AN ANALYSIS OF INSTITUTIONAL FACTORS INFLUENCING PARTICIPATION IN MILK MARKETS: CASE OF MASERU URBAN

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ABSTRACT

The study was undertaken with the purpose of investigating institutional factors influencing participation in milk markets in Maseru urban. Out of 30 dairy farmers, 30 were selected using a survey method and data was collected using a structured questionnaires. The data generated was analysed using both descriptive statistics and logit model. Descriptive results show that dairy farmers use formal market channels more than informal market channels. Empirical results show that market information, membership in organization and collective action, government support and contractual agreements influence participation in formal markets while social capital, path dependency, delayed payments and distance to milk collection centres influence participation in the informal markets.

Keywords: Market participation, informal markets, formal markets, institutional factors, milk markets, dairy farmers, logit model.
INTRODUCTION

In the age of trade liberalization and globalisation, the world markets are increasingly being integrated. This implies that farmers in the developing world are ever more linked to consumers and corporations of the rich nations. Consequently, local farmers are facing increasing market competition, not only in international markets, but in local markets as well. In an effort to withstand the market pressures, agricultural markets are now transforming to a vertically coordinated structure (Goodwin and Gouldthorpe, 2014; Jari and Fraser, 2009; Reardon and Barrett, 2000). Also, both the private and public sectors have made some adjustments in agricultural markets, in order to survive competition resulting from market changes.

The Lesotho agricultural sector was deregulated in 1997, with the aim of creating an open and market-oriented environment for boosting the sector. Based on the Agricultural Marketing Act of 1996, government intervention in agricultural marketing through the use of control boards was ceased. This change resulted in smallholder farmers and other formerly deprived farmers in output markets being included in agricultural marketing (Van Schalkwyk et al., 1997). Although the policy is now oriented in favour of smallholder farmers, they still have to compete for markets with the already developed commercial sector. For this reason, their survival in the markets is still at stake. In output markets, smallholder farmers often faced with difficulties in enforcing contracts and meeting stringent food safety norms, lack skills, are located in remote areas and mostly rely on middlemen. They are also served by poor physical infrastructures and weak institutions in markets (Goodwin and Gouldthorpe, 2014; Makhura, 2001). Understanding such challenges among smallholder farmers is important in identifying areas that need focus and direction for improvement. In the light of these challenges, suggestions can be made on how to improve smallholder farmers’ participation in output markets.

The main objective of this study is to identify and assess the institutional factors influencing milk market participation behaviour amongst smallholder farmers in the Maseru urban in Lesotho. The study focuses on the factors that compel smallholder farmers to make certain marketing decisions. Thus, it considers factors that guide farmers in deciding whether to sell produce in formal or informal markets.

CONSTRAINTS TO AGRICULTURAL OUTPUT MARKETS

Markets are important because they act as a mechanism for exchange. They are particularly important to the poor, because their involvement in the use of markets results in co-ordination and allocation of resources, goods and services. In other words, markets are very important in reducing poverty and improving livelihoods of households. It follows that market participation is important amongst smallholder farmers because households derive benefits such as income and open opportunities for rural employment (Dorward et al., 2009; Jagwe and Machethe, 2011). In addition, marketing activities such as processing, transportation and selling can provide employment for those willing to exit the farming sector. At the national level, Bairwa et al., (2014) identified that market participation is important both for sustainable agriculture and economic growth and for the alleviation of poverty and inequality. Unfortunately, smallholder farmers face difficulties in accessing markets, as a result, markets fail from effectively performing their duty. It is central to this paper to identify barriers that hinder markets from serving the interests of smallholder farmers, giving special attention to institutional and technical factors.

In Lesotho, smallholder farmers find it difficult to participate in commercial markets due to a range of institutional constraints. Factors such as poor infrastructure, lack of market transport, dearth of market information, insufficient expertise on grades and standards, inability to have
contractual agreements and poor organisational support have led to the inefficient use of markets, hence, commercialisation bottlenecks. According to Moturi et al., (2015), dairy farmers' choices of marketing channel are largely determined by different institutional factors.

