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Operation Organisational Change: Willingness to Co-operate Among Smallholder Fruit and Vegetables Processing Vendors in Tanzania

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A B S T R A C T

The importance of the formal and informal Small and Medium scale Enterprise (SMEs) sector in Tanzania raises stakes of the need to enhance the contribution of the sector in country's development. Not only the country economy, but also welfare of majority of people who's their livelihood depends on the performance of such sector. This paper analyses the willingness of smallholder manger-owners of fruit and vegetables processing enterprises in Tanzania to innovate from current individual working framework and form cooperative as innovative working mode for market access. The study involved the field survey, which took place across four regions of Tanzania (Dar es Salaam, Morogoro, Coast, and Tanga), and this covered a period of four months. In total, the 130 Fruit and Vegetable Processing (FVP) MSEs were randomly selected and visited to represent the population of small-scale FVP enterprises in Tanzania and the data recorded was then used in analyses. For analysis the econometric method specifically a logistic regression tool is herein used to estimate MSEs manager-owners' decisions in relation to innovation, meaning change from operation individually to work in cooperation. The result showed that, the willingness to cooperate of surveyed manager-owners is around 79%. Above empirical results impresses that, the smallholder's fruits and vegetable processors of Tanzania should merge and form cooperatives. This paper identified features associated with their cooperation decision which are MSE's distance to local government business department, manager-owners age, academic education level, and experience in business activities. Therefore, it was concluded that, diffusion of cooperative working structure in studied community is more likely. In order to diffusion easily cooperative mechanism in studied community, initiatives should start with studied processors of old age, lower general academic education level, and revenue status, as well as those in rural areas that operates far distance to local government business department. This is because such characteristics was found to have positive influence on surveyed manager-owners' decision regarding working in cooperatives. Generally, this study provides empirical evidence regarding the operational change of the MSEs by estimating their manager-owners' willingness to work in cooperation. The aim is to help significantly improve the economic development process in Tanzania as a whole.

Key words: *Fruits, Vegetable Processing, MSEs, Organisational Change, Willingness to Co-operate*

Introduction

Tanzania's economy depends on the agriculture sector. Also, its 2025 development vision seeks to transform agro sector from low productivity agricultural economy to semi-industrialised economy (URT, 2003). Further, fruits and vegetables Processing (FVP) sub-sector is a part and parcel of private agricultural sector leading Tanzania's economy. The FVP activities and market liberalization have motivated majority of Tanzanians with low capital to start-up micro and small enterprises (MSEs). These enterprises sell Processed Fruits and Vegetable Products (PFVP) into local market. This situation is leading to escalation of competition among PFVP suppliers. That is however significantly attributed with potential Tanzania has for Fruit and Vegetables (FV) production and lack of employment opportunities. Plus presence of imported products and those from lager enterprises, this creates competition and results to market saturation in domestic market. In that, majority of local people involves in fruit and vegetables processing activities obtain fewer returns per

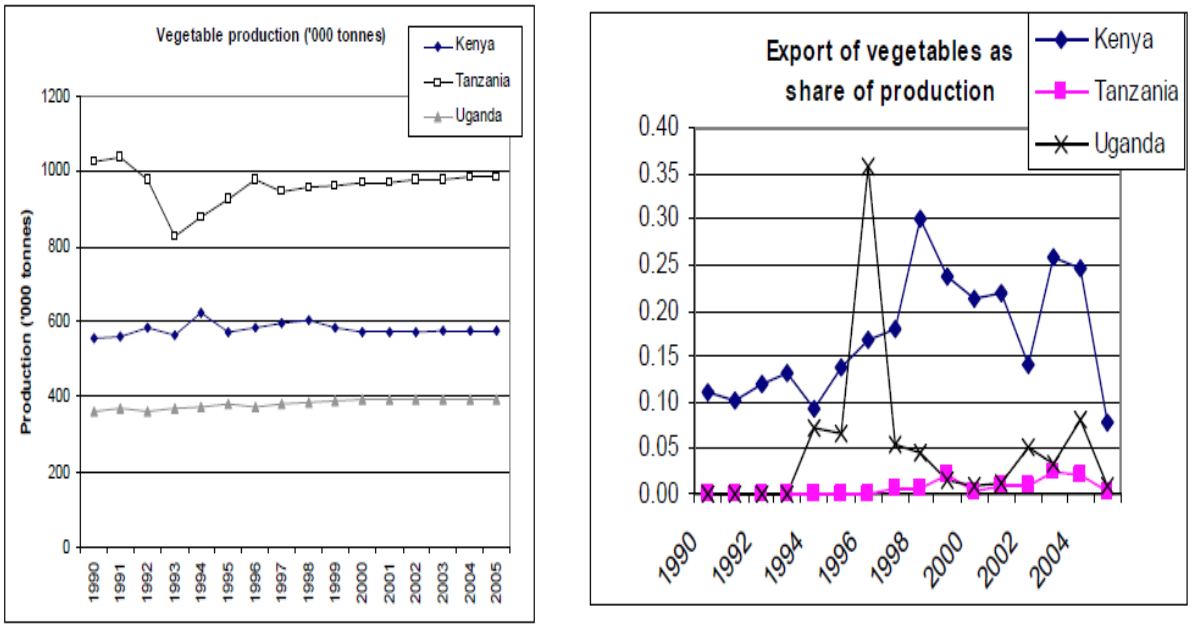
investment and their firms' grow is limited over long period of time, particularly for micro and small-scale enterprises (MSEs) ones.

