries/representatives	9	35	59	230
Guatemalan exporters	5	18	23	89
Shopkeepers in popular shops	4	16	NA	NA
Importers outside Guatemala	2	7	1	5
Supermarkets	NA	NA	1	2
Restaurants, hospitals, hotels, schools, etc.	NA	NA	1	2
Other	0	0	1	3
Total	100	389	100	391

Table 16. Importance of Quality and Price in Buyer Purchasing Decision

	Handicrafts (n=72)	Horticulture (n=56)
Buyer's Purchasing Decision is Based on	Percent	Percent
Quality only	56	46
Quality and price	37	54
Price only	7	0
Total	100	100

Table 17. Additional Sources of Income in Producers' Households

	Handicrafts Producer		Horticulture Producer	
Household Has Other Sources of Income:	Percent	Number	Percent	Number
Yes	64	249	75	298
No	36	141	25	97
Total	100	390	100	395

Table 18. Obstacles to Upgrading to Foot Loom

Obstacles Reported by Those Who Want to Upgrade	Percent	Number
Expense of purchasing loom	34	60
Lack of knowledge of weaving technique	20	36
Lack of information about foot looms	20	35
Lack of space for storing and using the loom	11	19
Lack of mobility; foot loom is not mobile	6	11
Foot loom is for men, not women	3	5
Foot loom designs less complex than back-strap designs	3	5
Buyer does not want products from foot loom	3	5
It is too risky	1	1
Total	100	177

Table 19. Portion of Output Sold by Producer to Top Buyer

	Handicraft Producer		Horticulture Producer	
Portion of Total Output	Percent	Number	Percent	Number
All	60	172	52	198
Almost all	3	8	20	75
More than half	3	9	19	71
About half	14	41	7	28
Less than half	20	56	2	9
Total	100	286	100	381

Table 20. Linking Social Capital Between Producers and Buyers

	Average	Range
Handicraft Producers		
Years working with top buyer (n=289)	6	1 to 20
Number of face-to-face meetings with buyer in past 12 months (n=258)	8	1 to 50
Horticulture Producers		
Years working with top buyer (n=388)	6	1 to 30
Number of face-to-face meetings with buyer in past 12 months (n=376)	8	1 to 28
Buyers		
Years working with producers (n=124)	8	1 to 25
Years working with intermediaries (n=30)	8	1 to 35
Number of face-to-face meetings with producers before order (n=121)	2	0 to 9
Number of face-to-face meetings with intermediaries before order (n=27)	1	0 to 3

Table 21. Producers' Methods for Communicating with Top Buyer

Methods Used to Communicate with Top Buyer in Past 12 Months	Handicrafts Producer (n=291)		Horticulture Producer (n=394)	
	Percent	Number	Percent	Number
Personally	95	275	92	364
Cellular telephone	11	32	13	52
Landline telephone	6	16	6	22
Email or internet	<1	1	0	0
Fax	1	2	0	0
Mail, courier, or package	0	0	1	2
Through group representatives	1	3	7	29

Table 22. Buyers' Typical Methods for Communicating with Suppliers

Communication Method	With Producers (n=124)		With Intermediaries (n=27)	
	Percent	Number	Percent	Number
Face-to-Face	96	119	93	25
Cellular Telephone	73	90	93	25
Landline Telephone	47	58	63	17
Email or Internet	9	11	15	4
Fax	11	14	22	6
Mail, courier, or package	7	9	11	3
Through group representatives	38	45	35	9

Table 23. Access to Forms of Communication

Form	Handicrafts Producers (n=390)		Horticulture Producers (n=395)		Buyers (n=132)	
	Percent	Number	Percent	Number	Percent	Number
Cellular Telephone	16	61	13	53	83	109
Landline Telephone	7	29	4	17	NA	NA
Email	1	4	<1	1	45	60
Internet	1	4	1	3	46	61

Table 24. Producers' Trust of Top Buyer

Type of Trust	Handicraft Producer		Horticulture Producer	
	Percent	Number	Percent	Number
Producer trusts top buyer to look out for producer's interests in business dealings				
Yes	76	219	76	283
No	24	70	24	87
Total	100	289	100	370
Producer trusts top buyer to be fair				
Yes	78	226	59	213
No	22	65	41	148
Total	100	291	100	361
Producer trusts top buyer to meet agreed upon conditions				
Yes	86	250	85	312
No	14	41	15	53
Total	100	291	100	365

Table 25. Use of Formal Contracts Between Producers and Buyers

Formal (Written) Contract Used	Handicraft Producer (n=286)	Horticulture Producer (n=354)	Buyers (n=128)
	Percent	Percent	Percent
Yes	13	22	17
No	87	78	83
Total	100	100	100

Table 26. Producer Knowledge of Top Buyer's Sales Location and Price

	Handicraft Producer	Horticulture Producer
	Percent	Percent
Producer knows where top buyer sells product	52 (n=290)	53 (n=394)
Producer knows sale price received by top buyer	31 (n=282)	18 (n=373)

Table 27. Buyer Knowledge of Profits Earned by Suppliers

	Producer Profits (n=104)	Intermediary Profits (n=51)
Buyers' Self-Reported Degree of Knowledge	Percent	Percent
No knowledge	44	61
Some knowledge	29	25
Full knowledge	27	14
Total	100	100

Table 28. Buyers' Current Number of Suppliers

Number of Suppliers in Past 12 Months	Number of Producers (n=123)	Number of Intermediaries (n=30)
Average	495	15
Range	1 to 40,000	2 to 20
50th percentile	20	9

Table 29. Buyer Time and Cost Comparison of Producers and Intermediaries

	Relative Time (n=71)	Relative Cost (n=74)
In comparing transaction with producers and intermediaries, buyers report the time/cost is...	Percent	Percent
Less when dealing with intermediaries	30	14
Same with intermediaries and producers	14	8
Less when dealing with producers	56	78
Total	100	100

Table 30. Sources of Learning for Producer Group Members

Source of Learning for Group Members	Handicrafts Producer (n=47)		Horticulture Producer (n=77)	
	Percent	Number	Percent	Number
Members give each other technical advice	72	34	52	40
Members seek technical advice from other sources	66	31	39	30

Table 31. Embedded Services from Horticulture Buyers to Producers

Type of Service	Producers Reporting They Received Services (percent)	Buyers Reporting They Provided Services (percent)
Training and/or technical assistance with Good Agricultural Practices (GAP)	4	71
Pay some or all of costs of certification process	5	38
Provide credit to help producers meet certification requirements	4	39
Give purchase preferences to crops produced by certified producers	3	55*
Pay higher product prices to certified producers	5	27
Supply certified producers with more and/or cheaper agrochemicals and seeds	9	29
Help certified producers find other buyers or markets for their products	21	25

* Buyer agrees to purchase products from certified producers before they are produced.

