Factors Affecting Performance of Agricultu ral Value Chains: The Case of Small-Scale Coffee Marketing In Kangundo, Machakos County

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ABSTRACT

Coffee is Kenya's forth source of foreign exchange after tourism, tea and horticulture, and significantly contributes to farm income and employment. The different marketing systems in the producer and marketing cooperatives (P&MCs), which ensure unsatisfying returns, poses a great challenge to the coffee industry, which comprises majority of small-scale producers (SSPs). The study sought to determine the factors influencing coffee marketing by small-scale producers and to assess the influence of smallholder coffee marketing systems to the coffee value chain. The study employed descriptive design. The establishment under study features small-scale coffee producers in Kangundo Sub-County, Machakos County. Questionnaires were used to gather Primary data. Stratified Sampling technique was used to compare the views of SSPs and top management of P&MCs on the target objectives. Statistical Program for Social Sciences (SPSS) aided analysis of quantitative data, while content analysis helped analyze qualitative data. Key challenges facing coffee marketing were low and delayed pay to SSPs, poor management of P&MCs, and low education levels of top management of P&MCs and SSPs. Smallholder coffee marketing systems in turn affects coffee value chain through financial constraints, reduced returns and reduced production. Policy implications of these findings through complementary education programs for SSPs and P&MCs and intervention of cooperatives' management through the relevant government institutions is the need for creating awareness of suitable and affordable measures towards an enhanced sustainable system in the Coffee Industry.

Keywords: Coffee Value Chain, Small-Scale Producers, Machakos County, Marketing, Producer and Marketing Cooperatives

1.1 Background Information

Agriculture is the backbone of Kenya’s economy, with about 75 per cent people entailed and employed in the sector. The sector is recognized as one of the pillars necessary to support economic recovery (Republic of Kenya, 2008). The country’s socio-economic and political development is heavily dependent on agriculture and the sector’s growth in turn support growth in other sectors. More than 65% of Kenyans living in the rural areas derive their livelihoods from farming and related activities. With a contribution of 24% of GDP directly and another 27% indirectly, agriculture is the main productive sector upon which the success of Vision 2030 is projected, as it is critical to the attainment of the 10% economic growth the country is targeting from the year 2009 to 2030 (Republic of Kenya, 2008).

Coffee is a significant crop in Kenya’s agriculture. It is major cash crop, which ranks fourth after tourism, tea and horticulture in earning the country foreign exchange. About 95 % of coffee produced is exported, whereas only about 5% is domestically consumed. Coffee industry as well contributes about 0.21% to the Gross Domestic Product (GDP) and 8% to the agricultural sector.

It contributes about 30% of the total employment in the agricultural sector. The industry supports about six million people due to its effective forward and backward linkages (AFFA-CD 2016).

There exists a variety of coffee species, but the most common are Arabica and Robusta coffee varieties. Kenya mainly produces Arabica coffee, grown on the rich volcanic soils in Kenyan highlands. This ensures extraordinarily rich in acidity and flavor, full body and deep sensual aroma and hints of chocolate, floral and citric undertones of resulting coffee beans. This makes Kenyan coffee stand out in international markets as per quality (Howden, 2012) and the beans are mostly used to blend other "low quality" coffees in most importing countries (Kegode, 2005).

According to Chege, 2012, Coffee production in Kenya has two levels of production; the SSPs organized into P&MCs (525) accounting for 70 percent production, and coffee estates (4000) accounting for 30 percent production. Coffee Industry had managed to earn about 40% of the country's foreign exchange in 1986. Since then however, its contribution has erratically declined to about 3% in year 2010 due to the drop in its production; from about 128,700MT in 1987/1988 coffee year to an average of about 49,088MT in 2010 (Bichanga and Kabaka, 2013) and this has greatly affected the economy of Kenya. The decline in coffee exports is attributed to decreased coffee production, declining world market prices and insufficient credit available to producers (EPZA, 2005). Kenyan coffee has continually attracted higher international market prices however (AFA-CD 2017) due to its unique quality, with the buyers using it to blend other coffee.

