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Analysing The Performance Of Two Export-Oriented Spice Chains In Nepal: Taking The Smallholder Perspective

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ANALYSING THE PERFORMANCE OF TWO EXPORT-ORIENTED SPICE CHAINS IN NEPAL: TAKING THE SMALLHOLDER PERSPECTIVE

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SUMMARY

This study assesses the performance of supply chains for two major export crops produced in Nepal (ginger and large cardamom) from a smallholder perspective. It aims to identify factors that constrain marketing choices available to smallholders, limiting the chain's robustness from their perspective. A qualitative case study method was used to gather and analyse data on farmer-buyer dyads in the ginger and cardamom chains. These case studies were informed by a conceptual model based on Transaction Cost Economics. The analysis included a cross-case comparison to identify the effects of exogenous chain attributes on the channels available to smallholders. Informal market trading was the only form of smallholder engagement observed in both chains. However, there was evidence that smallholders had previously engaged in relational contracts in the ginger chain, and in 'captive' relational contracts in the cardamom chain. There was no evidence that smallholders had ever engaged in either spot markets or conventional contracts in these chains. Although the informal market channel continues to operate, the ginger and cardamom chains are not robust from a smallholder perspective as producers are unable to select channels that better match their risk-reward preferences. The analysis suggests that access to other channels is constrained mainly by under-investment in value-adding assets. Government should give more attention to the cooperative model that it supports to promote collective marketing. Traditional cooperatives can and do help to resolve problems of asymmetric information and high unit transaction costs, but more innovative cooperative models are required to encourage the investment needed to finance value-adding assets and activities.

Key words: Large cardamom, ginger, transaction cost, collective marketing, case study

INTRODUCTION

Linkages between producers and markets are becoming increasingly coordinated to meet growing demands for high quality, safe food (Reardon, Timmer, & Berdegue, 2005; Shepherd, 2007; Woods, 2004). However, such shifts are seldom beneficial to smallholders who struggle to meet the costs imposed by these demands (Markelova *et al.*, 2009; Pingali *et al.*, 2005; Poulton *et al.*, 2006; Shepherd, 2007; Vorley *et al.*, 2009). This is cause for concern as agriculture remains a major source of livelihood for most of the rural poor in developing countries (World Bank, 2007), and linking them to markets will be crucial in sustaining their livelihoods and promoting both rural and urban food security (Wheatley and Peters, 2004). It is therefore important to identify ways of maintaining and promoting smallholder engagement in food supply chains.

Literature relating to chain performance tends to focus on whole chain issues and seldom considers performance from a smallholder perspective (Aramyan *et al.*, 2006; Cadilhon *et al.*, 2006; Chan and Qi, 2003; Gunasekaran *et al.*, 2004; Lohman *et al.*, 2004). This study takes a smallholder view and explores the ability of supply chains to sustain smallholder engagement. It focuses on the dyad between growers and their immediate buyers, and applies the axiom that a chain is robust if it has one or more dyads that sustain smallholder engagement. A chain that offers smallholders a range of such dyads, each with its own risk-reward profile, is considered to be more robust than one that offers smallholders few marketing choices.

The paper draws on a conceptual model based on Transaction Cost Economics (Williamson, 1979, 1985) to analyse information gathered in case studies of supply chains for ginger and large cardamom in Nepal, focussing on producer-buyer dyads. The model, developed by Bhattarai *et al*. (2013), extends the traditional vertical coordination continuum to incorporate missing dyads and informal market transactions. The purpose of this study is to understand why certain dyads are (or are not) used by smallholders in order to identify effective ways of improving their access to markets.

THE CONCEPTUAL MODEL

Bhattarai *et al*.'s (2013) conceptual model is illustrated in Figure 1. The segments of the 'dyadic pie' represent different modes of producer-buyer engagement in the vertical coordination continuum. The model distinguishes between informal markets and spot markets. Spot markets tend to be characterised by rigorous trading rules and product standards that support frequent and impersonal transactions based on prices. Informal markets, on the other hand, lack rules and standards. Transactions conducted in these markets tend to be personalised and cash-based to mitigate behavioural risk. Transactions in the conventional contracting dyad usually involve relatively simple terms that can be expressed in writing and enforced by a court of law. Relational contracts involve complex, recurring transactions with implicit terms that require internal enforcement. Vertical integration shifts coordination decisions and their enforcement to managers.

Anticlockwise shifts from one segment to the next are driven by the frequency and complexity of transactions, asset-specific investment and hold-up problems

associated with behavioural and environmental risk. Transaction costs are expected to increase with increases in the levels of these drivers, motivating tighter coordination between sellers and buyers. At some point vertical coordination gives way to vertical integration, which may well collapse if environmental risks are too high (Truong, 2012). The conceptual model applies to individual agents in a chain, and a chain is therefore expected to host a variety of dyadic relationships as transaction costs vary between individuals and locations. A chain in which smallholders continue to engage with buyers via multiple dyads suggests that they are able to exercise utility-improving choices. Conversely, a chain that does not engage smallholders in multiple dyads may well signal limited choice and hence scope for prudent interventions to promote smallholder participation.

