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Research Article

Factors Affecting Adoption of Value Addition Practices among Smallholder Irish Potato Farmers in Bomet County, Kenya

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In Kenya, value addition in Irish potatoes provides farmers with substantial income. However, the adoption of value addition practices is still low among farmers. Currently, there is a dearth of information on the factors affecting the adoption of value addition practices among smallholder Irish potato farmers in Bomet County. Using single cross-sectional data from 200 randomly selected respondents, the study determined factors affecting the uptake of value addition practices using the Binary logistic regression model. Descriptive statistics show that the majority of the Irish potato farmers (62.5%) adopted value addition practices. It was also found that the majority of the farmers did not attend training, and were not accessing agricultural extension services and credit facilities. Logistic regression results show that group membership (*P* = 0.013), cost per unit of potatoes (*P* = 0.041), and total land size (*P* = 0.058) were key variables that significantly influenced adoption of value addition. From the results, it is critical for farmers to join farmer groups and increase acreage under Irish potato production to reduce cost per unit. Farmers should also adopt modern value addition technologies to be encouraged to reduce post-harvest losses of potatoes and to improve smallholder farmers' income.

Keywords: Irish potatoes, Factors, Smallholder, Value addition, Adoption

INTRODUCTION

Irish potato, *Solanum tuberosum* L. is the world's fourth-largest food crop after wheat, rice, and maize. Irish Potato farming is an important component of agriculture, rural employment, human nutrition and economic development (FAO, 2009). World production reached a record 320 million tonnes in 2007 and production in the developing countries has almost doubled since 1991, with a corresponding increase in consumption (Hoffler and Ochieng, 2008). Irish Potatoes are an important source of food, employment and income in developing countries (FAO, 2008). It is high in energy content and ease of production has also made it an important component of urban agriculture which provides jobs and food security to some 800 million people globally (Hoffler and Ochieng, 2008).

Potatoes have been grown in Kenya for over 105 years. Initially, the crop was grown primarily by European farmers for their consumption and export to Southern Africa and Asia. Over time, potato production has expanded rapidly and now it plays a significant role as a food crop in producer areas and as a consumer good in urban centers (Durr and Lorenzl, 1980; FAO, 2008; FAO, 2009). Currently, Irish potato is Kenya's second most important food crop following behind maize, involving more than 790,000 smallholder farmers producing 2.9 million metric tons (MT) annually across 123,000 hectares. Birachi *et al.* (2012) in their study on markets and value addition in

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selected agricultural value chains showed that there is a clear advantage for farmers to shift from sale of raw produce to processing into higher-value products. The study further found that the rate of return after value addition increases by more than 90% when compared to prices of the raw produce and that processing helps to prevent postharvest losses that are experienced by farmers in general. There exist very good prospects for value addition in Irish potatoes due to the increasing number of urban consumers willing to diversify their consumption pattern in form of branded and packed fresh Irish potatoes in (super)markets, chips and crisps (Haverkot and Struik, 2015).

In Bomet County, Irish potatoes have a high potential for addressing food insecurity, unemployment and low farm incomes due to its high productivity. Irish potato production is currently practiced and carried out in 5 Sub-Counties of Bomet County. The crop is grown in the upper regions of the county with the main varieties produced being *dutch Robyn, Kenya Karibu, Shangy* and *Desiree* among others. According to GoK (2012), low-value addition has led to minimal returns to the farmers. Report by GoK (2014) indicates that, by adding value to Irish potatoes by making chips, crisps and other products, a farmer can make Kshs 400 per kilogram. But, despite the existence of high returns from potato value-added products, adoption of value addition practices among smallholder Irish potato farmers in Bomet County is low. Therefore, the present study attempted to determine factors affecting the adoption of value addition practices among smallholder Irish potato farmers in Bomet County.