1.2 Statement of the Problem

Coffee is one of the perennial crops in Kenya (Kenya National Bureau of Statistics, KNBS 2016) which constitutes core source of National income and wealth from foreign earnings and numerous employment opportunities across the 31 coffee producing counties. While small-scale coffee production amounts for about 70 per cent of the total coffee produced annually (Chege, 2012), the erratic reduction in quantity of coffee over the years since its introduction is alarming. (Bichanga and Kabaka, 2013) Earlier studies have focused on the economic importance of coffee, while others have stressed on roles of P&MCs in production (Wangari, 2014). Few studies have been done on SSPs' coffee marketing, thus creating need to study the factors affecting small-scale coffee marketing and the effects of the marketing systems (through P&MCs) to the coffee value chain.

Results showed that poor management of P&MCs, insufficient access to financial services and information, poor and inefficient infrastructure; climate change and soil deterioration had direct negative effect to Small-scale marketing of coffee. Extension services access was positive from the study, and this finding creates room for complementing and tackling some findings. The small-scale coffee marketing system further result to financial constraints, reduction in production, diversion to production of other crops and delayed and low payments to farmers by the P&MCs. The Recommendations made from the study addresses the findings.

1.3 Objectives of the Study

i. To determine factors influencing coffee marketing by small-scale farmers

ii. To assess the influence of small-scale coffee marketing systems to the coffee value chain

1.4 Justification of the study

The study was of importance in exposing the factors affecting small-scale coffee marketing. This in turn helped the researcher give recommendations on how to tackle the factors to improve the coffee industry. This will in turn help improve the coffee returns to SSPs, and perhaps revive the coffee industry by substantial increase in production. As well, the project is important to the coffee industry regulators to intervene in P&MCs through relevant policies to take significant actions on marketing of smallholder coffee. The project will lastly provide an education system to benefit both SSPs and P&MCs on healthy coffee value chain that would sustain the industry.