**Institutional aspects in smallholder agricultural markets**

Institutions are defined by North (1990) as rules of the game that facilitate coordination or govern relationships between individuals or groups. North (1990) divided institutions into formal and informal institutions. Institutional aspects and their role in marketing and economic development revolve around transaction costs, market information flows and the institutional environment. It is affirmed that smallholder farmers in developed rural economies lack adequate market information and contractual arrangements, lack lobbies in the legal environment and are not easily receptive to changes (Ferris et al, 2014; Delgado, 1999; Kherallah and Kirsten, 2001). These factors result in high transaction costs, hence difficulties in formal market participation. This line of argument is substantiated by Makhura (2001) who explained that when smallholder farmers are faced with high transaction costs, they will either stop participation in marketing or resort to other means of marketing such as spot markets. The use of spot markets may not be as rewarding to the farmers as formal markets are, mainly due to traders' opportunistic behaviour. In addition, spot markets are becoming less popular in the liberalised environment. To sum up, owing to institutional aspects, smallholder farmers face difficulties in accessing formal markets. This calls for institutional development among this group of farmers.

Farmers prefer marketing channels where they incur low costs and that offers higher prices to maximize profits. There are farmers participating in the formal markets and others participate in the informal dairy markets due to various institutional factors (Lesotho National Development Corporation, 2017).

In the commercial agricultural economy of Lesotho, there is high demand for milk for consumption and processing especially in the formal economy. Also, there is a high number of active dairy farmers in the country but this demand is not met since farmers still participate in the informal markets instead of the milk demanding and lucrative formal markets (Bureau of Statistics, 2015). Therefore, the study will investigate the institutional factors that influence participation in formal and informal dairy markets.

**MATERIALS AND METHODS**

**Description of the Study Area**

Maseru is a city found in Lesotho located at -29.32 latitude and 27.48 longitudes and situated at elevation 1552 m above sea level. It is a sub-tropical highlands characterized by warm rainy summers and cool to chilly and dry winters with the average mean temperatures during summer at 22°C (World atlas, 2015). According to Bureau of Statistics (2016), population of Maseru urban district was 267000 in 2014. The western business district holds larger office buildings, department stores and several banks while the eastern business district has small businesses, markets, street vendors and the central business district hosts the largest employment centres within the city through industries like milling companies, footwear companies and textile firms (Crush, 2015). However, all the streets and passage spaces are taken up by informal traders selling milk, fruits, vegetables, as well as clothing and other household items (Turner, 2011).

**Research design, Population and Sample**

The target population of the survey was dairy farmers in Maseru urban and their population was estimated at 30 dairy farms (LDP, 2018). A sample size of 30 farmers was selected out of the 30 farmers thus a survey was used. According to Delice (2010), a sample size between 30 and 500 is generally sufficient for many researches and the decision on size should reflect the quality of the sample in the wide interval.
Instrumentation
A questionnaire containing both open and closed ended questions was used as a tool for collecting data. According to Sekoai and Rantlo (2016), the open ended questions could be used with respect to the type of data needed as they allow the acquisition of more unbiased information due to unlimited responses. McLeod (2014) stated that closed questions structure the answer by allowing only answers which fit into categories that have been decided in advance by the researcher and it is possible to perform a statistical analysis of such answers. McLeod (2014) also stated that questionnaire provides a relatively cheap, quick and efficient way of obtaining information from a large sample of people where interviews would be impractical due to time constraints.

Data Collection
Primary data was collected using a questionnaire designed by the researcher to identify the milk markets used by dairy farmers and the institutional factors that influence their participation in the markets. The secondary data was also collected from books, journals, Lesotho Dairy Products (LDP) and Livestock Services.

Method of Analysis
The study used descriptive statistics where statistical indicators including frequencies and percentages were used to describe the identified milk market channels used by dairy farmers in Maseru urban. Data analysis was also done using Logit Regression Model to analyse institutional factors that influence participation in milk markets and their effect on market participation. According to Randela et al., (2008) logistic regression model can be used because of its ability to determine the effect of explanatory variables on the probability of the dependent variable and it yields the highest predictive accuracy possible with a given set of predictors. The following model was specified for market channel choice analysis:

\[
\text{Market channel} = \beta_0 + \beta_1 \text{access to market information} + \beta_2 \text{access to extension service} + \beta_3 \text{distance to milk collection centre} + \beta_4 \text{government support} + \beta_5 \text{member in farmers' organization} + \beta_6 \text{path dependency} + \beta_7 \text{delayed payments} + \beta_8 \text{contractual agreements} + \beta_9 \text{availability of social capital} + \epsilon_i.
\]