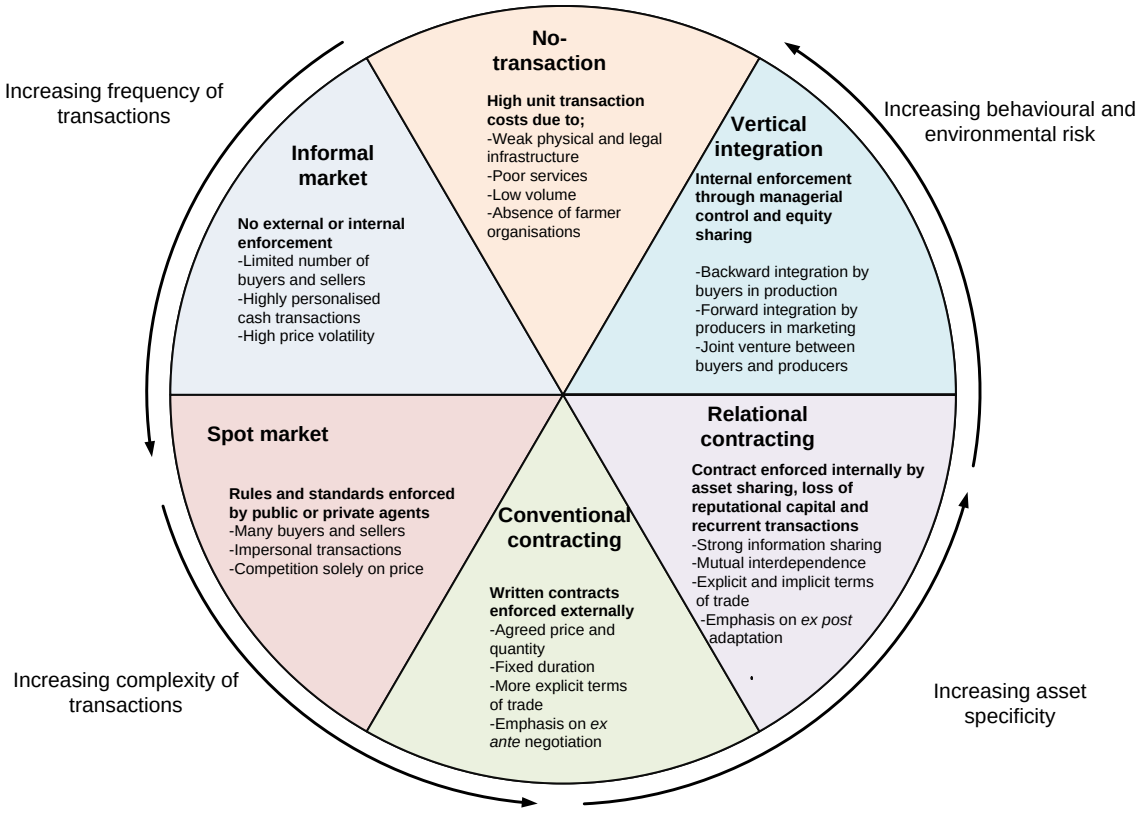

Figure 1: Modes of engagement between farmers and buyers

Source: Bhattarai *et al*. (2013).

DATA COLLECTION AND ANALYSIS

A qualitative, case study research strategy was adopted as the intention was to generalise the findings of the study to propositions rather than to a population, and the propositions address 'how' and 'why' questions about smallholder participation in supply chains rather than questions relating to 'how many' (Yin, 2009, pp. 1-24). Selection of the supply chains for case study was therefore purposive to ensure both theoretical and literal replication of the conceptual model's propositions. In each case, the unit of analysis was the farmer-buyer dyad. Producers and buyers, including potential buyers, were treated as sub-units in the embedded, multiple-case design.

Data were gathered by the first author from May to June 2011 in personal, semi-structured interviews conducted with farmers, managers of marketing cooperatives, buyers, potential buyers, government extension officers and staff working for NGO's. Further details about the study sites and respondents are provided in the overview of the ginger and cardamom chains presented in the next section. Interviews were recorded and later transcribed and coded using NVivo software to facilitate data retrieval and analysis. The analysis followed the approach suggested by Yin (2009, pp. 136-144) of searching for patterns in the data and comparing or contrasting observed patterns with those predicted by theory. In this way, theoretical propositions (such as those summarised by the conceptual model illustrated in Figure 1) can be confirmed or rejected. If rejected, the data may suggest alternative propositions, shifting the focus of the analysis to 'theory building'. The ginger and cardamom chains were analysed separately, followed by a cross-case comparison aimed at isolating the effects of exogenous attributes on the observed dyads.

OVERVIEW OF THE CHAINS

Ginger and cardamom are Nepal's second and fourth most important agricultural export crops respectively (Trade and Enterprise Promotion Centre, undated). Virtually all (98%) of the exported ginger and cardamom goes to India (Trade and Enterprise Promotion Centre, undated). This section provides a brief overview of the chains studied. The aim is not to provide comprehensive information about these chains but to understand the nature of relationships between producers and their buyers. The terms 'producers' and 'buyers' refer only to case study respondents.