2.0 LITERATURE REVIEW

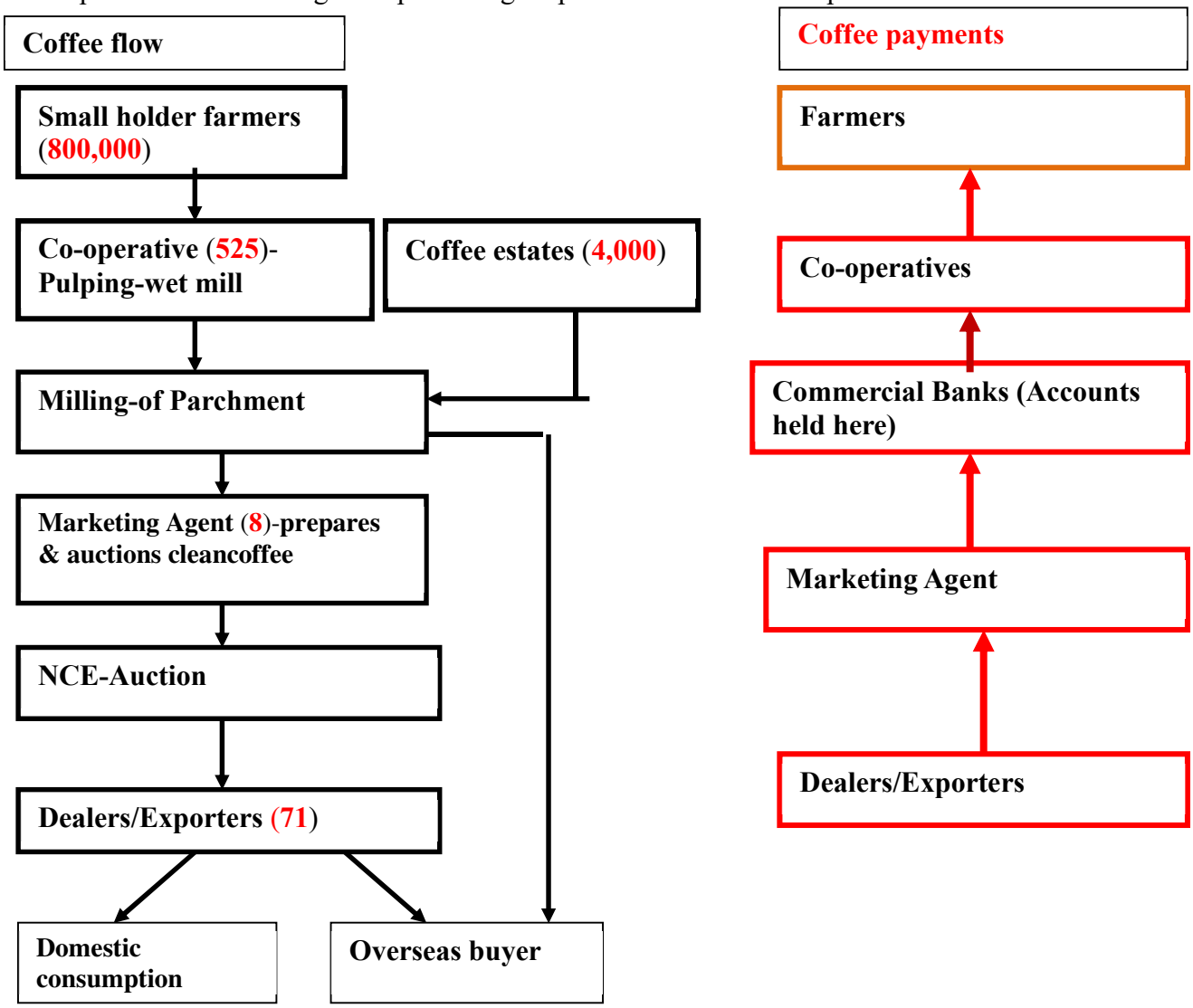
2.1 Coffee Value Chain

A value chain is a set of activities, which an organization undertakes to create value for customers. An organization is a system made of subsystems, where there is acquisition of inputs, which undergo transformation to produce output (Michael Porter, 1985). Activities along the value chain determine the costs too, which have a proportional effect to the profit (surplus supply). According to Porter (1979), a Value Chain entails primary activities, which are basic and secondary activities, which support the primary activities. The primary activities include inbound logistics, outbound logistics, sales and marketing, and services, whereas secondary activities entails support activities such as procurement, Human Resource Management, Technological development and organizational infrastructure (for instance finance, accounting, quality assurance and general strategic management), among others. Porter further describes a supply chain as Industry value chains; a representation of various processes involved in producing goods or services from raw materials to products.

According to Jan et al 2011, Supply chains are complex entities that serve many functions. They entail institutional arrangements that link producers, processors, marketers, and distributors. Supply chains consists of industrial organizations which allow buyers and sellers separated by time and space to progressively add and accumulate value as products pass from one chain actor to another. Through supply chains, Products move from producers to consumers, Payments, credit and working capital move from consumers to producers, Technology and advanced techniques are disseminated among value chain actors, Ownership rights pass from producers across the value chain to end users and Information from current customer demands and retail level product pass through the chain along the reverse channel.

According to International Funds for Agricultural Development (IFAD) 2013, an effective coffee value chain begins from input acquisition to farm production through quality assurance, storage and packaging to transformation and quality control (processing), packaging until the domestic or international companies to the end user. Across this value chain, there should be effective technical capacity, funds for instance microfinance and rural credit access and resources such as warehouses.

Coffee Value chain begins from input acquisition to the end user (coffee consumers). According to Chege (2012), Production of Kenya coffee is at two levels, smallholder production organized into co-operatives and medium and large sized farms commonly referred to as estates. By 2005, there were 700,000 smallholders organized into nearly 600 co-operatives, and nearly 3,300 estates of 2 to 20 hectares. The acreage under coffee is 160 thousand hectares with cooperatives accounting for 75 percent of this acreage and producing 57 per cent of total coffee production.



Coffee value chain and payment
Source: Coffee Directorate

2.2 Coffee Marketing

Kenya has two coffee harvests in a year. The "fly" or early crop (AFA-CD, 2017) that is harvested between September and December, and the "main" or late crop is harvested between March and July. Kenya produces mild coffees with primary processing undertaken at either the co-operative

owned mills (assembled coffee from SSFs) at farmer-owned mills in large-scale plantations (Coffee Estates). Commercial millers licensed by AFA-CD do secondary processing. Post-farm logistics such as transportation and warehousing is largely done by contracted private sector service providers. Kenya's coffee farmers have an option of selling their coffee directly to international buyers (direct coffee sales), or they can contract and authorize their marketing agents to sell through the NCE, a spot market that has been in existence since early 1930s. Direct sale contracts must however be registered with AFA-CD.