METHODS AND MATERIALS

Theoretical framework

The study of Irish potato farmer's decisions to adopt or not to adopt value addition practices was considered under the general framework of utility maximization (Norris and Batie, 1987; Pryanishnikov and Katarina, 2016). Suppose that P_j and P_k represent a household's utility for two choices, which are denoted by Y_j and Y_k respectively. The linear random utility model could then be specified as:

$$P_j = \beta_j X_i + \varepsilon_j \text{ and } P_k = \beta_k X_i + \varepsilon_k \quad (1)$$

where P_j and P_k are perceived utilities of value addition and non-value addition choices j and k, respectively, X_i is the vector of explanatory variables that influence the perceived desirability of each choice, β_j and β_k are utility shifters, and ε_j and ε_k are error terms assumed to be independently and identically distributed (Greene, 2000). The probability that a household will choose to add value, i.e. choose method j instead of k could then be defined as:

$$M(Y=1 \mid X) = M(P_{ij} > P_{ik})$$
$$M(\beta'_j X_i + \varepsilon_j - \beta'_k X_i - \varepsilon_k > 0 \mid X)$$
$$M(\beta'_j X_i - \beta'_k + \varepsilon_j - \varepsilon_k > 0 \mid X)$$
$$M(X^* X_i + \varepsilon^* > 0 \mid X = F(\beta^* X_i) \quad (2)$$

where M is a probability function, P_{ij}, P_{ik}, and X_i are as defined above, $\varepsilon^* = \varepsilon_j - \varepsilon_k$ is a random disturbance term, $\beta_j = (\beta'_j - \beta'_k)$ is a vector of unknown parameters that can be interpreted as a net influence of the vector of independent variables influencing adaptation, and $F(\beta^* X_i)$ is a cumulative distribution function of ε^* evaluated at $\beta^* X_i$. The exact distribution of F depends on the distribution of the random disturbance term, ε^*. Depending on the assumed distribution that the random disturbance term follows, several qualitative choice models can be estimated (Greene, 2000). Any household decision on the choices is underpinned by this theoretical framework, the realization of which can be implemented by a critically thought out conceptual framework.

A farmer group will choose to engage in value addition based on several factors like awareness of the value-added opportunity, production, market for the value-added product, training and previous knowledge on value addition. Access to credit, availability of value-adding equipment, knowledge on value addition technology, policy arrangements will influence the decision to engage in value addition. Group participation influences the choice and ability to practice value addition as it ensures accessibility to credit, equipment, and collective marketing which is more effective than individual marketing thus fosters value addition. Individual farmer and farm characteristics such as age, education level, gender, level of social capital and Irish potato production in a season may influence the decision to carry out value addition positively or negatively.

Education level, the number of Irish potatoes harvested may positively influence value addition. The gender of household decision-makers may influence the ability of the household to adopt new technologies and the replication of these technologies. Issues of food security, income generation, assets owned are expected to influence the level of value addition. The value addition of Irish potatoes is expected to increase farm income hence enabling the household to improve household welfare.

Description of the study area

The study was conducted in Bomet County (Figure 1). The County lies between latitudes 0º 29' and 1º 03' south and between longitudes 35º 05' and 35º 35' east. It is bordered by four counties; Nakuru to the east, Kericho to the North-East, Nyamira to the south and Narok to the West. Bomet covers an area of 2037.4 km2. The County lies up to 2,300m above sea level. Major crops produced in the County include; tea, Irish potatoes, maize, pyrethrum and coffee. The County population was estimated to be 782,531 in 2012 and was projected to reach 846,012 in 2015. The Irish potato annual production for the year 2013 was 25,517 Tonnes with a value of Kshs 965,918,182 (GoK, 2013).