Ginger

The case study was conducted in the Palpa district, a major ginger producing district along with Ilam, Salyan and Nawalparasi districts. Palpa lies in the mid-hills of western Nepal and is connected by all-weather roads to Butwal in the southern plain and the resort town of Pokhara in the North. Another all-weather road links Palpa with the interior district of Gulmi in the west. This road passes through Bhairabsthan village, the case study site. The case study comprises interviews with five farmers, the manager of the Bhairab Ginger Producers' Cooperative, two executives of the district federal cooperative, three traders (including a potential buyer) and three officials of government and non-government agencies. Ginger production in Palpa intensified in the early 2000s when an NGO implemented a donor funded project in the district. The producer cooperative was established in 2004 with 109 small ginger growers, and operates a collection depot in Bhairabsthan village. Volumes sold increased from 15 to 77 tons between 2004 and 2011.

Figure 2 illustrates existing market channels (solid arrows), discontinued channels (dashed arrows with dots) and potential channels (dashed arrows). Table 1 summarises the characteristics of observed and recent channels. In previous years, the producer cooperative sold both fresh ginger and processed (dried and sliced) ginger. However, at the time of the study, only fresh ginger was still being sold (channel 3b in Figure 2). Channel 4 in Figure 2 represents a potential marketing channel for dried ginger that failed to materialise when negotiations between the cooperative and Exporter 2 broke down. Channel 5 also refers to a potential marketing channel that failed to materialise when talks between a federal cooperative

and a local noodle factory failed to produce a trading relationship. These potential channels (Channels 4 and 5) were omitted from Table 1.

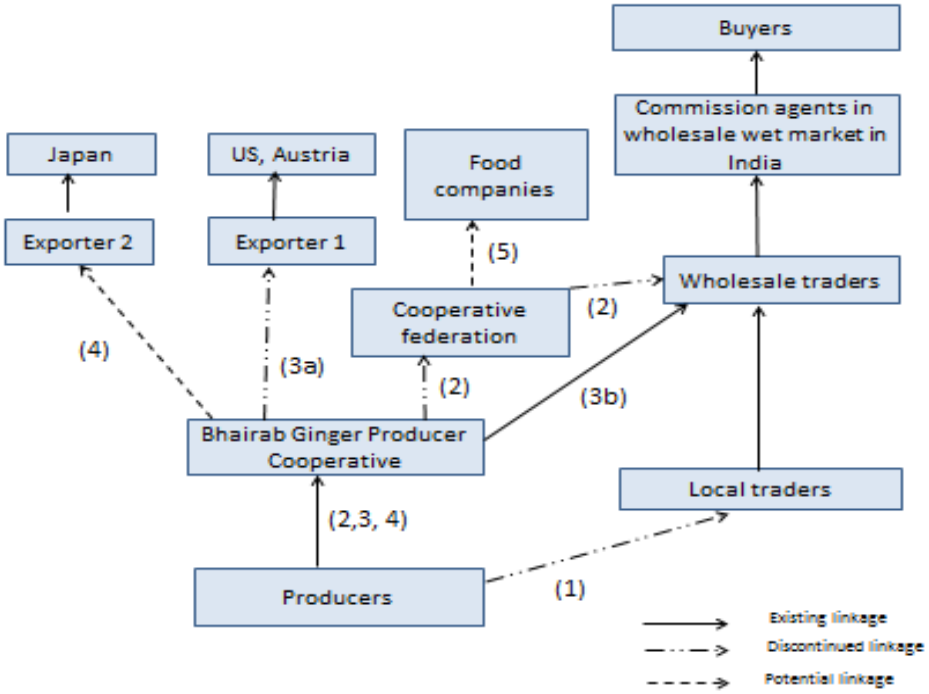

Figure 2: Ginger supply chain

Table 1: Characteristics of observed farmer-buyer ginger dyads

Dyad characteristics	Local trader dyad (1)	Federal Cooperative dyad (2)	Exporter 1 dyad (3a)	Wholesale trader dyad (3b)
Contract	Verbal	Written	Written	Verbal
Contract with	Producer	Federal Cooperative	Producer Cooperative	Producer Cooperative
Product	Fresh	Fresh	Sliced and dried	Fresh
Price	Prevailing market price	Negotiated price valid for a week	Fixed price negotiated for a year	Negotiated for each transaction
Payment	At the time of transaction	Part advance and final payments settled monthly	Part advance and full payment on delivery	Part advance and full payment before dispatch
Extension advice from buyer	No	No	No	No
Finance by buyer	No	No	No	No
Asset specific investment by the seller	None	In building and equipment through grant funding	In building and equipment through grant funding	In building and equipment through grant funding
Asset specific investment by the buyer	None	None	Investment in organic certification, drying equipment	None
Information exchange	None	Price, volume	Quality requirement, delivery schedule	Price and quantity during negotiation
Next buyer	Wholesalers	Indian traders	Importers in US and Austria	Indian traders

Large cardamom

This case study was conducted in Ilam district in eastern Nepal, a major cardamom producing district bordering India. An all-weather road from the southern plains passes through Ilam, and another main road connects Phikal - a major cardamom trading hub in southern Ilam - to India. The case study included interviews with six farmers, three immediate buyers and four key informants working for government and non-government agencies involved in large cardamom promotion. There was no evidence of collective marketing in the cardamom chain. The solid arrows in Figure 3 show how farmers in the study chain are linked to the market. Dotted arrows indicate potential export links directly to countries other than India.