Table 32. Embedded Services from Handicrafts Buyers to Producers

	Buyers Reporting They Provided Support (percent)
Training suppliers in use of foot loom (n=69)	13
Providing the foot loom to suppliers (n=69)	13
Paying part of the cost of the foot loom (n=69)	13
Providing credit to help with purchase of foot loom (n=68)	18
Supplying more, better or cheaper raw materials for use on foot loom (as compared to back-strap loom) (n=68)	13
Committing to purchase foot loom products before produced (n=69)	16
Helping producers find other buyers or markets for foot loom products (n=68)	15

APPENDIX B: TESTS FOR INTERNAL CONSISTENCY AND REPRESENTATIVENESS

As the methodology and statistical properties of respondent-driven sampling (RDS) have already been summarized in the research protocol for this study (Dunn, Bloom and Church 2005) and are discussed in detail in publications by the author of the method, Douglas D. Heckathorn (Heckathorn 1997; Heckathorn 2002) and colleagues (Salganik and Heckathorn 2004), this appendix focuses on the effectiveness of the RDS sampling methodology in the study. However, a brief theoretical background is presented for context.

A. BACKGROUND

It is theorized that RDS chain-referral recruitment approximates a regular Markov process. Hence, recruitment is a stochastic process where the characteristics of each recruiter affect the choice of the recruits. For example, study participants may recruit persons with whom they share certain characteristics such as sex or language. The probability of an individual recruiting a person similar to or different from him/herself on a particular characteristic can be modeled as a Markov process so that: 1) as the recruitment process proceeds from wave to wave, an equilibrium distribution of recruits will be achieved independent of the initial seeds, and 2) the set of recruits generated by RDS will approach equilibrium at a rapid (i.e., geometric) rate. If these properties hold true and an equilibrium distribution is achieved, then possible bias from the initial choice of seeds will be avoided. This equilibrium distribution does not represent the true population proportions, but it can be combined with information about the respondent's social network to estimate the true population proportions of the selected characteristics. This methodology provides a less expensive and reliable way to survey a hard to reach population compared to traditional random sampling from a complete population list.

B. RESULTS AND DISCUSSION

B.1. Equilibrium Distribution

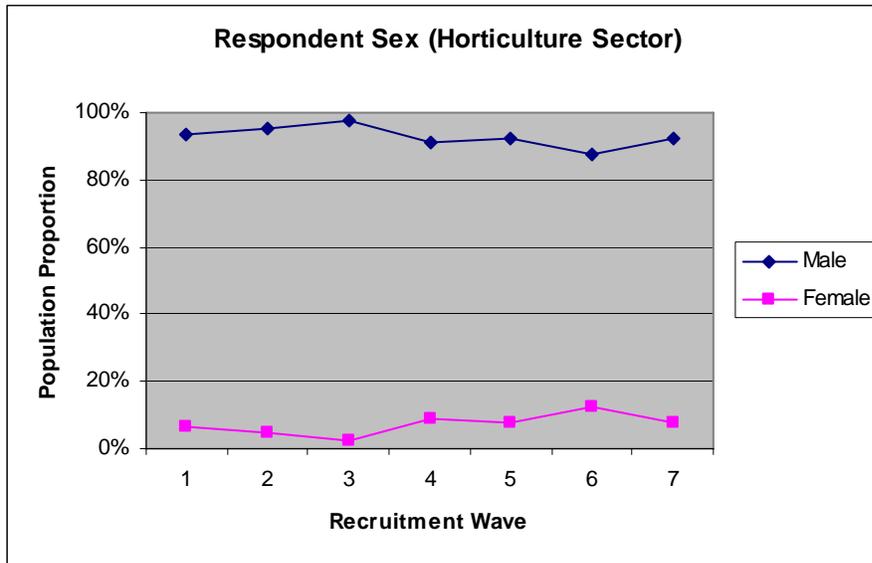
Three qualitative tests can be applied to determine whether equilibrium has been achieved for each characteristic examined. The first and most obvious is simply “eye-balling” the sample proportions/averages as they progress through waves and observing whether there's a centering on certain values. Second, the *RDS Analysis Tool* has an algorithm that can be used to estimate the equilibrium percentage/mean, allowing us to see how close the later waves and the overall sample come to that estimated equilibrium. Finally, based on the wave-to-wave transition probabilities, we can estimate how many waves would be required for convergence to a stable equilibrium (operationally defined to occur when the estimated equilibrium proportion/mean does not change by more than about 2 percent between successive waves). The overall picture can support an inference as to whether or not there were sufficient waves for each variable to reach equilibrium.

Several characteristics were investigated to ascertain the attainment of an equilibrium distribution: sex, size of the MSE, language, education, membership in producer group, age, and community activity. Respondent sex is presented in detail below as an example of the process.

For the horticulture sector, the initial choice of seeds closely approximates the equilibrium distribution for respondent sex (figure 3). The proportions therefore do not change significantly in progressive waves and are consistent with the final equilibrium distribution, which is 92 percent male and 8 percent female.

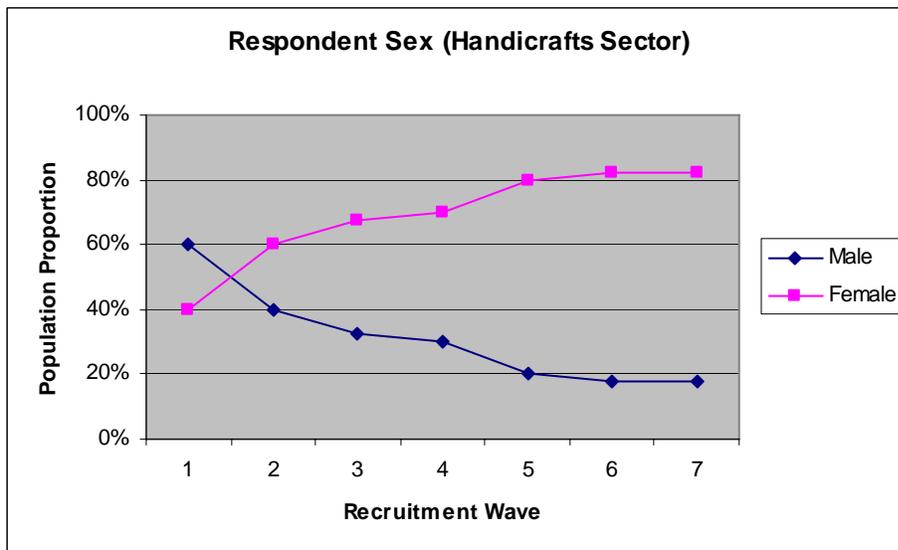
As a further test for whether equilibrium has truly been reached, we can estimate the number of waves required to reach equilibrium based on the transition probabilities. Based on an initial sample of all females and a convergence radius of 2 percent, the number of waves required is 2, while if the initial sample is all males, only 1 wave is required. Given that 7 waves were carried out, we can be fully comfortable that the equilibrium was reached for respondent sex.