Table1: Description of variables used in the model

<table>
<thead>
<tr>
<th>Variable label</th>
<th>Variable name</th>
<th>Coding of variable</th>
<th>Expected relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mktchann</td>
<td>Market Channel</td>
<td>1 formal, informal 0</td>
<td></td>
</tr>
<tr>
<td>Mktinfo</td>
<td>Market information</td>
<td>1 if access, otherwise 0</td>
<td>+</td>
</tr>
<tr>
<td>Extserve</td>
<td>Extension services</td>
<td>1 if access, otherwise 0</td>
<td>+</td>
</tr>
<tr>
<td>Mktdistance</td>
<td>Distance to milk markets</td>
<td>1 if short, if long 0</td>
<td>+/-</td>
</tr>
<tr>
<td>Mbof</td>
<td>Member of farmer organisation</td>
<td>1 if member, otherwise 0</td>
<td>+</td>
</tr>
<tr>
<td>Contract</td>
<td>Availability of contracts</td>
<td>1 if access, otherwise 0</td>
<td>+</td>
</tr>
<tr>
<td>Delpay</td>
<td>Delayed payments</td>
<td>1 if yes, otherwise 0</td>
<td>-</td>
</tr>
<tr>
<td>Pathdep</td>
<td>Path dependent decisions</td>
<td>1 if yes, otherwise 0</td>
<td>+/-</td>
</tr>
<tr>
<td>Govsupp</td>
<td>Government support</td>
<td>1 if yes, otherwise</td>
<td>+</td>
</tr>
<tr>
<td>Socialcap</td>
<td>Availability of extensive social capital</td>
<td>1 if yes, otherwise 0</td>
<td>+</td>
</tr>
</tbody>
</table>

RESULTS AND DISCUSSION
This chapter presents the results of the study and it first highlights descriptive statistics on milk...
marketing channels used by the sampled dairy farmers and next discusses the logistic regression results on both institutional factors that influence participation in milk markets as well as effect of the institutional factors on market participation. The main idea of this chapter is to discuss the descriptive and Logit regression results obtained from the dairy farmers and show the extent to which explanatory variables affect the stated dependent variable.

**Market Channels Used by Dairy Farmers**

About forty percent of dairy farmers use informal markets and they sell to individuals at farm gate, road side, bus stops and to local primary schools. There is gender inequity in terms of farmers who participate in the informal dairy markets as females were dominant at sixty percent and the explanation for this is that women are forced to supervise the activities as men go to business districts to look for jobs. The majority (70%) of farmers using the informal market channels were above the age of 60 and have been in farming for a relatively longer period and it is assumed that more experience increases knowledge about marketing systems. This knowledge may put the older and experienced farmers in a better position to choose the more rewarding markets in their contexts.

Their level of education was relatively low with an average of 4 years of formal schooling. The educational level has an influence on the ability to access, interpret, understand and use market information which can help to make informed marketing decisions. Household size ranges from a minimum of three people to a maximum of 20, with a mean of 9.1 in each household. According to Randela (2005), a larger household size has a negative effect in produce marketing because the household needs to supply household consumption before it decides to sell. Evidence from the research confirms this line of argument because larger households in this research sold less produce as compared to smaller households.

The remaining farmers (60%) use formal milk markets and all of them sell their produce in the formal markets through mainly the Lesotho Dairy Products. They have relatively high household incomes. There is gender inequity in this category as well since males were dominant at seventy percent and the explanation could be that their household incomes enable them acquire necessary inputs, equipment and infrastructure that help them to meet formal market requirements.

Their level of education was relatively high with an average of 13 years of formal schooling. Their educational level may have enabled them to access, interpret, understand and use market information which can help to make informed decisions.
marketing decision of opting for the more lucrative formal markets. Household size ranges from a minimum of one person to a maximum of 4, with a mean of 2 in each household. This small household sizes may have allowed them to reserve more milk for sale as a result of low household consumption.