Kenya produces less than one percent of the world's coffee, and her coffee is highly regarded for blending and specialty markets. In addition, Kenya is the main coffee logistics hub for Eastern Africa and all the main international coffee traders are represented (AFA-CD 2017). Exports shipments continue throughout the year, in January to July for the main late crop and in August to December for the early crop. The government of Kenya does not impose tax on coffee exports from Kenya. Kenya has a small production of unwashed coffee deriving mainly from degenerate beans – beans that matured and dried in the tree, broken branches and beans that have fallen to the ground. This coffee is called *Mbuni*, is believed to be of low value. It is graded as MH, ML. (AFA-CD 2017). According to AFA-2017, *Mbuni* production should be avoided if possible, since it is of poor quality hence yields low. Instead, farmers should focus on production of clean coffee, which is processed to produce seven standard grades: AA, AB, C, PB, E, TT and T.

Coffee Directorate (2017) has categorized the Coffee market into four distinct segments; Traditional Markets, Emerging Markets, Specialty Coffee Markets, and Domestic markets. Traditional markets have long historical ties with the Kenyan coffee industry. Most of them have some coffee multinational firms in Kenya. These markets include UK, Germany, Belgium, Finland, Denmark and most of the European Union countries. Emerging Markets are those that have not been buying Kenyan coffee in bulk in the past; they know very little about Kenyan Coffee. However, based on their economic growth and GPD, they have the potential to buy more of Kenyan coffee. These include Lebanon, Egypt, Syria, Jordan, Yemen and Turkey, Iran, Saudi Arabia and United Arab Emirates (UAE). Specialty coffee markets bases on coffee sourced from single origin of the premium grades of AA, AB, PB and E which usually score about 80% and above of the Specialty Coffee Association of America (SCAA) grading system. Domestic markets represent the Kenyan local market for coffee.

Kenyan Coffee is mainly exported (about 95%) as green coffee beans, and only about 5% marketed and consumed locally. Main importers of Kenyan Coffee include Germany, United States, Belgium, Sweden, Finland, South Korea, Switzerland, France, United Kingdom and Canada (United States Department of Agriculture, 2017). Coffee Directorate has incentives to increase domestic coffee market through domestic coffee campaigns with universities and higher learning institutions as main targets. As they do so, they are encouraging putting up of more and more coffee houses within the institutions (AFA-CD 2017).

However, coffee farmers are continually getting lower returns from coffee due to various reasons; ranging from access to inputs for production throughout the production process until marketing. Studies have been done to assess several of these variables. Little has been done concerning coffee

marketing and more specifically small-scale coffee marketing systems however. This study will tackle the factors derailing the coffee industry at the marketing node with focus of SSFs and recommend possible solutions.

3.0 RESEARCH METHODOLOGY

3.1 Location of study

The study was carried out in Kangundo Sub-county, Machakos County, which is situated in Eastern Kenya. The area has climate that support a variety of crop farming such as coffee, perennial fruits(mangoes and avocados) and crops (cassava), macadamia, short season crops such as maize, beans, peas and vegetables, as well as rearing of livestock. Most people living in Kangundo sub-county partly depend on income from agriculture for their livelihoods.

3.2 Research Design

According to Kombo (2006), research design is a scheme, outline or plan used to generate answers to research problems. It entails arrangements of conditions of data collection and analysis. The research adopted the Descriptive research design. This research design tests and reports the way things are (Mugenda and Mugenda, 2003). This method has an advantage in enabling the researcher to collect direct information about human behavior that is complex and more difficult to study (Omukoko et al, 2017).

3.3Sampling Size and Sample Procedure

According to Mugenda and Mugenda (2008), sampling procedure is a way of selecting a given number of respondents from a representative of a defined population. The target population included all coffee farmers in Kangundo Sub-County, Machakos County. The Sampling was done using the stratified random sampling where by questionnaires were administered to two representatives of P&MCs; the chairperson and the sales manager, and thirty coffee farmers (members of P&MCs) selected at random across Kangundo Sub-County, making a total of 40 sample size. The stratified method adopted in the study aimed to assess factors affecting Small-scale coffee marketing from both the SSPs' and P&MC managers' points of view. Random sampling helped select 10 subjects from the SSP stratum by randomly picking any two farmers in a common P&MC, and any of the two representatives from each P&MCs, making a sample size of 15.