Above all, organisational working framework of the smallholders' fruit and vegetables in Tanzanian is rather inefficient. In sense that, the supply of their products does not penetrate easily to the domestic and international modern markets, at which price is high. This is crucial element for people's welfare, earning of foreign currency, and economic growth of Tanzania. That situation is more likely to contribute poorly on the Tanzania's economic development process and discourage entrepreneurs involving in fruit and vegetables processing activities, especially small-scaled vendors. In that understanding, this paper finds it is of logical to look at operational organisation of Tanzanian micro and small-scale fruit and vegetables entrepreneurs. Herein, a term organisation is manifested to imply the MSE's resources, geographical proximity, and their supply chain. The paper goes further to explores how possible the activities of study entrepreneurs can be re-organised in a form that can speed-up transformation process of Tanzanian fruit and vegetables sub-section from less to more productive states.

Paper Issue, its Relevance and Objective

The Small and Medium scale Enterprise (SMEs) sector in Tanzania raises stakes of the need to enhance the contribution of the sector in country's development. Not only the country economy, but also welfare of majority of people who's their livelihood depends on performance of such sector. Especially in agro-sector which contributes to more than one-fourth of the country's Gross Domestic Product (GDP) and it accounts for almost 85% of the total exports and employs nearly 60% of total labour force. The estimate shows that, with such agriculture dependency still Tanzania economy is one of the poorest economies in terms of per capita income. It is argued that, almost 36% of total population, i.e. in excess of 43.7 million subsists on less than one United State Dollar ($) a day (CIA, 2011).

Currently, in Tanzania, the private sector that majored by SMEs is becoming an engine of economic development. Furthermore, the processing of agricultural crops is becoming more important in overcoming food insecurity problem, add value to reduce losses of raw crops, and ultimately economic development of many countries mostly in developing countries like Tanzania. This regard, makes processing of agriculture produces more relevance to global societies and economies advancement. However, despite of the fact that Tanzania has a great potential than its neighbouring East African (EA) countries in production of fruit and vegetable crops, as it is blessed to have sufficient arable land, labour forces, natural resources including water sources, rich soils and different agro-ecological zones (Batamuzi et al., 2004; URT, 2009). If compared with its competitors Uganda and Kenya countries, the Tanzanian export vegetables share of production is smallest over the past years in last decade (Figure 1 below).



Source: FAOSTAT | © FAO Statistics Division 2007 | 23 April 2007

Figure 1.Export share of vegetables production in three East African countries

The above situation impresses that, still Tanzanian fruit and vegetable vendors do not significantly use global market opportunities and participate fully in process of economic development. Most of the small scale food processing enterprises does not effectively access market opportunities, thus receive less returns on investment and their growth is less likely.

For the small-scale fruit and vegetable processing vendors, it happens that, because most of their activities are not effectively organised to serve for the domestic and international markets. The analysis by Ruteri and Xu (2009a) found that, the small and medium scale food processors in Tanzania do not benefit from concept of Supply Chain Management (SCM). Thus, they suffer from a severe exposure to market information asymmetries. As such, are constrained from achieving economies of scale and scope. Of-course, in Tanzania, most of smallholder entrepreneurs operate under less-productive networks. While, economist and policy makers agreed that, industrialisation foundation can not be made or established and of-course be stable *'sure'* without efficient network of the Micro, Small, and Medium scale enterprises (MSMEs) (Adjei et al., 2010).

Further, Mashimba and Kühl, (2014) revealed a low growth rate among the fruit and vegetable processing MSEs in Tanzania, with figures of 0.25 for revenue and 0.16 for capital investment in machinery. The main factors associated with that low growth performance were found to be: operational capital, number of owners, number of staff, profit levels and annual product production levels. Other are, links to support organizations, plus access to basic market information and business improvement services, combined with the distance to input sources and marketplaces, were also found to impact on growth, as was the age of the manager-owners. Furthermore, on one hand the preceding authors found that small-scale fruit and vegetable processing enterprises operate unilaterally, their Return on Investment (ROI) figures are on average, for an investment of 1 TZS, a gain of 0.16 TZS cents and a loss of 0.84 TZS cents. On the other hand, most of multi-owned fruit and vegetable processing MSEs obtain better returns as compared to enterprises owned by single person. As a result, the key proposal was that fruit and vegetable processing MSEs should merge in each study area and form small-scale food cooperatives.