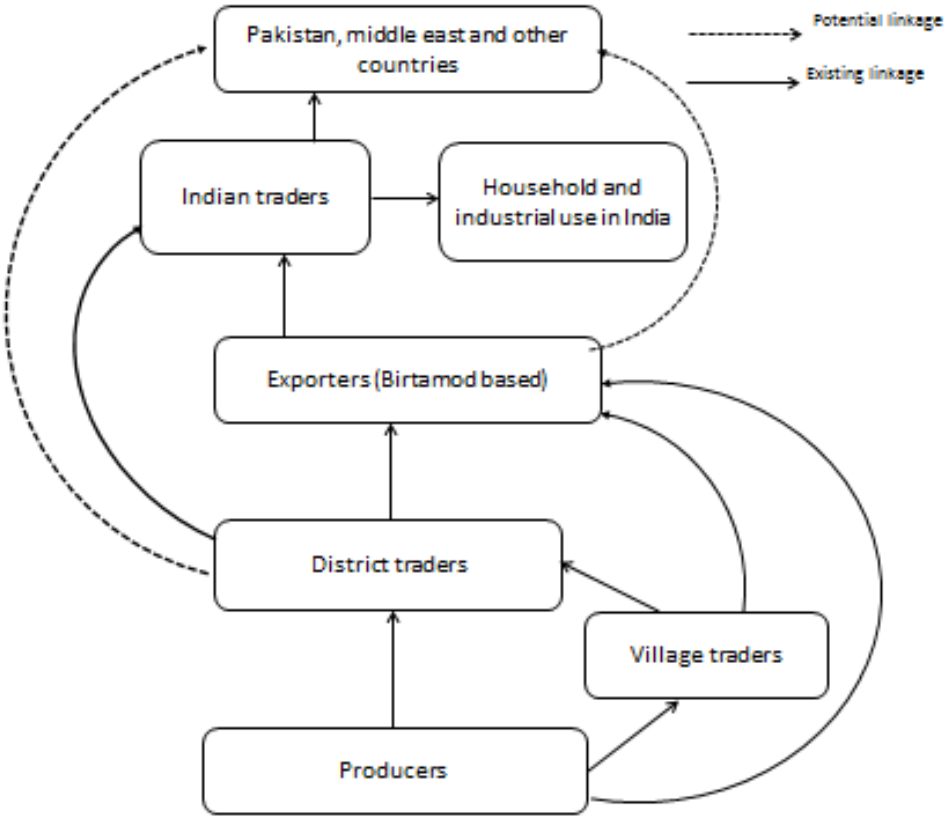

Figure 3: Large cardamom supply chain

Small cardamom growers sell to district traders based in market centres along the highway. They also sell to exporters in Birtamod (a major cardamom trading hub in the southern plains) and village traders. Nepalese exporters sell to traders based in various Indian cities. However, all three dyads exhibited very similar relationship characteristics (Table 2).

Farmers and traders used to engage in a practice known as Dahadani. In terms of this practice, forward purchase was negotiated at an agreed price or a promise to buy at a prevailing market price, and buyers would advance cash or foodstuffs to farmers on credit. However, this practice no longer exists and buyers no longer finance producers. Farmers believed that Dahadani exposed them to opportunistic pricing, both in selling cardamom and in purchasing foodstuffs from the buyers.

Table 2: Characteristics of observed farmer-buyer cardamom dyads

Characteristics	**Exporter dyad District trader dyad Village trader dyad**
Contract	Verbal
Contract with	Individual
Price	Negotiated for each transaction
Payment	At the time of transaction
Extension advice from buyer	No
Finance by buyer	No
Asset specific investment by producers	Low for most farmers but high for those who grow cardamom in their arable lands
Asset specific investment by the buyer	Limited in processing by exporters, none by other buyers
Information exchange	Price and quantity at the time of negotiation
Next buyer	Indian traders for exporters, Exporters for district traders District traders and exporters for village traders

CHAIN ANALYSIS AND DISCUSSION

Ginger

Dyadic relationships in the ginger chain switched from informal market transactions to relational contracts and back to informal market transactions. There was no evidence of spot market trading or conventional contracting. Transactions with Exporter 2 did not materialise even though the product met the importer's requirements. Similarly, transactions with a noodle factory did not materialise despite the efforts of a federal cooperative to engage this buyer. Figure 4 relates the observed and failed dyads to modes of engagement proposed by the conceptual model.