Figure 3. Equilibrium Distribution for Respondent Sex -- Horticulture



In the handicrafts sector the initial choice of seeds does not closely approximate an equilibrium distribution (figure 4). As recruitment progresses, the distribution trends toward an equilibrium as seen in wave 7 with 18 percent male and 82 percent female. This exhibits the importance of passing through several waves in order to eliminate any bias from the initial seeds.

Figure 4. Equilibrium Distribution for Respondent Sex -- Handicrafts



The number of waves necessary was estimated at 7 assuming an initial sample of all males, and 9 assuming an initial sample of all females. Thus, the worst case scenario would require 9 waves to reach

equilibrium. However, the equilibrium (18 percent females and 82 percent males) is seen in both waves 6 and 7 as the initial sample was mixed rather than concentrated on one sex or the other.

Overall, equilibrium on the basis of sex seems to have been achieved in both sectors, suggesting that the final sample was not biased by the initial choice of respondents (seeds) and that the recruitment process had progressed far enough for this characteristic.

B.2. Population Estimates

The *RDS Analysis Tool* can be used to estimate population proportions of the respondent characteristics using linear regression and data on the study participants' self-reported network sizes and transition probabilities (the probability of referring a person who is either similar or different to the referrer based on selected characteristics). The size of the respondent's network was reported on the survey instrument and the transition probabilities were calculated by the *Analysis Tool* based on referral data. Taking respondent sex again as an example, the *RDS Analysis Tool* estimates that overall, 90 percent of horticulture MSE owners are male and 10 percent are female. These estimates are similar to the proportions calculated from the sample (table 33).

Table 33. Population and Sample Proportions for Respondent Sex – Horticulture

	Male (percent)	Female (percent)
Population Proportions	90	10
Sample Proportions	92	8
Equilibrium Proportions	92	8

In the handicrafts sector, it is estimated that 24 percent of MSE owners are male and 76 percent are female (table 34). These estimates are less similar to the sample proportions, and relatively far from the estimated true population proportions of 12 percent male, 88 percent female. This difference can be attributed to the earlier waves which had not neared the equilibrium distribution but still counted toward the total sample (see figure 4), as well as the adjustment based on network characteristics needed to move from the equilibrium distribution to the estimated population proportions.

Table 34. Population and Sample Proportions for Respondent Sex – Handicrafts

	Percent Male	Percent Female
Population Proportions	12	88
Sample Proportions	24	76
Equilibrium Proportions	18	82

While it is possible to exclude the earlier waves in order to only capture the later, more mature waves, this presents some difficulty for the overall sample since a different number of waves will be required for different characteristics, depending on the initial distribution of characteristics in the seeds, as well as referral preferences. Furthermore, the earlier waves do not significantly affect the final true population proportion estimates. Regression analysis should also be free of bias or inconsistency. There is an efficiency question, but using robust regressions and robust standard errors will, in principle, address this matter. Population weights should be used when generalizing to the population in order to be making inferences about the true population proportions and not the naïve sample proportions.

These same techniques for estimating the equilibrium distribution and population estimates were applied to the size of the MSE, language spoken, membership in a producer group, community involvement, age, and education level of respondents.

Most of these variables exhibited convergence in progressive waves toward a relatively stable equilibrium (figures 6, 8, 11, 12), while other variables exhibited convergence but had not fully stabilized (figures 5, 13, 15). Finally, in some variables, distribution was unstable in progressive waves (figures 9, 10, 14, 16) indicating that those characteristics do not significantly affect referral decisions and social networks. This is unsurprising for some characteristics. For instance, education levels do not have very much variation among the population, ranging from one to six years of primary school. The fact that social networks do not appear to differentiate based on educational attainment (recruitment patterns seem random) is expected.

For characteristics that did not fully stabilize at equilibrium, more waves and referrals would be helpful. One interesting note is in looking at the distribution of respondent languages in the horticulture sector (figure 7); all but wave 7 seem to be hovering near equilibrium. This is a possible indication that the sub-population of Spanish speakers had not yet been penetrated until wave 7, and that additional waves might be required to capture the entire population.

For respondent language in the handicrafts sector, the number of waves required far exceeds seven, and ranges from 43 to 61 (table 38). The confidence intervals for the estimated population proportions are also huge, and the spread for the estimates is as much as 40 percentage points (Cakchiquel 38 to 78 percent, Quiche 5 to 23 percent, and Tzutujil 8 to 52 percent). The significant volatility in estimates is because there is a significant amount of bias in recruitment. 95 percent of Cakchiquel speakers refer other Cakchiquel speakers, 88 percent of Quiche speakers refer other Quiche speakers, and 93% of Tzutujil speakers refer other Tzutujil speakers. This makes the referral process very slow to reach an equilibrium given a biased initial set of seeds. In the case of this study, the initial set of seeds was relatively diverse across language speakers, and this is an important practice to continue in future studies, especially concerning characteristics likely to have high recruitment biases such as language. For the horticulture sector, the bias in recruitment is less significant, and though the number of waves required is higher than the rest of the characteristics tested, it is not nearly as high as in the handicrafts sector.

For all of the other characteristics examined, the number of waves required to reach the estimated equilibrium is less than the seven waves that were conducted. This indicates that based on the transition probabilities calculated from respondent referrals, if there were an equilibrium to be reached, it would have been achieved. It is important to note that this test alone does not show equilibrium was reached for each variable. The number of waves required to reach an estimated equilibrium based on the average transition probability can gloss over a clear lack of convergence from wave to wave, for instance for education in both sectors (figures 9, 10). It's clear that the proportion of each group is highly volatile across waves and that education is not a characteristic that affects recruitment.

Overall, it can be concluded that the sample is reliable for estimating the population proportions. The results from this study are strong enough to support the validity and usefulness of the RDS methodology.