Therefore, following several constraints comforted by fruit and vegetable processing small-scale enterprises in Tanzania and the aforementioned literature results that suggest for cooperation. This paper empirically assesses the willingness of manager-owners of the fruit and vegetables processing small-scale enterprises to change from their existing individual operational mode and form cooperative operation framework in their community. The co-operative mode herein is believed to enhance concerned entrepreneurs perform proper, especial on supply chain to reach potential markets, thus obtain rational returns and grow rapidly.

The main objective of this study is to provide empirical evidence of the potential for small-scale fruit and vegetable processors to diffuse the cooperative working mode proposition. More precisely, the aims of this paper are:

To determine the business environment attributes that are likely to encourage the manager-owners of the study businesses to change their way of working, and

To examine the likelihood of cooperative framework being diffused across the surveyed community.

Methodology

The field study were involved, which took place across four regions of Tanzania (Dar es Salaam, Morogoro, Coast, and Tanga), and this covered a period of four months, this time the researchers spent one month collecting MSE related information in each of the study areas. The study regions and study MSEs were purposively selected due to their engagement in the fruits and vegetables processing industry. The enterprises were also sampled according to Tanzanian MSE definition. In Tanzania MSEs are enterprises with between 1 and 49 people. In total, the 130 Fruit and Vegetable Processing (FVP) MSEs were randomly selected and visited to represent the population of small-scale FVP enterprises in Tanzania and the data recorded was then used in analyses. Table1 below shows the statistics of the sample MSEs in the study regions of this paper.

Table 1. Distribution of MSEs between the four regions

Regions	Frequency (Freq.)	(%)
Dar es Salaam	60	46.2
Morogoro	32	24.6
Coast	26	20.0
Tanga	12	9.2
Total	130	100

Source: Field data, 2011

The results above show that most of the small-scale FVP enterprises are in Dar es Salaam region (46.2%), reflecting its position as the major commercial region in Tanzania, followed by Morogoro (24.6%), Coast (20.0%) and Tanga (9.2%) regions. The reasons for selecting the above regions as study areas were: large quantity of fresh fruit and vegetables grown in Morogoro and Tanga regions. Further, together with the fact that although they produce the least, the Dar es Salaam and Coast regions are the major destinations and consumption areas for both the raw Fruit and Vegetables (FV) and Processed FV Products (PFVPs) produced and imported from other parts of the country and abroad. Finally, the study regions are among the main commercial centres in Tanzania, for instance, the quantity of marketed food products in Dar es Salaam is increasing rapidly (ESKOLA, 2005). Because of that, this region, i.e. Dar es Salaam has the biggest sample size of MSEs for this research.

The key method used to collect the data was direct interviews with manager-owners of the study MSEs, followed by discussions and talks with experts from those institutes that support the MSMEs in Tanzania. Prior the field study, questionnaires were developed to identify those questions relevant for the study analyses. Structured questionnaires

containing open and closed questions were then used to elicit information from the randomly selected sample MSEs. Therefore, based on the objectives of this paper, cross-sectional data were gathered from the sample MSEs for analysis. The econometric method of analysis, i.e. logistic regression tool is herein used to analyse MSEs manager-owners' decisions in relation to innovation.

Conceptual Framework for Analysis

This paper has developed a conceptual framework, to help analyse the study MSE manager-owners' willingness to change from operating unilaterally to the forming of cooperatives. This framework shows that such a change is highly dependent on the operational constraints faced by such enterprises, those related to the manager-owners' level of knowledge, i.e. from academic education and business experience and the enterprises' supply chain and earnings characteristics. Figure 1 below is a conceptual framework for analysis of surveyed manager-owners willingness to change operating individually and work by forming cooperative with other study MSEs within their areas. The arrows in Figure 1 imply the indirect effect of variables on respective directed too.