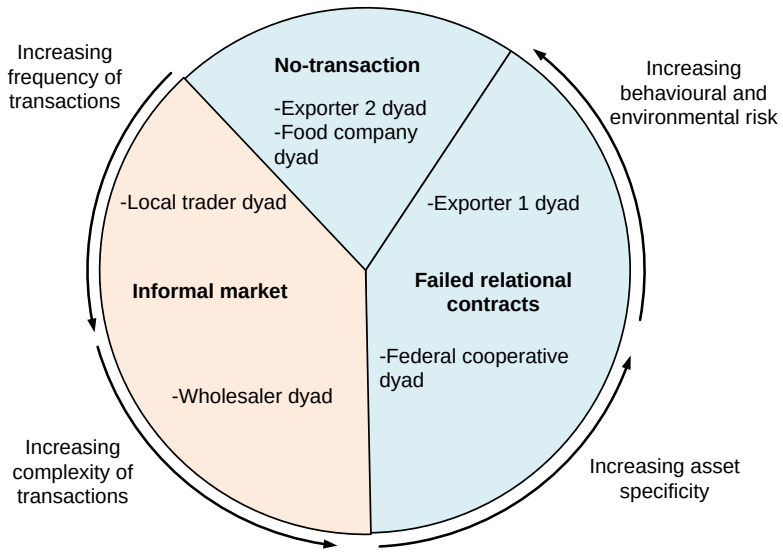

Figure 4: Observed and failed modes of engagement and their drivers

Prior to the donor-funded project in the early 2000s, low yields and the absence of collective marketing obliged small farmers to sell fresh ginger to local traders. The farmers lacked market information and their exposure to opportunistic behaviour grew as the project increased both the size and frequency of their transactions in this informal market. In 2004, the project established the Bhairab Ginger Producers' Cooperative (a marketing cooperative) and linked it to a district-level federal cooperative. The federal cooperative aggregated the output of several producer cooperatives and negotiated a relational contract with a large wholesaler attracted by the sizeable crop and low unit transaction costs. The relational contract required the buyer to make payments in advance of delivery. This shifted risk from growers to the buyer, suggesting that collective marketing via cooperatives afforded the growers more bargaining power. Repeat transactions and *ex post* price renegotiation when prices were bullish provided some internal enforcement measures to encourage contract compliance in this dyad.

However, inadequate internal enforcement, high costs of collective action (that were not financially viable without project support) and high levels of environmental risk (caused by frequent policy changes affecting the importation of fresh ginger into India) led to the demise of this dyad after just three years. The producer cooperative resorted to trading its (smaller) volumes directly with wholesalers. In addition, grant funding enabled the cooperative to purchase driers and to negotiate a relational contract with Exporter 1 to sell sliced dry ginger. This relational contract was driven by the complexity of transactions as the importers specified stringent quality, volume and schedule requirements. Asset specific investment in organic certification by Exporter 1 also encouraged relational contracting. This dyad certainly offered growers a more stable pricing regime than did the volatile fresh ginger market.

Despite its advantages, the dry ginger dyad also collapsed after three years. Its failure was prompted by inconsistent quality due to poor sanitation and inappropriate drying, and to inconsistent volume and delivery. These environmental risks were attributed to under-investment in value-adding equipment as the driers were too small to maintain a regular supply of quality product. In addition, bullish prices in the fresh ginger market encouraged opportunistic behaviour on the part of producers who shifted their deliveries to wholesale traders in the fresh market, thus exposing the buyer (Exporter 1) to a hold-up problem. The producer cooperative sacrificed the long-term benefits of relational contracting in the dried ginger market for short-term gains in the informal fresh ginger market. This behaviour may also explain why the producer cooperative was not enthusiastic about supplying Exporter 2.

Producer opportunism during periods of rising prices and under-investment in value-adding assets are predictable problems in traditional marketing cooperatives as their institutional arrangements encourage members to maximise profits in the short-term and to avoid investments that yield superior returns in the long-term (Cook, 1995; Harris *et al.*, 1996). Nepal's ginger cooperatives were established along traditional lines and are therefore prone to the 'horizon' problem described by Cook (1995). The flawed institutional arrangements of these cooperatives appear to have contributed to the demise of relational contracts and loss of robustness in the ginger chain as the only investment made by the Bhairab Ginger Producers' Cooperative was financed

from external grants and the evidence points strongly to opportunism by the cooperative during periods of rising prices.

When opportunism and under-investment collapsed the relational contracting dyads, the producer cooperative was left with no choice but to trade informally with wholesalers. Spot markets do not exist as there are no grades and standards to differentiate produce - fresh ginger is traded in Nepal without even removing soil from the rhizome. The behavioural and environmental risk that undermined relational contracts also constrained conventional contracting in the absence of cost-effective external enforcement. Collective marketing and the low complexity of transactions in the informal market help to keep transaction costs low even though the frequency of transactions is high.

Large cardamom

All three of the dyads observed in the cardamom chain were characterised by the attributes of an informal market where product standards and trading rules are poorly specified, goods are traded for cash, and transactions are independent of previous or subsequent transactions. There was little evidence of a spot market, conventional contracting or relational contracting. Prior to the advent of mobile telephones, however, the cardamom chain was dominated by Dahadani - a dyad omitted from the conceptual model. Although Dahadani represented a form of relational contracting, the evidence suggested that the relationship was built on asymmetric information and was not fair to farmers. Figure 5 illustrates observed dyads in the cardamom chain.