C. POSSIBLE LIMITATIONS AND NEXT STEPS

The RDS methodology as used in this study shows promising results. The following are some suggestions for future RDS surveys regarding the methodology and further areas of study.

C.1. Measuring the Social Network

The social network between respondents plays an integral role in estimating the population proportions from the chain referral process. In this study, the network variable was self-reported and was only tested with one question. Given the importance of this information to the methodology, it would be useful to confirm the size of the respondent's relevant peer social network with additional questions, and to conduct pilot testing around these items.

C.2. Measuring the Achievement of Equilibrium

A more flexible survey structure might be helpful. In this survey a predetermined number of waves were established based on the total number of respondents desired and the number of waves thought necessary. Practically however, the number of waves necessary to reach an equilibrium may vary by characteristic, and one solution would be to enter data as it's being collected and observe whether or not there is convergence. Through eye-balling the convergence and estimating the number of waves required based on the calculated transition probabilities, the field team can determine whether enough waves have been conducted or more are needed. This of course requires some flexibility in both the timeline and the scope of the field work, but planning ahead for the possibility of more waves could ameliorate that problem.

C.3. Coverage of the Social Network

The RDS methodology assumes that everybody within the population has some non-zero probability of reaching anybody else in the population. If this is not true because of geographical division or social isolation, there will be some bias within the data. The problem can be solved easily if the isolated populations can be identified; then testing can simply be done separately on the two populations and the results integrated. This issue was not addressed directly in this study, though the sample was gathered from locations that were relatively accessible to each other.

C.4. Referral Information

Tied to the previous comment, it is important to keep track of all the referrals made by respondents, even if they are not followed up on. This information can be used to establish how connected various geographic regions are through the social network, as well as estimate how penetrated a population is by the recruitment process. For instance, at a point where referrals are frequently repeated, it can be an alert that the recruitment process has achieved adequate penetration of the population.

D. CONCLUSIONS

RDS is still in the early stages of development. This study demonstrates the potential application of RDS in surveying hard-to-reach populations in a statistically reliable way. Additional experimentation with the methodology is required, but its theoretical underpinnings are supported by this study.