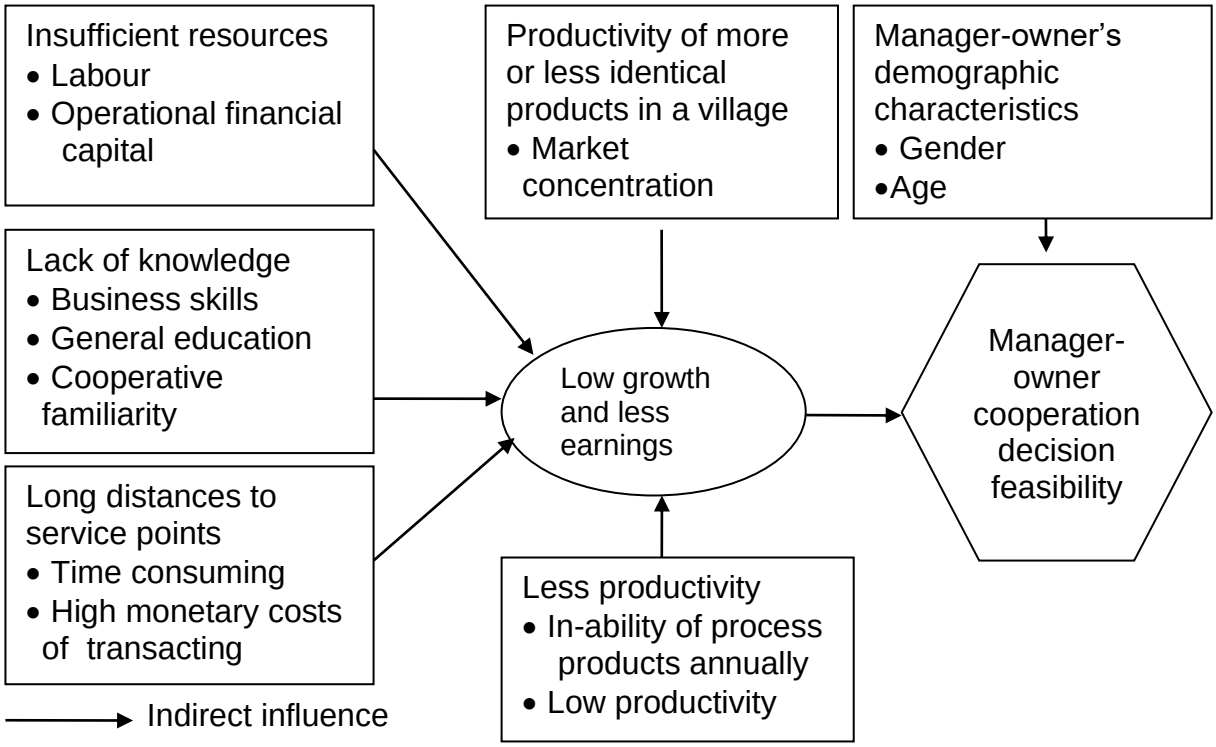


Figure 1. Conceptual framework for manager-owners' cooperation decision
Source: Author's illustration, 2013

Data description of the manager-owners' cooperation analysis

During the conduct of business activities, the study entrepreneurs are constrained by a number of issues. Such constraints are lack of knowledge, supply chain problems and resource issues. Variables regarding business constraints are included in this study's analysis of the manager-owners' decisions whether or not to introduce operational change, because they will influence whether they decide to cooperate in order to reduce the severity of such problems or even escape them. The willingness of the study manager-owners to re-organise their processing activities, from the current unilateral way of working to a more cooperative form, is analysed here using a logit logistic model. The analysis includes a number of covariates, these being the gender of the manager-owners (GND), whether they are in the active or retirement age classes (RAGD), what academic education level class they are in (SCYD) as a dummy, their level of preliminary knowledge about cooperatives (KNC) and their business experience in active years (BEX), also as a dummy. Note that, there is no logic to analyse manager-owner' decision to work in cooperation based on addition unit of his/her age and number of year in school. Therefore, these variables were classified into groups to form age classes (active age: < 50 and retiring age: ≥ 50) and education level (low: < 14 and high: ≥ 14 years in school) classes of sampled manager-owners. The low education level class mean general academic education under degree level, while high class counts first degree to PhD level.

The other covariates used for willingness to cooperate analysis are the number of employees in an MSE (ANEi), the operational capital available to an enterprise, measured in TZS (CSAi), the number of owners in an enterprise (NOW), whether the MSE supplies products throughout the year (YRA), the number of MSEs in a village doing the same business (NSB), the distance to the nearest marketplace (DMP), the distance to the nearest input source (DIP), and the distance to the government's local business department (DGV), measured in kilometres. The final set of variables are an MSE's average

monthly total factor productivity (PRDi), measured in grams, and average monthly revenues (REVAi) and profits (PRFi), at period prior to interview for this study took place, both measured in TZS.