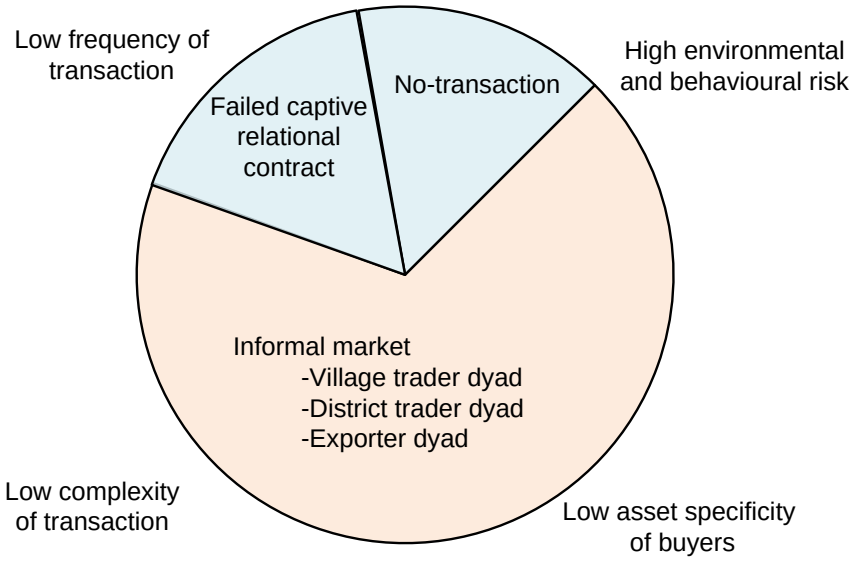

Figure 5: Observed and failed modes of engagement and their drivers

Dahadani appears to be a beneficial relational contract for farmers as it gave them access to finance and an assured market. However, farmers perceived the interest charges and prices offered by buyers to be unfair, and were obliged to commit a part of their next crop to redeem loans if their current crop fell short of expectations. Buyers, it seems, had an information advantage. The attributes of the Dahadani system suggest that this type of relationship can be best described as a captive

relational contract. However, such a captive relationship was not driven by mutual interdependence or by efforts to jointly create value, but by a combination of asymmetric information and the absence of alternative sources of credit. Expansion of mobile phone technology reduced the cost of information as farmers could easily ask alternative local buyers for prices. In addition, alternative sources of credit emerged and farmers were no longer dependent on finance from traders. As a result, the captive Dahadani system collapsed.

When this happened, farmers switched to informal market trading that offered them better terms. A true relational contract did not develop due to the absence of asset specific investment amongst buyers, and high environmental risk in production due to crop diseases and price volatility caused by shifts in production and demand in India (and possibly in other countries). Production and price uncertainty also make it harder to anticipate contingencies and therefore raise the cost of both relational and conventional contracting.

While mobile phone technology alleviated the problem of asymmetric price information in the farmer-buyer dyad, farmers and supporting agencies claimed that prices were not competitive as their buyers supply a small number of exporters who control the links to Indian markets. In their view, these exporters are large, well informed and collude to keep new entrants out of the market. Buyers, on the other hand, claimed that their prices reflected supply and demand in Indian markets.

Perceptions of asymmetric information and opportunistic behaviour by exporters would tend to discourage farmers from making value-adding investments. If farmers under-invest because they perceive a problem of asymmetric information, then potential solutions are to disseminate credible market information and to strengthen farmers' bargaining power through collective marketing. On the other hand, if farmers under-invest because the premiums for value-adding are genuinely too low, then a potential solution is to reduce the unit costs of value-adding and of engaging in more complex transactions by pooling their produce and marketing it collectively (the ginger chain highlighted the role that producer cooperatives could play in value adding and attracting preferred buyers). In either case, collective marketing could play an important role in developing contractual relationships between producers and buyers further down the chain. Higher levels of investment would, however, also require that producer marketing cooperatives be structured in ways that encourage investment by farmers and, perhaps, by strategic partners.

Lack of confidence in the prices offered by exporters may also have contributed to the absence of well-defined grades and standards (as they would be of little value) and, consequently, to the absence of spot markets. Following the welcome demise of captive relational contracts, cardamom farmers in Ilam were left with informal trading as their only marketing channel.

Conceptual model revisited

The cardamom case study revealed a dyadic relationship omitted from the conceptual model illustrated in Figure 1, Dahadani – a 'captive' form of relational contracting. This mode of engagement was associated with buyer opportunism to take advantage of asymmetric information and the absence of anternative sources of credit. The

captive relational contract observed in the cardamom chain differs from the captive supply contract described by Gereffi *et al*. (2005) which was aimed at adding value by strenghtening the capacity of small farmers to meet rigourous product specifications. In the case of Dahadani, the captive relationship fits the lower end of the vertical coordination continuum as the risk-reward profile of informal market transactions was preferred to that of Dahadani. Figure 6 offers a revised version of the conceptual model.