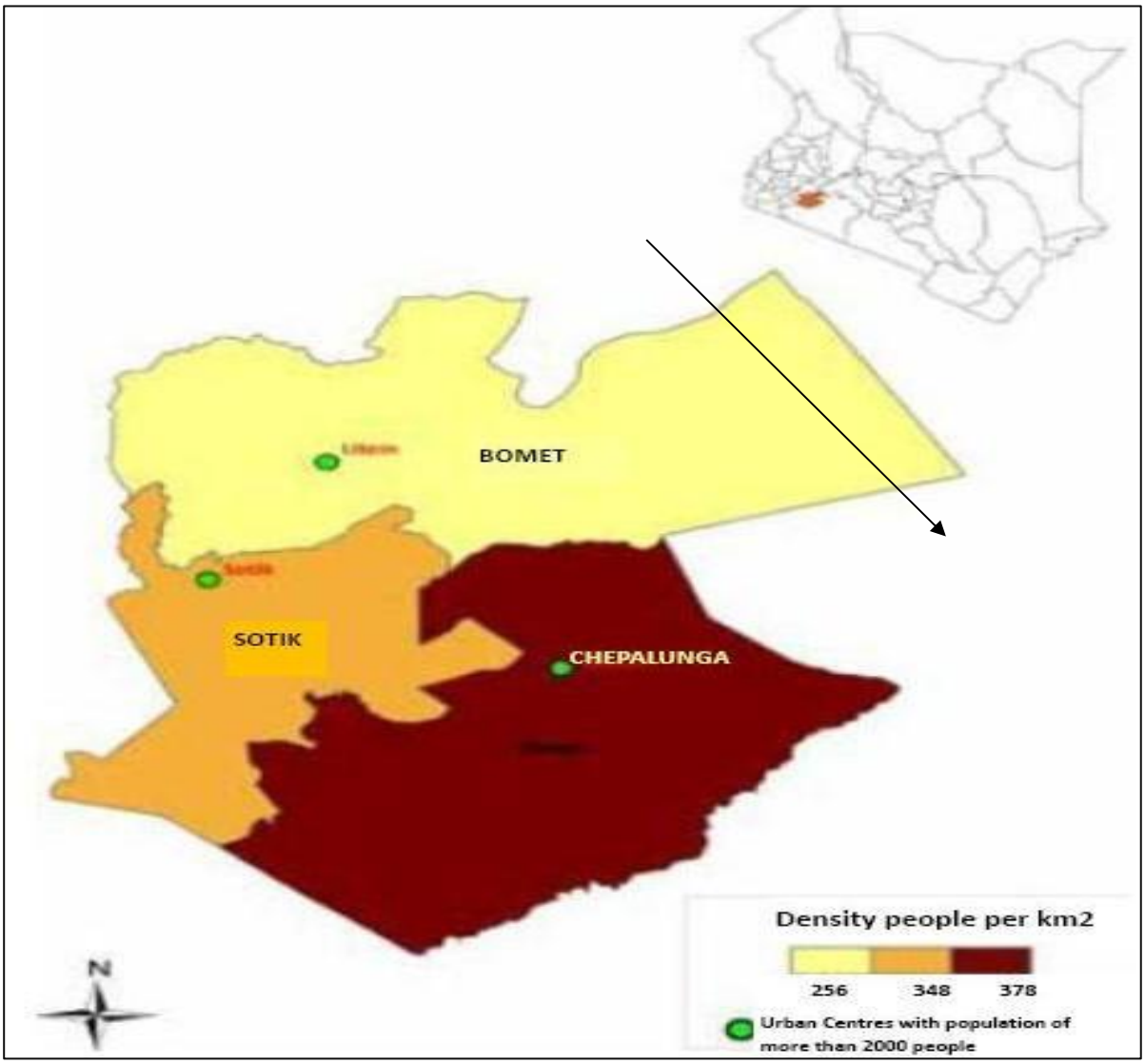

Figure 1: Map of Kenya showing Bomet County, the study area.
Source: Modified map from www.bomet.go.ke

Sampling procedure

The study adopted a multistage sampling procedure. First, Bomet County was purposively selected because it is one of the major Irish potato producing Counties in Kenya and with low-value addition activities. Within the County, five Irish potato producing Sub-Counties were also purposively selected. In each of the five Sub-Counties, the simple random sampling method was used to select 4 wards to give a total of 20 wards. In each of the selected wards, a list of Irish potato farmers was generated in the 20 wards with the help of County and Sub-County Agricultural Officers. A total sample size of 200 smallholder Irish potato farmers was then selected using a systematic sampling procedure.