Figure 5. Equilibrium Distribution for Size of MSE -- Horticulture

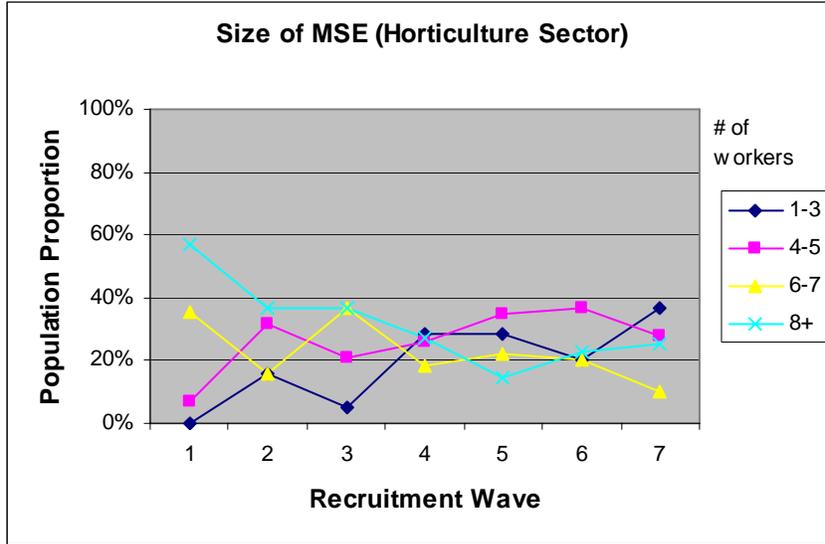


Figure 6. Equilibrium Distribution for Size of MSE – Handicrafts

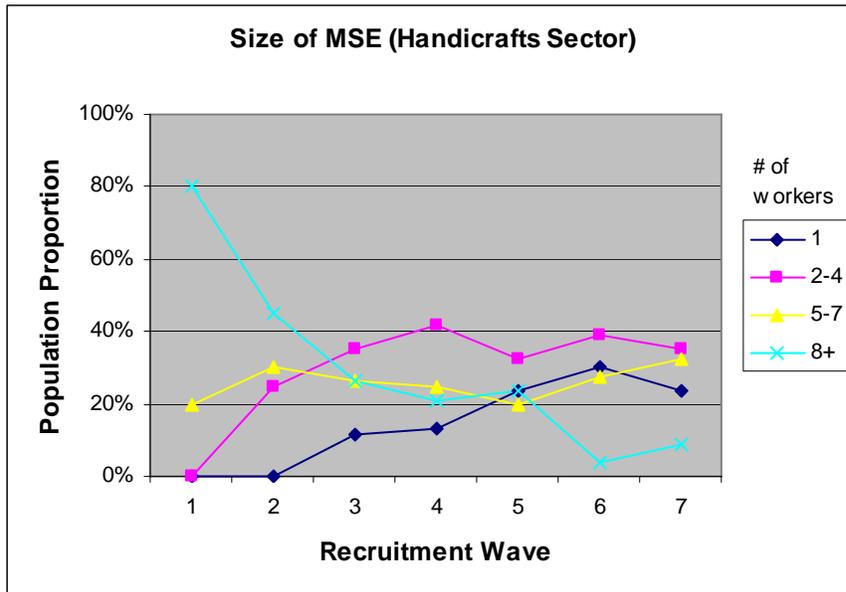


Figure 7. Equilibrium Distribution for Respondent Language – Horticulture

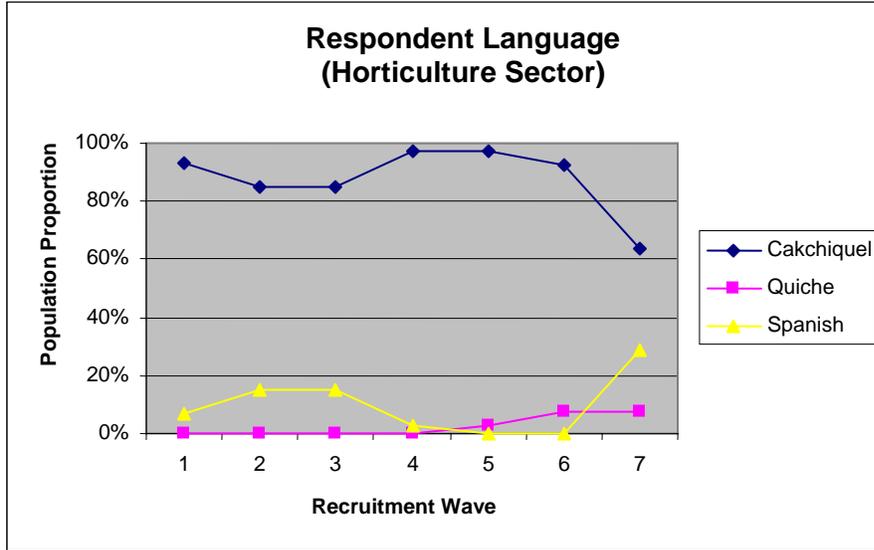


Figure 8. Equilibrium Distribution for Respondent Language – Handicrafts

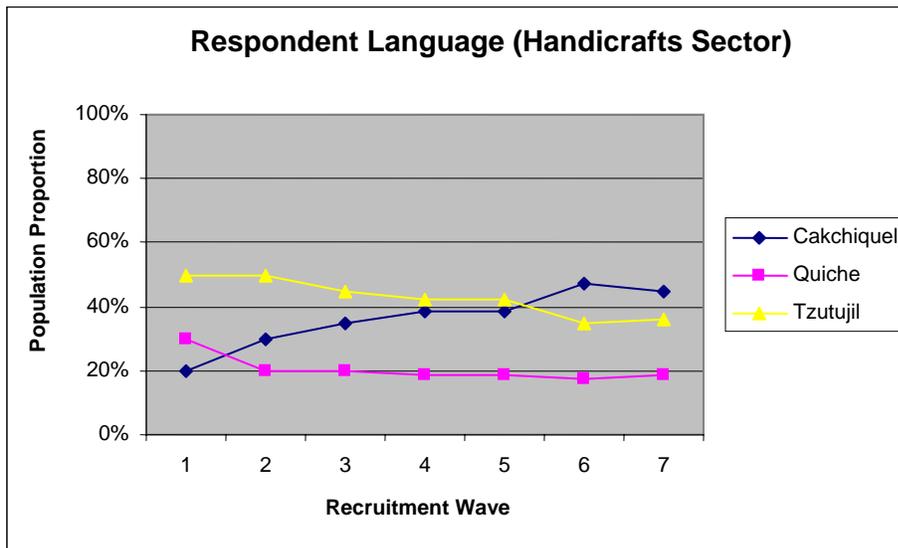


Figure 9. Equilibrium Distribution for Respondent Education – Horticulture

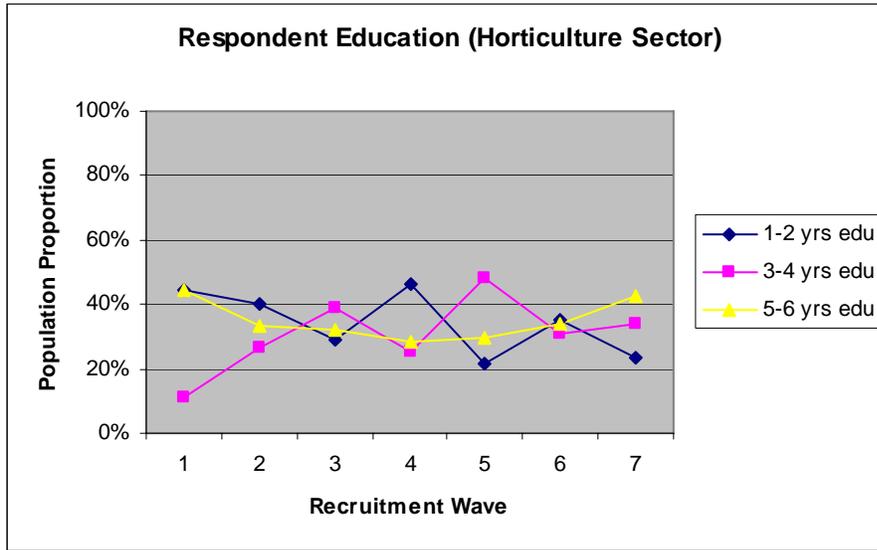


Figure 10. Equilibrium Distribution for Respondent Education - Handicrafts

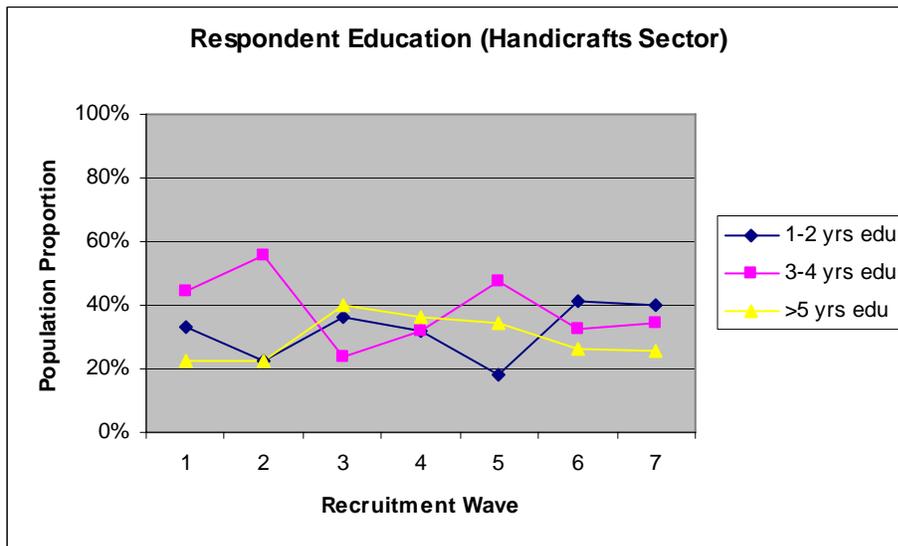


Figure 11. Equilibrium Distribution for Producer Group Membership - Horticulture

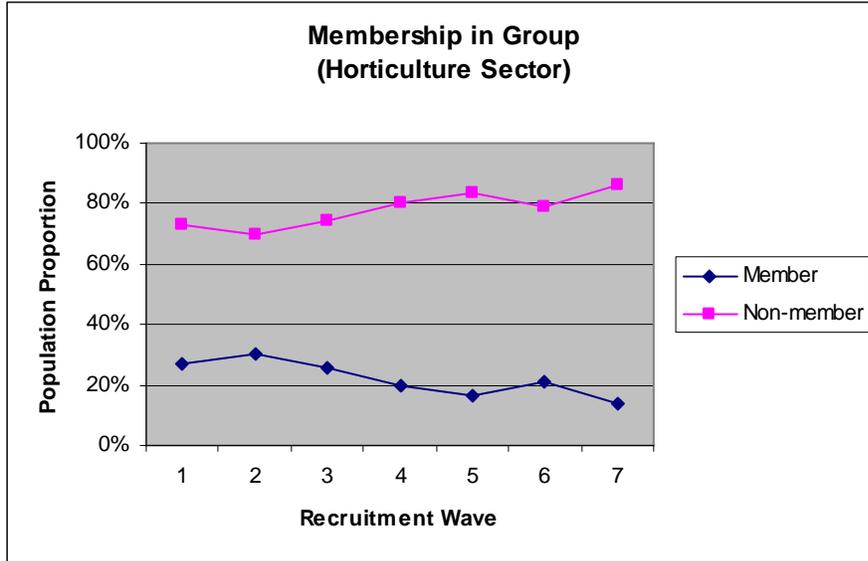


Figure 12. Equilibrium Distribution for Producer Group Membership - Handicrafts

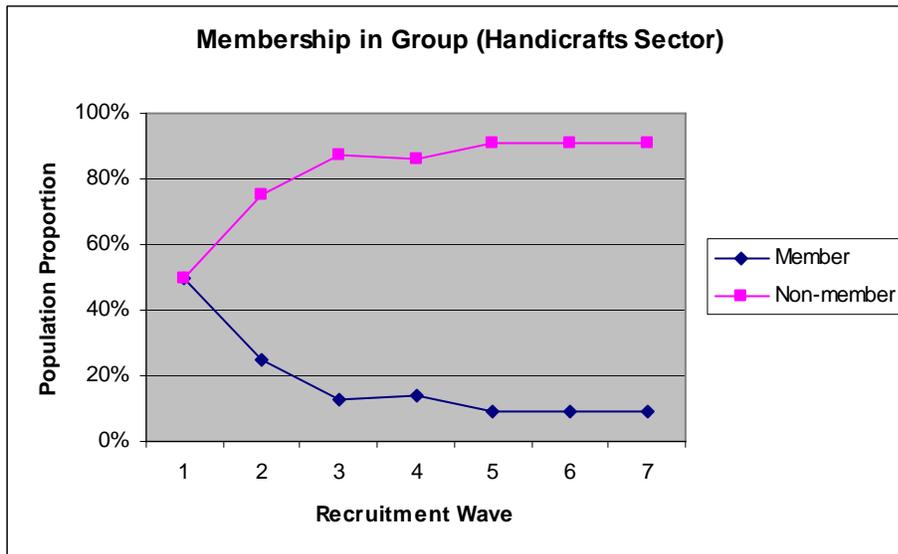


Figure 13. Equilibrium Distribution for Respondent Age - Horticulture

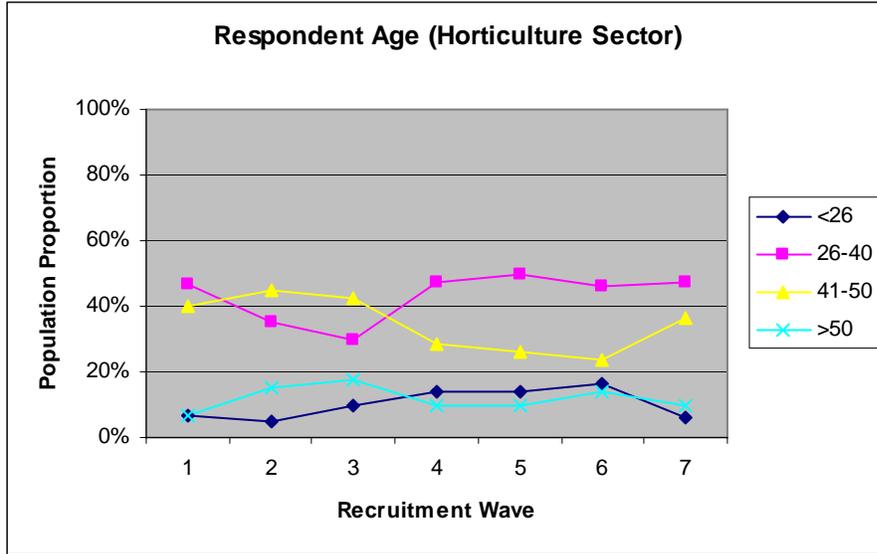


Figure 14. Equilibrium Distribution for Respondent Age - Handicrafts

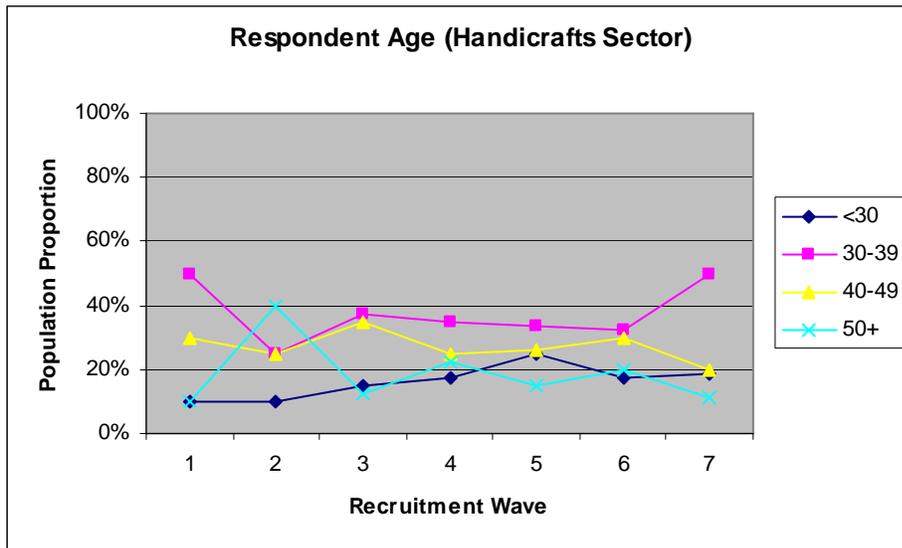


Figure 15. Equilibrium Distribution for Community Activity - Horticulture

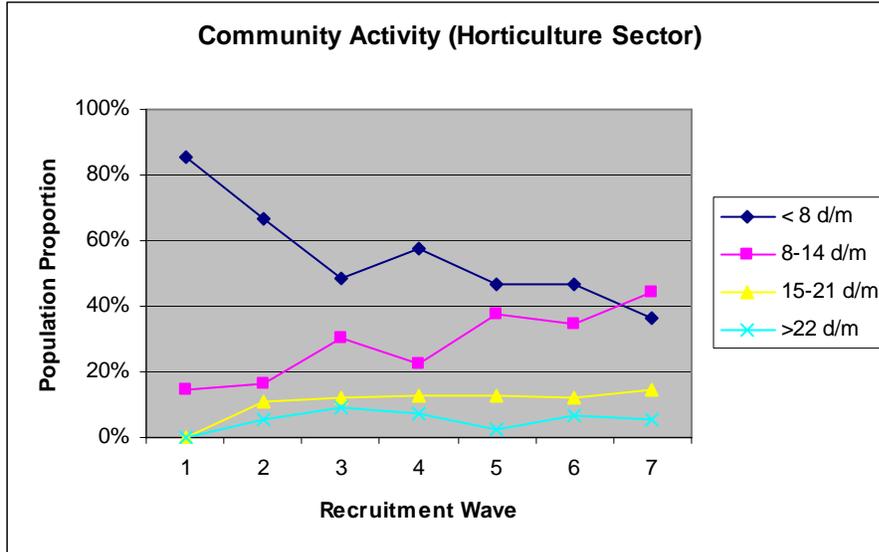


Figure 16. Equilibrium Distribution for Community Activity - Handicrafts

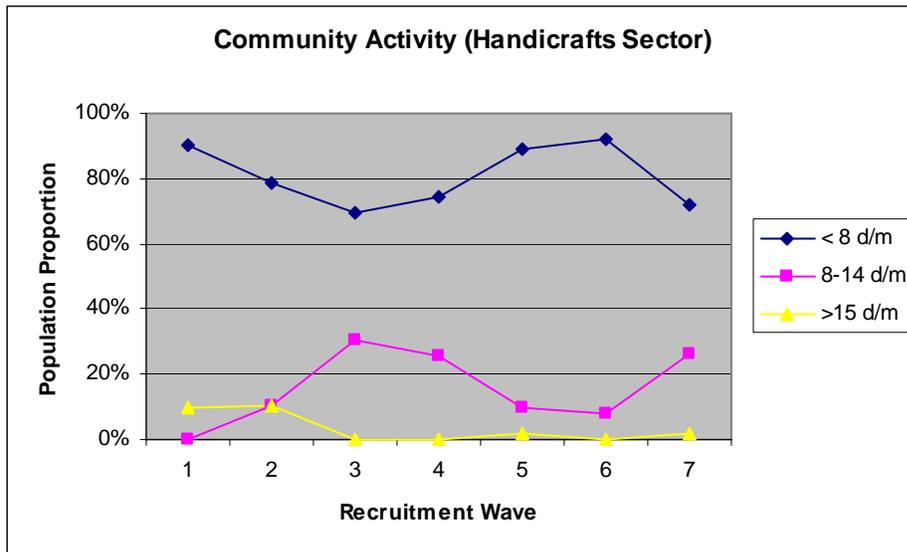


Table 35. Population and Sample Proportions for MSE Size - Horticulture

Number of Employees	1-3	4-5	6-7	8+
Population Proportions	33.3	30.6	15.3	20.6
Sample Proportions	24.5	29.5	20.1	25.8