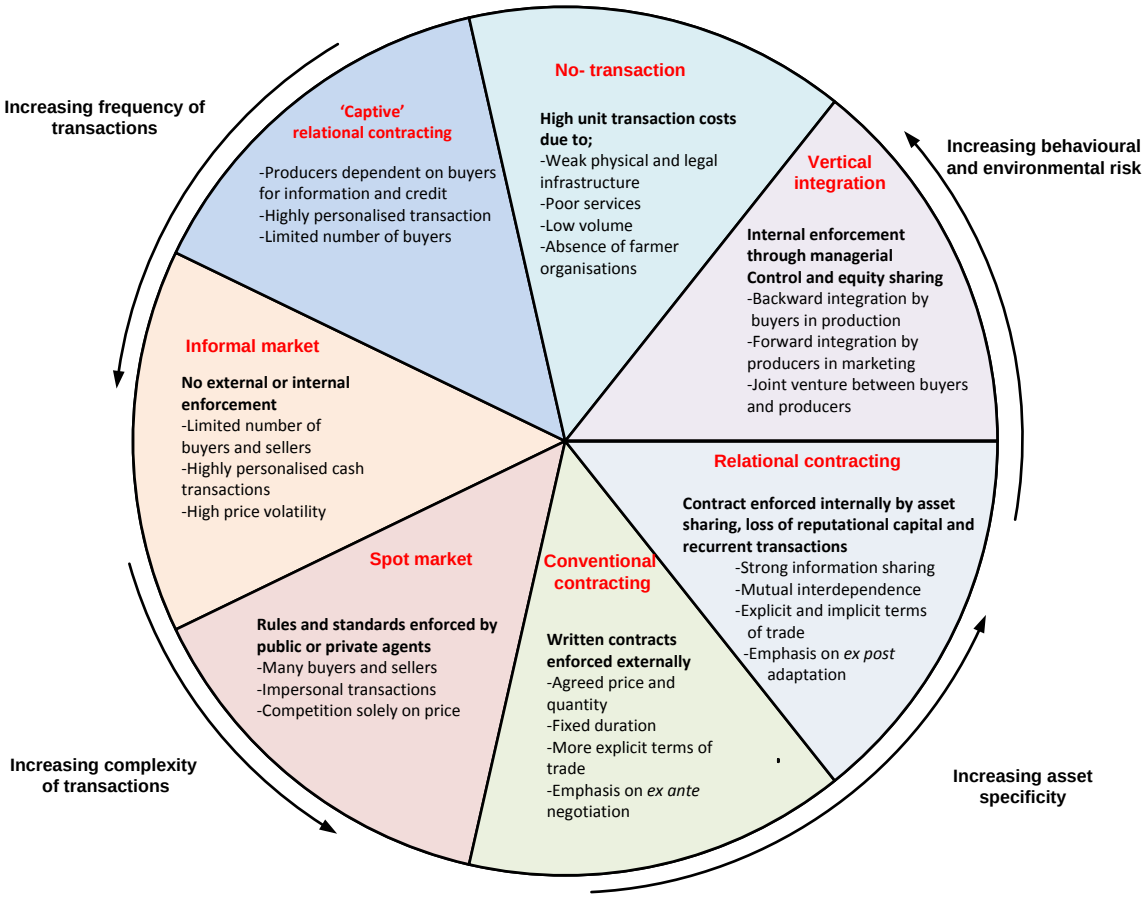

Figure 6: Revised conceptual model

CROSS-CASE COMPARISON

Figure 7 compares observed and failed dyads in the ginger and cardamom chains with the revised conceptual model. At the time of the study, the informal market was the only dyad available to smallholders in either chain, yet the pathways leading to this outcome were quite different in each chain. This section focuses on exogenous chain attributes (Table 3) that could have contributed to this outcome through their effects on transaction costs.

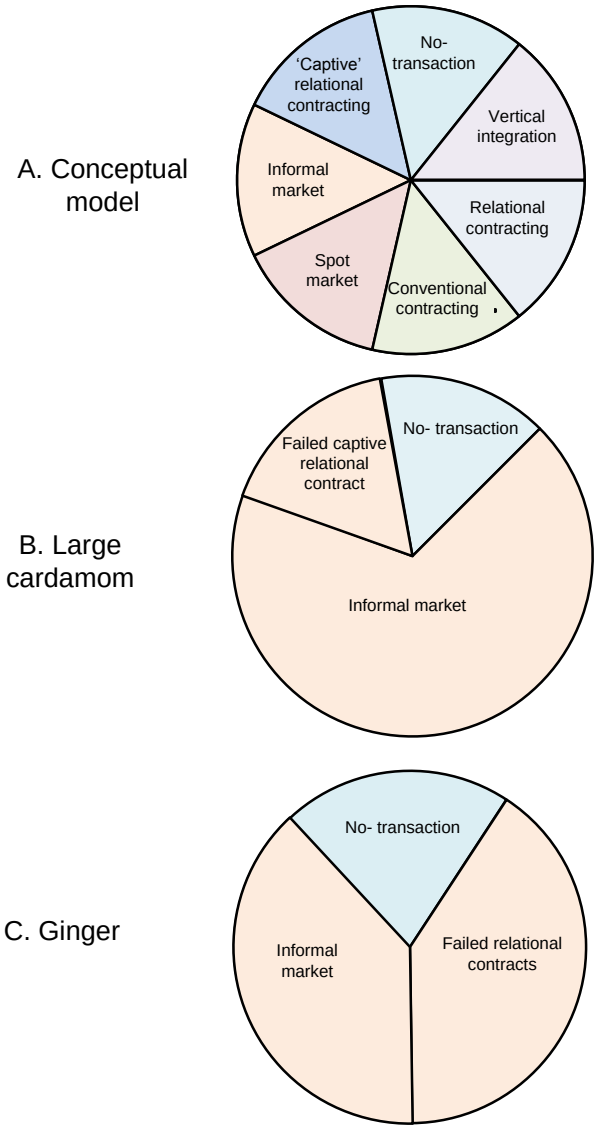

Figure 7: Revised conceptual model vs. observed and failed modes of transaction

Table 3: Exogenous attributes of observed farmer-buyer dyads

Attributes	Large cardamom	Ginger
Attributes that differ between chains		
Collective marketing	No	Yes
Product traded	Dried capsules	Fresh rhizome
Crop biology	Perennial with a long gestation period	Annual
Bulkiness	Low	High
Storability	Long	Short
Attributes that are similar between chains		
Harvest season	Single per year	Single per year
Export vs. domestic	Export	Primarily export
Alternative local buyers	Many	Many
Alternative suppliers	Many	Many
Intermediaries in the supply chain	Many	Many
Product uses	Consumption and Industrial	Consumption and industrial
Product differentiation	None	None
Compliance requirement	None	None
Access to finance	Self-help groups/Micro-finance institutions	Cooperatives
Mobile telephone	Now available	Now available
Road access	All-weather road connected nearby market centre but not farms	All-weather road connected nearby market centre but not farms
Research and extension advice	Available from government extension agency (perceived as weak)	Available through cooperative and government agency
Legal system	Unavailable or costly	Unavailable or costly
Rules and standards enforced by third party	Absent	Absent