**INSTITUTIONAL FACTORS INFLUENCING PARTICIPATION IN MILK MARKETS**

Logit model results indicate significant variables at statistical significant levels of 5% and 10% and the formal market channel is the base outcome in the model. Pseudo R² = 0.4423, which is 44%, meaning model fitness is good and this shows that most of the explanatory variables are significant. Prob > chi2 = 0.0849, which is significant at 10%, meaning explanatory variables included in the model have a joint effect on the dependent variable. Constant being 0.074 which is significant at 10% implies that jointly independent variables affect market channel choice. Therefore all these variables are expected to influence formal and informal marketing participation, meaning all these explanatory variables have strong influence on market channel choice.

### Table 2: Logistic regression model results

| Variable    | Coef.   | Std. Err. | z      | P>|z|  | [95% Conf. Interval] |
|-------------|---------|-----------|--------|------|---------------------|
| Mktinfo     | 2.659982| 1.53215   | 1.74   | 0.083| -0.3429761          |
| Extserv     | 0.6642027| 1.580651   | 0.42   | 0.674| -2.433817           |
| Mktdistance | 0.6435231| 0.3351661   | 1.92   | 0.055| -0.0133904          |
| Mbof        | 2.116855| 1.239205   | 1.71   | 0.088| -0.3119425          |
| Delpay      | 2.6599723| 1.53215    | 1.73   | 0.084| -0.3429761          |
| Govsupp     | 4.114859| 1.957674   | 2.10   | 0.036| 0.2778822           |
| Contract    | 4.068107| 1.401376   | 1.78   | 0.034| 0.2873468           |
| Pathdep     | 4.116279| 1.868748   | 2.10   | 0.043| 0.2789731           |
| Socialcap   | 4.2765432| 1.755438   | 1.87   | 0.036| 0.2543876           |

Significant at 5% and 10% levels respectively. Number of observations = 30, LR chi2 (11) =17.86, Prob > chi2 = 0.0849, Pseudo R² = 0.4423, Log likelihood = -11.260996

**Access to Market information:** access to market information has the p-value of 0.083 which is significant at 10% with a positive effect on formal market participation. The result agrees with *a priori* expectation that farmers with access to market information on demand, prices, quality standards and returns on different markets participate in formal markets because they are better informed and approach their production and marketing activities accordingly. The results are consistent with Djalalou *et al.*, (2012) who suggest that access to timely, accurate and up-to-date market information is fundamental for commodity marketing in formal markets.

**Access to Extension Services:** the results showed that access to extension service was insignificant with a p-value of 0.674 thus it does not influence marketing decisions. The results do not agree with the study’s *a priori* expectation that extension services enhance dairy farmers’ skills and knowledge through provision of information on proper management practices and link them with modern technology which will increase their chances to participating in the formal markets. The possible explanation for this may be that extension officers do not attend to all groups of farmers participating either formally or informally and are not able to monitor if their
advices have been implemented due to large population of farmers. This is a result of high farmer to extension agent ratio as Makapela (2015) stated that there is limited access to extension in most cases with the extension staff to farmer ratio standing at 1: 1500 approximately.

**Distance to milk collection centres:** distance to milk collection centre has a positive influence on participation in the informal markets as the increase in distance to milk collection centers or markets resulted in an increase in the degree of informal market participation. The more the distance to milk collection centers the higher the chances of participating in the informal markets than in the formal markets. The explanation for this scenario is that farmers are likely to participate in the informal market in order to avoid incurring transaction costs associated with organising and coordinating transport for moving milk to usually distant collection centres. The findings agree with Terefe (2016) that the more the market is close to the farmers’ dwellings the higher chances of participating in such markets in order to avoid transportation and transaction costs.

**Membership in farmer organization:** membership in a farmer organisation positively influences participation in the formal milk markets with a p-value of 0.088 and significant at 10% level. The result is consistent with the study’s *a priori* expectation that a farmer who belongs a farmer organization is more likely to participate in formal markets. The result means that if a farmer is involved in the farmers’ organization there are high chances of participating in the formal market because they share market and production information and have better contacts that link them to the formal market and there is collective action which enables farmers to attain bargaining power, economies of scale and reduced transaction costs. Mburu *et al.*, (2007) indicated that farmer organizations provide some technical assistance and trainings to members in order to improve their marketing information and reduced transaction cost through buying inputs and marketing their produce in groups. The group participation helps the farmers to meet the stringent requirements that characterise the formal markets.