Note: Segmentation by number of employees approximately represent quartiles of sample

Table 36. Population and Sample Proportions for MSE Size - Handicrafts

Number of Employees	1 (percent)	2-4 (percent)	5-7 (percent)	8+ (percent)
Population Proportions	14.2	34.5	31.6	19.6
Sample Proportions	19.9	35.1	26.2	18.6

Note: Segmentation by number of employees approximately represent quartiles of sample

Table 37. Population and Sample Proportions for Respondent Language – Horticulture

	Cakchiquel (percent)	Quiche (percent)	Spanish (percent)
Population Proportions	88%	2%	9%
Sample Proportions	88%	4%	9%

Table 38. Population and Sample Proportions for Respondent Language - Handicrafts

	Cakchiquel (percent)	Quiche (percent)	Spanish (percent)
Population Proportions	59%	14%	27%
Sample Proportions	41%	19%	41%

Table 39. Population and Sample Proportions for Respondent Education - Horticulture

	1-2 years (percent)	3-4 years (percent)	>5 years (percent)
Population Proportions	33%	35%	33%
Sample Proportions	32%	34%	34%

Table 40. Population and Sample Proportions for Respondent Education - Handicrafts

	1-2 years (percent)	3-4 years (percent)	>5 years (percent)
Population Proportions	39%	30%	31%
Sample Proportions	32%	36%	32%

Table 41. Population and Sample Proportions for Producer Group Membership - Horticulture

	Member (percent)	Not Member (percent)
Population Proportions	14%	9%
Sample Proportions	20%	8%

Table 42. Population and Sample Proportions for Producer Group Membership - Handicrafts

	Member (percent)	Not Member (percent)
Population Proportions	12%	88%
Sample Proportions	12%	88%

Table 43. Population and Sample Proportions for Respondent Age - Horticulture