Note that only those variables significantly related to the study manager-owners' cooperation decisions are discussed here intensively. The willingness of manager-owners to cooperate with others in a village depends on a variety of factors within and beyond their control. Furthermore, the transformation process itself requires significant investment, in labour, knowledge and financial capital, drawn from savings, turnover and/or support institutions. This shows that the implementation of proposed co-ops mechanism if in place will require re-investing the profits and re-organising the logistics arrangements and other activities of the study MSEs. UNU (2009) noted that because innovations, that is, radical changes, occur at the firm level, then a firm has to act as the central actor in the technological change process. UNU added that, in particular for a firm or an enterprise, the empirical tests carried out thus far have not been conclusive about the relationship between the size of an enterprise and technology adoption. However, this study does not pick up this debate, but rather adds another facet to the examination of MSEs manager-owners' decision-making regarding innovation adoption, based on their demographic characteristics and constraints.

According to (UNU 2009), some of the literature has addressed the relationship between human capital and technology adoption. UNU revealed it was found that educated and experienced owners, as well as workers, are more likely to innovate than those who are not so educated or are less experienced, meaning that more innovative firms tend to be headed by educated manager-owners. In this study it is therefore expected that manager-owners' academic knowledge and experience in business will influence their decision whether or not to adopt a cooperative mode of operation. In addition, the younger manager-owners would have more duration in business and manager-owners with more experience in business activities will also prefer to adopt a cooperative organisational mode, in order to improve their businesses.

Furthermore, operating a long distance from the main service providers and market can in several ways reduce expected revenues and profits, so it can be expected that manager-owners of MSEs that receive lower revenues and profits will opt for the co-ops mechanism. Table 2 below shows a list of dependent and independent variables (with their expected sign, mean, Std. and S.E.) which are incorporated into the logit regression, to assess the study manager-owners' level of willingness to cooperate.

In this paper, it is also assumed that knowledge capital acquired at school and from training programs will influence the survey manager-owners' decisions on co-ops working idea. In Tanzania, MSMEs often comprise of school-leavers who have primary, secondary, vocational training and some degree level education (OLOMI, 2006; and ADJEI ET AL., 2010), plus most of the government officials and staff who support the study enterprises also have diplomas or degrees. However, it is also true that entrepreneurial skills can be acquired outside of school; through learning by hearing, reading and even from observing the performance of others. Thus, the general academic plus other knowledge (such as knowledge of how to cooperate) characteristics of the study manager-owners can be used to help assess study manager-owners willingness to cooperate.

This study anticipates that the general education level of the manager-owners is an important pre-requisite for innovation, meaning that information and knowledge they have of the technology offered by skilled manpower, such as government and NGO officials will have an indirect impact on the manager-owners' decisions to cooperate. However, it is not only knowledge capital which can herein affect the decisions of manager-owners in relation to change; physical capital, and especially money acquired from MSE earnings and additional jobs, can influence cooperation decisions also. In this regard, the study expects deficient resources in a given MSE to influence its manager-owner's level of cooperation decision.

Other transaction attributes are presumed herein to influence manager-owners' cooperation decisions, including distance to the main input source and to PFVPs marketplaces. The enterprises' access to input sources and marketplaces for their products influences the net benefits received and the manager-owners' innovation decisions, therefore, if the proposed idea is effective at minimising transportation costs, the more remote enterprises will decide to adopt an idea earlier or not otherwise apply it. The reason for this is that a shorter distance to service points reduces time spent, well as transportation, monitoring and negotiation costs. The study MSEs' manager-owners can decide whether to stick with their unilateral organisational mode or change, so it is assumed in the model that manager-owners operating a short distance from government business departments are less likely decide to operate under the proposed cooperative venture than those situated far away. Remember, distance is important for access to trade improvement services.

Cooperate model

Ahead of interpreting the empirical results regarding surveyed manager-owners' willingness to cooperate, it is crucial to make the following two remarks: First, the values of variable' coefficients in logit regression explore the causality relationship between the dependent and independent variable. Second, the values of marginal effects after logit of independent variables provide their magnitude effect on the dependent variable, and it is logical to interpret their values and signs as well. If the estimated coefficient of a variable is very small in value, still its sign (positive or negative) is important for interpretation of results. Therefore, the empirical evidence shows that decision of the MSE' manager-owners whether to cooperate or not is negatively associated with the MSEs' average revenue, the manager-owners' education levels and their business experience (Table 3). On the other hand, this same decision is positively related to the manager-owners' ages and an MSE's distance to the local government business department. Linear regression results offered in Table 3 below also indicate that a manager-owner's life age, education level and business experience positively and significantly influence a manager-owner's willingness to cooperate.