**Delayed payments:** this variable has a negative influence on the dairy farmers’ participation in the formal markets and has a p-value of 0.084 significant at 10% level. The result is consistent with the study’s *a priori* that delayed payments are likely to discourage farmers from participating in a particular market. Due to the perennial delays in the payments from LDP, dairy farmers have to approach buyers several times in order to get paid and the monitoring related transaction costs are increased for the farmers. This dissatisfies the farmers and some leave the formal market for the informal markets that are characterised by prompt payments.

**Government support:** this variable positively influences dairy farmers’ participation in the formal markets and has a p-value of 0.036. This finding is consistent with conventional expectation that government support enhances participation in the formal markets than in the informal markets. Most farmers participate formally because of government support in the form of subsidised inputs, free technical advisory services and granting of improved technologies. This support enables farmers that use formal markets to meet standards and grades required by the formal markets. This is supported by Kihoro (2016) when indicating that Government support encourages farmers to participate in the formal markets as farmers are capacitated to improve quantity and quality of output/produce necessary to participate in formal markets.

**Path dependency:** this variable positively influences participation in the informal market with a p-value of 0.043. These dairy farmers’ decision making is influenced by what their forefathers have been doing as they follow what their elders have been doing in their dairy businesses. The smallholders that use formal markets are characterised by path dependency which determines the action situation in the dairy
industry in the country as it reflects that information and knowledge are shared among participants and between generations. This attribute influences marketing choices as these smallholders chose informal markets because they have been used and trusted by their forefathers. These smallholders continue to participate in the informal markets because, according to them, these informal mohair markets offer more benefits and changing to the alternative markets will impose immediate and high costs on their dairy farming business. From an economic point of view, the cost-benefit analysis by these smallholder mohair farmers favours participation in the informal mohair markets.

**Availability of contractual agreements:** the variable has significantly influenced the participation of dairy farmers in the formal markets with a p-value of 0.034. This agrees with the study’s *a priori* expectation that farmers with contractual agreements with buyers are more likely to participate in formal markets. Contractual agreements facilitate and enhance communication, hence information flow between dairy farmers and buyers which results in incentives that influence economic behaviour and decision making among small-scale farmers. The contractual agreements provide guaranteed access to formal markets as it enables the exchange partners to know the preferences and expectations of each other in terms of quality, in particular. The dairy farmers meet the quality requirements of the buyers as a result, which in turn reduces costs associated as the exchange costs (information search and negotiations) are reduced for small-scale farmers and for buyers. The contractual agreements render participation in the formal markets less costly and more beneficial to this group of smallholders, hence use of such markets.

**Availability of social capital:** the social networks have been positively influencing dairy farmers to participate in the informal dairy dealings. These informal institutions facilitate the sharing of information between the dairy farmers that use informal milk markets. One of the results of these interactions is the knowledge of milk prices offered by informal buyers prior to the time of milk sales. The prior knowledge of mohair price positively influences the transaction costs incurred by small-scale mohair farmers in the informal markets because it affords the smallholders a chance to select the informal buyer or trader that offer better prices thus avoiding the cost of missing out on a relatively higher net income. In the formal markets, where the prices are only known at the time of sale, the farmers do not get an opportunity to look for buyers who offer better prices (when offered prices are unfavourable).

**CONCLUSIONS AND RECOMMENDATIONS**

Due to market information the dairy farmers’ ability to meet grades and standards required by the buyers in the formal markets is improved hence participation in the commercial agricultural economy. Government support in the form of free technical advice, subsidised inputs and technologies has created an environment that is conducive for the participation of dairy farmers in the formal milk markets. Collective action reduces barriers that prevent the small-scale dairy farmers from participating in the lucrative formal markets. The contractual agreements render the formal market a guaranteed market for the small-scale dairy farmers and enhance their participation in the formal agricultural economy.

On the other hand, dairy farmers that use the informal markets do not receive any of the advantages and incentives received by their counterparts in the formal markets and their market options are relatively limited and the only outlet for their mohair is informal traders. Social networks influence and consolidate their participation in the informal markets to the detriment of the integration into the formal markets. The participation of this category of scale mohair farmers in the informal markets is significantly enhanced by their path dependent decision making. Their integration into the formal
The agricultural economy is limited and threatened by high monitoring transaction costs associated with delayed payments that characterise the formal markets.

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