	<26 years (percent)	26-40 yrs (percent)	41-50 yrs (percent)	>50 yrs (percent)
Population Proportions	14%	44%	29%	13%
Sample Proportions	12%	45%	31%	12%

Table 44. Population and Sample Proportions for Respondent Age – Handicrafts

	<30 years	30-39 yrs	40-49 yrs	>50 yrs
Population Proportions	17%	41%	26%	16%
Sample Proportions	18%	37%	26%	18%

Table 45. Population and Sample Proportions for Community Activity – Horticulture

	<8 d/m	8-14 d/m	15-21 d/m	>22 d/m
Population Proportions	55%	31%	11%	4%
Sample Proportions	49%	33%	12%	5%

Table 46. Population and Sample Proportions for Community Activity – Handicrafts

	<8 d/m	8-14 d/m	>15 d/m
Population Proportions	90%	9%	0%
Sample Proportions	81%	18%	1%

ENDNOTES

¹ The definition of MSEs varies considerably by country and organization. Microenterprises are often defined as having 10 or fewer employees, while small enterprises are often defined as firms with up to 50 employees. Chapter 19 of USAID's Automated Directive Series (ADS) states that microenterprise "refers to a very small-scale, informally organized business activity undertaken by poor people. For USAID program purposes, the term is restricted to enterprises with 10 or fewer workers, including the owner . . . and any unpaid family workers." Additional criteria are often included in specific contexts. For a review of the various criteria used to define MSEs, see Magill and Meyer (2005). See Nichter and Goldmark (2005) for the definition of MSEs used in several recent USAID initiatives. In this study, MSEs are defined as firms with fewer than 25 full-time and part-time employees.