Table 3 shows that the exogenous attributes characterising the cardamom and ginger chains are similar with the exception of collective action, crop biology, bulkiness, storability and the nature of the product traded. Despite these differences, both chains depend entirely on informal trading. This suggests that differences in crop attributes (gestation period, bulkiness, storability and the nature of the product) and collective marketing were not large enough to distinguish the dyadic relationships in these chains, or that other factors overwhelmed the impact of these factors. Jaffee (1995) did not find any consistent effect of product attributes on modes of smallholder engagement observed in his study of horticultural export chains in Kenya.

At first glance, the unimportance of collective marketing is surprising as cooperation is expected to reduce unit transaction costs and to facilitate joint investment in value-adding assets. However, collective marketing failed to create new dyads in the ginger chain (despite increasing the volumes and frequency of transactions) as the producers' cooperative adopted traditional institutional arrangements that inhibited investment. Under-investment in dryer capacity and a temporary increase in the price of fresh ginger discouraged the cooperative from maintaining its relational contract with an exporter of dried ginger slices. In the cardamom chain, the absence of collective marketing not only precluded farmer investment in value-adding assets but also denied farmers the opportunity to bulk up supplies, reduce unit transaction costs and attract a preferred buyer.

Cardamom's long gestation increases the level of asset specific investment made by farmers who grow the crop on land suited to annual crops. However, cardamom is easy to store, allowing farmers to wait for favourable prices and so reduce their risk of hold-up. Ultimately, differences in crop biology, bulkiness and storability between cardamom and ginger did not alter the way producers and buyers engage in these supply chains.

Both chains are long, primarily serving Indian markets and involving many intermediaries. Collective marketing and mobile telephone services alleviated the problem of asymmetric information in the farmer-buyer dyads of the ginger and cardamom chains respectively. However, farmers suspected that prices offered by exporters were not market related. Indeed, the absence of well-defined grades and standards does suggest a general lack of credible information about the downstream export market.

Road access and the availability of extension services were similar in the ginger and cardamom chains. Better access to roads should reduce transport costs for both producers and buyers. Likewise, research, development and extension should improve yields and quality. However, such improvements are unlikely to create new marketing channels for smallholders while there is a perception of asymmetric information and under-investment in value-adding assets. Better access to an effective legal system may also do little to encourage conventional contracting while yields and export markets are so uncertain. Research, extension and market information are first required to reduce environmental risk.

In sum, it appears that the lack of variation in dyadic relationships between smallholders and their immediate buyers in the ginger and cardamom chains can be attributed fundamentally to the similarity of their markets and enabling environments, asymmetric information and a poor choice of cooperative model to facilitate collective investment in value-adding assets and processes.

Nepal is well positioned to access international cardamom markets (ITC, 2007) and to earn higher prices for its ginger (FAO, undated) but needs to add value to its products. Although the chains described in this paper continue to engage smallholders, they provide little if any choice – a situation analogous to the low-level equilibrium described by Dorward *et al.* (2003) and Poulton *et al*. (2006). Improving the flow of information along chains serving Indian markets and complementing this information with well-defined grades and standards could promote local spot markets, but a substantive improvement in the performance of these chains from a smallholder perspective will require investment in value-adding assets and activities. This, in turn, will require collective marketing. It is unfortunate that Nepal adopted a traditional cooperative model to promote collective marketing as traditional cooperatives do not generate strong incentives for investment (Chaddad & Cook, 2004). Instead, they create incentives for producers to take advantage of high prices in spot and informal markets at the expense of relational contracts with long-term benefits. This was evident in the case study of the ginger chain, and similar findings are reported by Beverland (2007) in his comparison of traditional and New Generation Cooperatives in New Zealand. Such an outcome is entirely inconsistent with the notion of value adding, especially when contracts are complex and external enforcement via the legal system is not a viable alternative to internal enforcement.

CONCLUSIONS

The case studies of the cardamom and ginger chains showed that these chains had been unable to sustain smallholder engagement in dyads other than the informal market. These chains are, therefore, not robust from the perspective of smallholders as the absence of multiple marketing channels constrains their marketing choices. The case studies suggest that other modes of engagement are unlikely to develop while farmers perceive that prices are manipulated by exporters. Under these conditions, farmers see little point in adding-value or establishing and complying with grades and standards. Improving the flow of information along the export chain may at least help to establish sustainable spot markets. However, value-adding requires collective marketing to spread processing, marketing and transaction costs. Evidence from the ginger chain showed that collective marketing can indeed give smallholders access to preferred marketing channels, but it also showed that the traditional cooperative model is unlikely to sustain dyadic relationships for value-added products because it discourages member investment and undermines compliance with relational contracts. The government should consider supporting hybrid cooperative models like New Generation Cooperatives and investor-share cooperatives to promote collective marketing amongst smallholders. The case studies also highlighted the importance of research, extension and information to reduce high levels of yield risk that constrain both conventional and relational contracting.

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