Table 2. Summary of dependent and independent variables for estimating manager-owners' willingness to cooperate (n = 130)

Equation 1	Dependent and independent variables description	Proxy	Mean., Std., and S.E.	Expected impact
Characteristics directly related to manager-owner (manchr)	Manager-owners' willingness to cooperate (Dummy)	WAPO	--	Dependent variable
	Manager-owners' gender (Sex)	GND	--	Female-positive Male-negative
	Manager-owners' age class (Dummy)	RAGD	--	Active-positive Retired-negative
	Manager-owners' general education class (Dummy)	SCYD	--	Higher-positive Lower-negative
	Manager-owners' additional job (Dummy)	JOB	--	Yes (1)- negative No (0)- positive
	Manager-owners' experience in business activities (years)	BEX	23.3, 9.9, & 0.9	Many-positive Less-negative
	Manager-owners' preliminary knowledge of about cooperative (Dummy)	KNC	--	Yes (1)-positive No (0)-negative
Characteristics directly related to enterprise (Entchr)	Average working capital of an enterprise prior to interview (TZS)	CSAi	646730.8, 1115081.0, & 97799.1	Many-negative Less- positive
	Number of owner (s) in an enterprise (number)	NOW	1.6, 1.5, & 0.1	Many-positive Less-negative
	MSEs' average monthly revenue in its operation prior to interview (TZS)	REVAi	437957.7, 689719.1, & 60492.4	Less-positive High-negative
	Number of MSEs doing the same business in village (number)	NSB	2.8, 2.8, & 0.2	Many-positive Less-negative
	MSEs' average monthly profit in its operation prior to interview (TZS)	PRFi	144055.4, 275623.8, & 24173.8	Less-positive High-negative
	Average number of employees in an enterprise operation prior to interview (number)	ANEi	4.06, 5.0, & 0.4	Less-positive Many-negative
Characteristics directly related to supply chain (supchr)	Distance to main input marketplace (km)	DIP	11.7, 12.7, & 1.1	Shorter-positive Longer-negative
	Distance to products marketplace of high prices (km)	DMP	9.5, 11.3, & 1.0	Shorter-positive Longer-negative
	Distance to main supportive body (km)	DIS	8.9, 11.0, & 1.0	Shorter-positive Longer-negative
	Distance to local government business department (km)	DGV	7.1, 9.4, & 0.8	Shorter-positive Longer-negative
	Average productivity level of products of an enterprise (gm)	PRDi	121332.3, 149661.7, & 13126.2	Less -positive High-negative

Source: Author's compilation, 2013

Modelling manager-owners' level of willingness to cooperate

The study manager-owners argued they had little knowledge about cooperatives, though some noted they had a little basic knowledge about working within such a framework. They revealed they had learned about cooperatives from school, short courses conducted by support institutions and by reading documents, as well as from observing existing cooperatives within the coffee market and in other sectors such as women's and social affairs. In Tanzania, some women do form groups to which they donate funds, meaning that if members need help in the future, such groups offer support, especially on education, ceremonies and health problems. However, during the field study of this research, the enumerators briefly explained to the manager-owners about cooperatives prior to their interviews.

In the model used to assess the probability of the study manager-owners adopting a cooperative working mode, the manager-owners' willingness to form a cooperative is set as a dummy dependent variable, meaning it represents the willingness of a manager-owner to form a cooperative, that is, to collaborate with other processors in the study area. To measure the level of willingness to form a cooperative, the respondents were asked whether the cooperative system is good or not, would it be appropriate for their business, whether they would participate in such a venture, and if so what proportion of a product unit's total profit from sales they would contribute towards the establishment of a cooperative institution (in this the positive co-ops will is for those who were willing to pay 12% and above of their of their profit). This figure was designed based on the contribution behaviours of the communities in the study areas in relation to most social affairs and financial interest rates in Tanzania over recent times.

Furthermore, the respondents were also asked to declare at what stage they would wish to join a cooperative system; after a few months or years later when others had already started cooperating? In other words, would they wait to learn from those who first worked inside cooperative system before entering, or would they like to be pioneers of the system? All these above questions were essential, to probe the exact willingness of the surveyed manager-owners to form and work in a cooperative framework.

In the model's equation 'manager-owners willingness to cooperate model for the surveyed enterprises', the manager-owner of an enterprise *i,* within the study MSEs sample *j,* can decide to cooperate with others as a result of business constraints. Therefore, the level of willingness to form a cooperative is coded as WAPO. As noted above, the dependent variable is constructed as a dummy, so is 1 if a manager-owner wishes to cooperate, and 0 if not. It is assumed that a manager-owner's cooperation decision is stimulated by the characteristics of the study enterprise (entchr), the supply chain-related activities (supchr) and the manager-owner him or herself (manchr). Thus, the unconditional expectation of a WAPO outcome is by definition a probability, as follows:

$$E[WAPO]=Pr\ (WAPO=1) \quad (1)$$

While the conditional expectation of a WAPO outcome, meaning the manager-owners' willingness to cooperate, given the entchr, supchr and manchr covariates, is:

$$E[WAPO_i|^{1}(entchr_i\ ,\ supchr_i\ ,manchr_i\ )]Pr\ (WAPO_i=1/entchr_i\ ,\ supchr_i\ ,manchr_i\ ) \quad (2)$$