² The amount of surplus labor available increases as the household matures and the dependency ratio (number of workers to number of dependents in the household) becomes more favorable.

³ USAID's Microenterprise Development office is promoting economic growth with poverty reduction through the Accelerated Microenterprise Advancement Project Business Development Services (AMAP BDS) IQC. The AMAP BDS strategy focuses on linking micro- and small enterprises (MSEs) into global and domestic value chains, while addressing the resource constraints these small firms face when competing in more lucrative markets and improving their incentives for upgrading. AMAP BDS seeks to increase the competitiveness of industries in which MSEs participate while increasing benefits to MSEs from participation in these industries. It works to foster small firms' access to the resources needed to compete in new markets and to promote incentives for mutually beneficial relationships, improved learning, and expanded benefits. The research for this report was conducted under an AMAP BDS Knowledge and Practice task order to the *Analyzing the Integration of MSEs in Value Chains* research initiative (a.k.a. *Component A: Clients and Markets*). Documents related to the AIMVC initiative are available at <http://www.microlinks.org/aimvc>.

⁴ Textile handicrafts include products made by weaving on a loom, by crochet, or by embroidery. It also includes products that combine these hand-made items with other materials.

⁵ For a collection of value chain research publications, including many of the references cited in this report, see the Global Value Chain Initiative website: www.globalvaluechains.org.

⁶ The channel upgrading category is introduced and discussed in Dunn et al. (2006).

⁷ For example, it has been suggested that there is an upgrading hierarchy ranging from process upgrading, at the lowest level, to chain upgrading, at the highest. Higher levels of upgrading rely increasingly on disembodied activities related to knowledge, skill, and marketing expertise. Barriers to entry are lowest at lower levels of the hierarchy, where embodied activities are most prominent, leading to increased competition and declining terms of trade. Conversely, disembodied activities are more difficult to emulate, leading to less competition and higher rates of return (Kaplinsky and Readman 2001; Gereffi 1999; Kaplinsky and Morris 2001).

⁸ The International Trade Center (ITC) has created a definition for "artisanal products," which it classifies as a subset of creative industries. The ITC has formally proposed a new code within the harmonized system to record international trade in these products. The ITC recognizes six market segments for artisanal products: 1) clothing and accessories; 2) decoration (interior and exterior); 3) household items; 4) gifts; 5) toys; and 6) stationary.

⁹ Statistics provided through personal communication with Karen Gibbs, Vice President of Marketing, Aid to Artisans.

¹⁰ Handicrafts fair trade sales are proxied by the “other handicrafts” category; again, it is difficult to pinpoint the exact products designated by this category.

¹¹ This statistic was compiled by AGEXPRONT based on registration of foreign currency earnings by the Bank of Guatemala: <http://www.banguat.gob.gt/>.

¹² The “verduras y legumbres” category in the export statistics is the one that most closely corresponds to the products investigated in this study. The horticulture crops included in this study are crops linked to snow peas in terms of similar production zones, general production techniques, and markets. The products included in this definition are snow peas, sugar snap peas, English peas, green beans, French beans, yellow wax beans, baby carrots, baby squash, baby corn, broccoli, cauliflower, cabbage, Brussels sprouts, lettuce, and celery.

¹³ The three field studies are part of the AIMVC initiative, funded under an AMAP BDS Knowledge and Practice task order. The second field study examines the high-value horticulture value chain in Tanzania and a third field study is planned for Asia, but had not begun at the time of this writing. Information on the related field studies is available at <http://www.microlinks.org/aimvc>.

¹⁴ AGEXPRONT is a private, non-profit organization established in 1982 to promote and develop the exports of non-traditional products of Guatemala.

¹⁵ Artisan-brokers are defined as intermediaries operating at the wholesale level of the textile handicrafts value chain. This is usually an MSE owner with technical knowledge of weaving who coordinates the work of multiple weavers to respond to orders from a third-party buyer. An artisan-broker may also operate a store or market stall in the popular and tourist market.

¹⁶ At the time of the survey, the incentive payment of Q20 (Guatemalan quetzales) was roughly equivalent to US\$2.50.

¹⁷ The RDS Analysis Tool was developed by Douglas D. Heckathorn to evaluate data using the RDS methodology. Information on the RDS Analysis Tool is available at the following website: http://www.soc.cornell.edu/~rds/documentation/RDS_Analysis_Tool_Introduction.html

¹⁸ Design elements in weaving include colors, color combinations, types of thread, patterns and representations (*figuras, dibujos*), spacing of patterns, texture of the cloth, width of the cloth, and so on. Design also refers to different ways to combine woven cloth with other materials, such as zippers, buttons, leather, fibers, and so on, to make finished products.

¹⁹ Distributors are defined as medium and large firms that, as a sole or main business, sell to retail-level firms, including supermarkets, hotels, restaurants, and institutions. Examples of Guatemalan distributors are La Carreta, Disvegua, and La Meseta. Examples of US distributors include Hanover Foods, Melisas, L.A. Salad, and Mar Bran USA.

²⁰ Exporters are defined as firms that, as a sole or main business, sell to non-retail buyers outside of Guatemala. Examples include Mar Bran, Maya-Pac (ALCOSA), Aj Ticonel, Cuatro Pinos, and CEMUSDA.

²¹ Brokers are firms that operate at the wholesale level in the US and EU. These firms receive products on consignment. They resell the products at the wholesale level (e.g., to distributors) or at the retail level.

²² The identification of a producer's "top buyer" involves two steps: 1) identify the buyer category into which the producer makes the largest portion of sales (the buyer categories are listed in table 5) and 2) within that buyer category, identify the single buyer to which the producer had the highest sales in a given time period.

²³ Weaving using the foot Loom (*telar de pie*) is a technique introduced by the Spanish in which the warp is attached to a large wood and metal structure and foot pedals are used to mechanically lift and lower the warp. The foot loom can produce much wider fabrics than the back-strap loom, but it can not produce the same complicated brocades. The majority of weavers using the foot loom are men, although some women also use the foot loom. The foot loom is also known as the "treadle loom" or "floor loom."

²⁴ Weaving using the back-strap loom (*telar de cintura, telar de palitos*) is a pre-Columbian technique in which the warp of the loom is stretched between a fixed support (i.e., tree, post) and a strap that wraps behind the weaver's back. The weaver leans forward or backward to control the level of tension on the loom. The width of the loom can vary from just a few inches wide to approximately a meter in width. In Guatemala, the back-strap loom is used exclusively by females and, according to indigenous beliefs, was introduced by the goddess Ixchel.