Chapter 4

Using ICT to Integrate Smallholder Farmers into Agricultural Value Chain: The Case of DrumNet Project in Kenya

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ABSTRACT

This article examines an ICT-based intervention (known as the DrumNet project) that has succeeded in integrating smallholder-resource and poor farmers into a higher value agricultural chain. The article assesses the design of the project, and how it resolves the smallholder farmers’ idiosyncratic market failures and examines member-farmers’ marketing margins. The article finds that the design of the DrumNet project resolves smallholder farmers’ credit, insurance and information market failures and enables them to overcome organizational failure. The article concludes that successful ICT-based interventions for integrating farmers into higher value agricultural value chains require an integrated approach to tackling smallholder farmers’ constraints. The findings have implications for the design of future ICT-based interventions in agriculture.

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1. INTRODUCTION

Linking smallholder farmers to markets remains a major challenge in Africa and is associated with the lack of smallholder commercialization in the continent (Poulton et al., 2005; Barrett, 2008). A number of factors contribute to this problem. First, smallholder farmers are usually price-takers and deal with traders who often are more informed about input and output markets. Second, majority of smallholders lack the information on quality and quantity parameters used by traders in the selling process. Lack of information prevents farmers from adopting profitable production alternatives and also keeps them supplying low-paying marketing outlets (Ashraf et al., 2009). Third, seasonal variations in prices often expose smallholder farmers to greater price risks than the larger farmers, causing the former to dispose of their produce soon after harvest. Fourth, smallholder farmers trade in small village markets with long and fragmented value chains.

In addition to the above market-based (incentive) factors, smallholder farmers also encounter a number of capacity-based constraints. The majority of smallholder farmers are asset-poor (Barrett, 2008). They lack financial capital needed to acquire the inputs required to commercialize production, the human skills (capital) needed to function in better-paying but competitive markets and the social capital that is instrumental in organizing production (Doward et al., 2003). In addition, smallholder farmers often face poor infrastructure in form of roads, telecommunication and electricity that impede their market access. Further, smallholder farmers, given their geographical dispersion tend to be characterized by organizational failure (Rich & Narrod, 2005). That is, majority of smallholder farmers are often unable to mobilize themselves into farmer organizations and take advantage of benefits of collective marketing such as economies of scale and collective bargaining power.

Information and asset poverty make the cost of doing business (i.e., transaction costs) unaffordable to majority of smallholder farmers (Shiferaw et al., 2007). Consequently, such farmers prefer selling their produce in nearby village markets or at the farm rather than travelling to the market where they could get better prices (Fafchamps & Hill, 2005). Such village markets however tend to offer low prices and are characterized by significant price variation (Aker, 2008).

For many African countries, commercializing smallholder agriculture provides the only engine for agrarian and rural development. However, commercializing the smallscale farm sector requires efficient markets which in turn require access to market information, transparent and profitable pricing system, and capital (especially credit and better production practices). Where market information is not readily available and accessible, opportunistic behavior (by traders and other market actors) tends to develop. One such behavior is the cheating on quality and quantity (especially scale) which in turn results into the failure of traders to establish long-term business relations in Africa (Fafchamps & Gabre-Madhin, 2006). Due to the opportunistic behavior between buyers (traders) and sellers (farmers), transactions tend to be relational (i.e., selling only to those previously known and hence trusted), are in small volumes and are based on visual inspection. The tendency for transactions to involve visual inspection precludes long distance, non-personal transactions and typically increases the cost of trade (since actors must travel long distances to verify quality of traded commodity during the buying process). It also retards expansion of trade between regional and distant market actors.

The prior imperfections in the markets for smallholder farmers have led to a search for alternative models of integrating such farmers into better paying commodity value chains. Such models attempt to resolve some of the farmer-specific (idiosyncratic) constraints that impede smallholder farmers’ access to production technology, market
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