If including a stochastic term, the above function takes the following form:

$$WAPO_i = F((entchr_i\ ,\ supchr_i\ ,manchr_i\ )\ \beta,) + e_i \quad (3)$$

Then, subject to the classical assumptions of regression analysis above, the conditional expectation function becomes as follows:

$$E[WAPO_i|entchr_i\ ,\ supchr_i\ ,\ manchr_i\ ]=F((entchr_i\ ,\ supchr_i\ ,\ manchr_i\ ),\ \beta,) +$$
$$E[u|entchr_i\ ,\ supchr_i\ ,\ manchr_i\ ] = F((entchr_i\ ,\ supchr_i\ ,\ manchr_i\ ),\ \beta) \quad (4)$$

Where:

Pr is the probability distribution function

F is the cumulative normal distribution function with a unit variance

entchr$_i$, supchr $_i$ and manchr $_i$ are vectors of the variables (see footnote; ([1]) below), which include controllable ones F ((entchr$_i$, supchr$_i$, manchr$_i$)

$\beta,$) is the standard regression function

e is a stochastic term with a mean of zero and a variance equals to 1, and

i stands for an enterprise (i = 1,2,3, …130).

The specification of a manager-owner's willingness to cooperate is calculated using the least squares procedure for a linear probability model (LPM), parameters are estimated using the Maximum Likelihood approach in STATA, and the multinomial logistic distribution is automatically assumed. The regression function for the manager-owners' willingness to cooperate is specified directly as:

$$WAPO_i = \beta_1 entchr_i + \beta_2 supchr_i + \beta_3 manchr_i + e_i \quad (5)$$

Where:

Where, β_1, β_2, and β_3 are parameters to be estimated.

Actually, this model shows the probability that the study manager-owners will decide to cooperate, given the study MSEs', the manager-owners' and supply chain characteristics. Specifically, the variables thought to influence the realisation of a *WAPO* outcome are the MSEs' monthly total factor productivity and their annual production levels, their earnings, the number of owners, the operational working capital, the number of employees, their distance to the key service points and their manager-owners' ages, genders, education levels, additional job and business experience.

[1]**Codes of variables**: Variable codes in the function 2, 3, and 4 are illustrated in summary of dependent and independent variables (Table 2 above)

Table 3. Logit estimates for the study manager-owners' willingness to cooperate (n = 130)

Covariates	Linear regression estimates			Logit estimates			Average marginal effects after logit		
	Coef.	S.E.	t	Coef.	S.E.	z	dy/dx	S.E.	z
Manager-owners' gender (GND)	0.187	0.148	1.26	0.871	0.785	1.00	0.117	0.090	1.30
Manager-owners' age class (RAGD)	0.346**	0.143	2.42	1.795***	0.691	2.60	0.254**	0.113	2.25
Manager-owners' education class (SCYD)	-0.213**	0.128	-1.66	-1.037**	0.623	-1.67	-0.204	0.142	-1.44
Manager-owners' business experience (BEX)	-0.015**	0.007	-2.18	-0.087**	0.035	-2.46	-0.014**	0.007	-2.11
Manager-owners' additional job (JOB)	-0.049	0.087	-0.56	-0.120	0.404	-0.30	-0.020	0.068	-0.29
MSEs' operational capital (CSAi)	-1.62e-08	1.26e-08	-1.28	-9.69e-08	6.18e-08	-1.57	-1.61e-08	0.000	-1.53
Distance to main input source (DIP)	0.001	0.005	0.16	0.005	0.017	0.26	0.0001	0.003	0.25
Distance to main marketplace (DMP)	0.002	0.005	0.34	-0.021	0.24	-0.85	-0.003	0.004	-0.84
Distance to main supportive body (DIS)	-0.002	0.004	-0.48	-0.031	0.024	-1.29	-0.005	0.004	-1.24
Distance to government department (DGV)	0.002	0.001	1.23	0.090**	0.034	2.58	0.015**	0.006	2.28
Number of same MSEs in a village (NSB)	0.006	0.016	0.38	0.071	0.075	0.94	0.012	0.013	0.91
Manager-owners' cooperative skill (KNC)	0.010	0.088	0.111	-0.248	0.418	-0.59	-0.041	0.067	-0.60
Number of owners in an enterprise (NOW)	-0.007	0.036	-0.18	-0.114	0.203	-0.56	-0.019	0.034	-0.56
Number of employees (ANEi)	0.008	0.015	-0.50	0.080	0.094	0.85	0.013	0.016	0.84
Productivity level of products (PRDi)	1.52e-08	1.01e-08	1.57	1.00e-00	9.90e-07	1.01	1.81e-07	0.000	0.90
MSEs' revenue in its operation (REVAi)	-9.38e-08	7.50e-08	-1.25	-7.73e-07	4.85e-07	-1.59	-0.0000001**	0.000	-1.85
MSEs' profit in its operation (PRFi)	8.43e-08	2.66e-07	0.32	1.09e-06	1.22e-06	0.89	1.81e-07	0.000	0.90
_cons	0.878***	0.178	5.01	1.945**	0.911	2.14			
Likelihood ratio Chi^2 (df: 16)		--			28.52				
Prob > F		0.4941			--				
Prob > Chi^2		--			0.0392				
Adj & Pseudo R^2		-0.0035			0.1535				
Log likelihood		--			-78.612046				
y = Pr (*WAPO*); (Predict)							0.79		
y = Pr (*WAPO*); (correctly classified)	0.69								