3.4Piloting

Kothari (2004) stresses that extensive study of the subject matter (problem) is key in definition of the problem, and this is best done by conduction a pilot study. Piloting ensures pretesting of the data collecting instruments and their use, therefore enabling assessment and clarification of the instruments and their use. Burns (2000) explains that pretesting allows discovery of errors and as

well, acts as a tool for training research teams before the actual collection of data begins. Burns also argues that effective revision is the result of determining participants' interests, measuring the effectiveness of questions to participants, checking for participants' modifications of question intent, examining questions continuity and flow. Mugenda and Mugenda (2003) posit that 1% of 10% of sample size is adequate for a pilot study. Piloting done in the first week of November 2017 enabled adjustment of the questionnaire towards alignment of all values that had effect on the independent variables that contributed to determining the factors affecting small-scale coffee marketing in Kangundo Sub-County.

3.5 Instrumentation

According to Kothari (2004), administration of questionnaire by interviewing the sample group method is effective in extensive enquiries, and can lead to relatively reliable results despite being expensive**.** Data was collected by administration of questionnaires through a one-on-one interview, an aspect that enhanced a higher level of reliability to the data collected. The interviewer could as well provide clarification where it necessary. The one-on-one interview ensured that the right people filled the questionnaires (SSPs and P&MCs representatives). The data was collected in November 2017. The data collected from the farmers was on demographic information, and data on the socioeconomic characteristics of the farmers. The demographic data included the age, gender and education levels of the farmers. The socioeconomic characteristics included the factors influencing coffee marketing, years of coffee farming experience, size of farms, quantity of coffee produced per coffee year, and other socio-economic activities done apart from coffee production.

3.6 Data Collection

The target population of the study was all coffee farmers in Kangundo sub-county. Both primary and secondary methods of data collection were applied. Collection of primary data was done using questionnaires filled by the target samples through one-on-one interviews.

3.7. Data Analysis and Presentation

Before processing the responses, the completed questionnaires were edited for completeness and consistence. They were then numbered and checked to see that all the items were answered according to instructions to reduce errors and maintain the validity of the data. Data was analyzed using relevant statistical analysis tools. Quantitative data was analyzed using descriptive statistics, by use of SPSS and presented through percentages, means and frequencies. This analysis was done by tally of responses, computing percentages of variables in response, describing, and interpreting the data in correspondence with the study objectives and assumptions using SPSS. Mugenda and Mugenda (2003), explains that SPSS is a comprehensive, integrated collection of computer program for managing, analyzing and displaying data. Content analysis was used to analyze qualitative data (the data collected from open-ended questions).

4.0 RESULTS AND DISCUSSION

4.1Demographic Characteristics

4.1.1Genders of Respondents

Gender	Frequency	Percentage (%)
Male	8	52
Female	7	48
Total	**15**	**100**

From the questionnaires, the researcher observed that more men filled the questionnaires than women did. This implies that men participate in coffee marketing more than women in Kangundo Sub-County. The researcher identifies education to farmers to ensure that perception on gender roles is positive to include all genders across the coffee value chain, more specifically at the management level. By so doing, unique ideas could some up on operations thus improving the sector.

1.1.2 Age of Coffee Producers

1.1.3

Age (years)	Frequency	Percentage (%)
Below 30	0	**0**
31-40	1	4
41-50	2	14
51-60	4	27
Above 60	8	55
Total	**15**	**100**

Most of the farmers were above 50 years, with those above 60 years with the highest percentage. Youths should be encouraged to invest in the coffee value chain therefore, mainly at the production node to secure the future of coffee industry. Capacity building is necessary to encourage coffee farmers to avail family land to their children and incorporate them in farming.

4.1.3 Education Level

Education Level	Frequency	Percentage (%)
Primary	7	45
Secondary	6	40

Tertiary	2	15
Total	**15**	**100**

Most of the farmers interviewed attained education up to secondary school level. Only 15 per cent attained education to tertiary level. Extension services could complement this factor. Therefore, capacity building should be thorough, involving all stakeholders at all nodes of the value chain to equip farmers with detailed knowledge in the coffee industry.

1.1.4 Membership to social group

Membership	**Frequency**	**Percentage (%)**
Yes	3	20
No	12	80
Total	**15**	**100**

From above, 80 per cent of farmers did not belong to any social groups. Only 20 per cent were members of social groups. The researcher noted that some aspects could be improved if farmers had social institutions. Social institutions trigger developmental goals mainly amid sharing information related to members' livelihoods.

4.2Factors that Influence Small-scale Coffee Marketing

Variables		**Descriptive**
Management of P&MCs	Poor (yes %)	72.4
	Low management Skills (yes %)	65.2
Extension Services	Adequate (yes %)	73.4
Financial Services	Limited access (yes %)	69.5
	High Collaterals (yes %)	76.5
Coffee Production	Climate Change (yes %)	95.2
	Increased soil deterioration (yes %)	81.7
Information	Information divide (yes %)	83.6

Infrastructure	Poor roads (yes %)	76.2
	Inefficient transport (yes %)	68.2

From the socioeconomic results of the questionnaire, poor and low management skills of P&MCs and low skills of the P&MCs representatives, limited access to financial services and information, climate change and increased soil deterioration, poor and inefficient transport facilities negatively affect coffee marketing in Kangundo Sub-County. All these variables recorded a percentage effect of above 50 per cent. SSPs attributed low management skills to big debts the P&MCs they belong to have. These loans in turn limit such P&MCs from seeking any credit, yet the SSPs have limited access to credit since they are constrained by insufficient collateral to secure the loans. More so, what the farmers get as returns is relatively low due to the mediocre coffee production. This mediocre production, besides other issues, was linked to climate change effects and soil deterioration by the SSPs.

The returns are therefore not enough to allow for improvement in the coffee production. SSPs also directed poor management skills to situations where the P&MCs indirectly exploit them. In the case of purchasing inputs through P&MCs, for instance these leaders overcharge the farmers to 'pocket' the margin. In case, a farmer changes their mind to purchase the inputs individually, these leaders are reluctant to refund the farmers' money. The hilly nature of Kangundo Sub-County makes it quite difficult to transport coffee from some SSPs' farms to their P&MCs consuming more of their time. On the other hand, access to extension services recorded a high positive percentage from the farmers interviewed. SSPs acknowledged the efforts of the county agricultural department and Coffee Directorate alongside private sectors in provision of technical capacity. This shows that there is possibility of improvement through the technical skills provision.

4.3The Influence of Small-Scale Coffee Marketing System to the Coffee Value Chain

Variable	**Descriptive**
Financial Constraints (yes %)	78.6
Reduction in Production (yes %)	74.2
Diversion to producing other crops (yes %)	60.7
Delayed payment (yes)	88.9
Low and erratic coffee returns (yes %)	83.2

Marketing of coffee through P&MCs further affect the entire coffee value chain through financial constraints, reduction in production, diversion of farmers to produce other crops and delayed payments which are low and erratic, as these variables record a response of above 50 per cent in the results. Delayed payment relates to some P&MCs' regulations that restricted farmers to be

remunerated all at once. P&MCs' officials also attributed delayed payment to the long channel their coffee is paid through as shown in the literature review. Some low returns were attributed to the debts by the case P&MCs as per the management stratum, whereas the SSFs attributed it to low productivity due to climate change effects, soil deterioration and financial constraints they face. All these issues results to some farmers diverting to production of other crops.

5.0 Conclusion and Recommendations

The study sought to determine the factors affecting small-scale coffee marketing and the influence of smallholder coffee marketing systems to the coffee value chain. Results showed that management of P&MCs and access to financial services and information had a direct impact on small-scale coffee marketing. Poor and inefficient infrastructure, climate change and soil deterioration also derails Small-scale marketing of coffee. The small-scale coffee marketing system (through P&MCs) further results to financial constraints, reduction in production, diversion to production of other crops and delayed payment to farmers by the P&MCs, which is low and erratic. However, access to extension services was statistically significant.

The results recommend the government's intervention through practical policies to govern the management of P&MCs. This will be achieved through liaison of key ministries: Ministry of Agriculture, Ministry of Enterprise and Cooperative Societies and the County Government. The study also recommends combination of bottom-up and top-down education systems by extension officers in capacity building both P&MCs officials and all the SSPs to identify problems on ground and disseminate information and new technologies efficiently and effectively. The study also recommends formation of social groups among coffee farmers, which will enhance sharing of knowledge and information, and ease the access to finance through social-economic activities undertaken by these social groups. Stakeholders and value chain actors too have a role to play in shortening of the payment channel. This is possible through reviewing of the coffee payment policies.

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