Note: *** and **: significant at 1% and 5% level respectively.
(*) dy/dx is for discrete of outcome *'willingness to cooperate'* from 0 to 1
Source: Field data, 2011

Also, the results in Table 3 indicate that the older the manager-owner and the further the distance of an MSE to a local government business department increases the likelihood that the manager-owner will decide to cooperate. An increase in MSE monthly revenue, and the manager-owner having a higher education level and greater business experience, makes the willingness to cooperate less.

Furthermore, it is more important to interpret the marginal effects of the logit regression model than the coefficients, due to the fact that coefficients have different scales due to the varying forms of the *F* function. This is the reason why only signs of coefficients were interpreted above, but not the magnitude. The marginal effects give the magnitude of a covariate's marginal effect on estimated outcomes. In that regard, the results in Table 3 indicate that if a manager-owner has an age of 50 or more, that is, is at retirement age, the probability that he or she will decide to cooperate increases by approximately 25.4%. That means the study manager-owners around retirement age are 25.4% more likely to cooperate. Also, adding one to a manager-owner's business experience (*year)*, *TZS* 1 to monthly revenue and one kilometer to the distance from a government business department, decreases and increases the probability that manager-owners will be willing to cooperate by 1.4%, 0.00001% and 1.5% respectively. From the above conceptual framework in Figure 1 (page 6), it is herein suggested that the manager-owner' business experience and age and the constraints they face, influence their decisions on whether or not to work cooperatively, either directly or indirectly respectively. Therefore, the forth hypothesis of this research; that the decision of MSE manager-owners on whether to change a way of doing business is associated with their constraints, is readily accepted.

This result perhaps suggests that, if the cooperative mode is encourage in the study community, the decision to cooperate would be taken based on a manager-owner's age, business experience and academic education level, the MSE's revenue and distance to a government trade improvement service. These results provide a new light that, the small-scale entrepreneurs with characteristics more or less the same characteristics as entrepreneurs in study enterprises view their long-term benefits based on age, experience, revenue and distance to government service points. Finally, with respect to Table 3, the results of logit model for willingness to cooperate show that the probability of all surveyed manager-owner to decide work in cooperative mode if in place is 79%, and their willingness to cooperate correctly classified probability is 71%. Thus, it is argued here that the results of the analysis into the study manager-owners' willingness to work in a cooperative mode show great promise for the diffusion of such an approach in the study regions.

Conclusions

To conclude, a logit regression analysis revealed the study owner-managers' levels of willingness to cooperate, and suggests that the diffusion of a cooperative mechanism among the study community is possible. The analysis found that the probability that all the study manager-owners will decide to form cooperatives if encouraged to do so, is 79%. Those factors influencing their decisions to cooperate are an MSE's the manager-owner's age and education level, distance to a local government business department, revenue and the level of business experience of the manager-owners. Therefore, it is herein argued that using a cooperative system, it would be possible to organise smallholder fruit and vegetable processing activities into a cooperative framework which could help easy access inputs and support, and employ more professional staff, in turn encounter their main constraints in market.

Recommendations

Tanzania government and other support development agencies have to inform the study entrepreneurs about potential advantages of working in cooperation. Further, using policy instrument the cooperation should be prerequisite for registering the smallholder fruit and vegetable processors the small-scale food cooperatives can be formulated and encouraged, especially for those entrepreneurs willing to operate collectively. In order to easily establish and later diffuse the cooperative mechanism within the study community, Tanzanian support bodies should begin with fruit and vegetables processors of an older age (but still active), with a lower education level and generating lower revenues, as well as those in rural areas who operate far from local government business departments.

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