Sample size

Since the population of Irish potato farmers in Bomet County is unknown, the infinite formula for determining sample size was used. The study adopted the formula specified by Kothari (2004). Mathematically, the formula is specified as follows:

$$n = \frac{Z^2 pq}{e^2} \quad (3)$$

Where n= sample size, p= proportion of the population doing value addition, q = 1-p, z = the standard variate at a given confidence level (a = 0.05), e= the acceptable error (precision). Using p = 0.6 assuming a conservative sample, z=1.96, q=0.4 and an acceptable error of 6.78% (e). q is the weighting variable and is computed as 1-P. The sample size, computed using the above formula was thus 200 respondents.

The sample was determined as:

$$n = \frac{1.962x0.6x0.4}{0.0678^2} = 200 \quad (4)$$

Sampling procedure

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Analytical technique

Binary Logistic Regression Model

The decision to add or not to add value among Irish potato farmers in Bomet County was assessed using a binary Logit model. The choice of this model was based on the fact that the decision to add value is discrete; it is either one value add or not. Furthermore, the study assumes a normal distribution and hence the choice of the binary Logit model. The reasoning behind the two-stage approach is that the decision on the extent of Irish potato value addition (the volume of value-added Irish potato) is usually preceded by a decision to engage in the process of value addition. The binary Logit model used in the first stage is as specified in Equation 5.

$$\text{Prob}\,(Y_i=1 \mid X = \int_{-\infty}^{\chi'\beta} \boldsymbol{\varphi}(t)\,\delta t = \boldsymbol{\varphi}(X'\beta) \quad (5)$$

where Y_i is an indicator variable equal to unity for households that add value, $\boldsymbol{\varphi}$ (.) is the standard normal distribution function, ***β*s** is a vector parameters to be estimated and *X*s are the determinants of the choice. When the utility that household ***j*** derives from value addition is greater than 0, Y_i takes a value equal to 1 and 0 otherwise. It follows, therefore, that:

$$\mathbf{Y^*=}\boldsymbol{\beta}_i X_i + V_i \quad (6)$$

where $\boldsymbol{Y_I^*}$ **(0, 1)** is the latent level of utility the household gets from value addition**.** Given this assumption, it follows that:

Y_i =1 if $\boldsymbol{Y_I^*} > 0$ *i Y* and *Y*i = 0 if $\boldsymbol{Y^*} \leq 0$ (7)

Empirically, the model can be represented as follows:

$$Y = \beta_j X_i + \varepsilon_i \quad (8)$$

where ***Y*** is the probability of a household to adopt value addition practices and a vector of household characteristics $\boldsymbol{X_i}$ and $\boldsymbol{\varepsilon_i}$is the error term. In the second step, the Inverse Mills Ratio (IMR) is added as a regressor in the extent of value addition equation to correct potential selection bias. It was expected that the extent of value addition was self-selected in the sense that only some households choose to add value, hence the decision of the extent of value addition is preceded by the decision to add value. Consequently, this raised an empirical problem of self-selection. To reconcile this problem, the decision to add value was treated endogenously in the study to control the potential sample selection problem. Therefore, first the determinants of the decision to add value were estimated, and then, the Mill's Ratio from the selected equation was used as an independent variable in the target equation, that is used to assess the determinants of the extent of value addition.

$$\boldsymbol{E(Z_i|Y=1)=f(}\boldsymbol{x_i\beta}\boldsymbol{)+}\boldsymbol{\gamma\hat{\lambda}}\boldsymbol{+U_i} \quad (9)$$

where ***E*** is the expectation operator, $\boldsymbol{Z_i}$ is the (continuous) extent of value addition measured by the proportion of value-added Irish potato output. ***X*** is a vector of independent variables influencing the extent of value addition, ***β*** is a vector of the corresponding coefficients to be estimated. $\hat{\lambda}$ is the estimated IMR and $\boldsymbol{U_i} \sim N(0, \sigma_u)$. $\boldsymbol{Z_i}$ can be expressed as follows:

$$\boldsymbol{Z_i^*=\beta_i X_i + \gamma_{\hat{\lambda}} + u_i} \quad (10)$$

where ***i*** is only observed if the farmer is doing value addition (*Y*=1), hence $\boldsymbol{Z_i=Z_i^*}$. Empirically, this can be represented as:

$$\boldsymbol{Z_i^*=\beta_i X_i + \gamma_{\hat{\lambda}} + u_i} \quad (11)$$

where $\boldsymbol{Z_i}$ is the extent of value addition given the farm and farmer characteristics, ***Xi.*** $\hat{\lambda}$ is the Inverse Mills Ratio estimated in step 1 of the Heckman model and $\boldsymbol{u_i}$ uses the error term. Equation (8) and (11) will then be jointly estimated using the Heckman two-stage procedure in STATA as recommended in Heckman (1976). The following econometric model was used to analyze the data.

Data, data collection and data analysis

Primary data were collected using a structured and non-structured questionnaire. Agricultural Officers from Sub-County agricultural offices, Agricultural Sector Development Support Programme (ASDSP), Kenya National Potato Farmers Association (KENAPOFA), Kenya National Farmers Federation (KENAFF) assisted to identify respondents during data collection process. SPSS software was used in the analysis and results presented in tables.

Table 1: Description of variables and the expected signs

Variable	Coding	Units of measurement	Expected effect
Dependent Variables			
Decisions to value add Irish potatoes	1=Adding Value 0= Not adding value	None	None
Independent Variables			
Cost per unit of Irish potatoes produced	Continuous variable	KES	(-)
Price per unit of non-value added Irish potatoes	Continuous variable	KES	(-)
Income from value addition	Continuous variable	KES	(+)
Total quantity harvested	Continuous variable	KGS	(+,-)
Land acreage under Irish potatoes	Continuous variable	Acreage	(+)
If the household decision-maker	Dummy (1=yes, 0=No)	None	(+)
Access to agricultural extension services	Dummy (1=yes, 0=No)	None	(+)
Total land size owned	Continuous variable	Acres	(+)
Quantity of Irish potatoes Harvested	Continuous variable	KGS	(+)
Age of decision-maker	Continuous variable	Years	(+,-)
Off-farm hours spent daily on off-farm activity	Continuous variable	Hours	(-)
The market price of value-added Potatoes	Continuous variable	Kenya shillings	(+)
Household decision maker	Dummy (1=Household head, 0=Not household head)	None	(+)
Credit access	Dummy (1=yes, 0=No)	None	(+)
Level of education of the decision-maker	Dummy (1=yes, 0=No)	Years	(-)
The total value of the household assets	Continuous variable	Kshs	(-)
Availability of value addition equipment	Dummy (1=yes, 0=No)	None	(+)
Gender of the household decision-maker	Dummy(1=Male,0=Female)	None	(+,-)
Distance to the nearest Market	Continuous variable	Km	(+)
Member to a group	Dummy (1=yes, 0=No)	None	(+)
Value addition practices	Categorical	None	(+,-)
Cost of value addition	Continuous variable	KES	(-)

RESULTS AND DISCUSSION

Irish potato value addition in Bomet County

The majority of the Irish potato farmers (62.5%) undertook value addition as shown in Table 2 below. The reason is that the buyers insist on sorted raw Irish potatoes and the processors also require sorted and graded Irish potato according to size and variety and generally the price increases after value addition. The Irish potato farmers also need to sort small potatoes that will subsequently be used as potato seed and the damaged potatoes during harvesting are consumed at the household level.

Table 2: Composition of value addition adopters and non-adopters among Irish potato farmers in Bomet County

The decision to value add	Frequency	Percent	Cumulative Percent
Not value adder	75	37.5	37.5
Value adder	125	62.5	100
Total	200	100	

Source: Own computations, 2018.

Value addition practices in Irish potato production in Bomet County

Most of the farmers carried out value addition in the form of sorting, grading, chopping, and frying. However as indicated in Table 3, the most common form of value addition practiced by the farmers is sorting (66.5%) while grading, chipping and frying was practiced by 0.5 % of farmers in each case. The rest of the farmers did not engage in any form of value addition. The cost of producing potatoes is high and thus constraints farmers' profits. Therefore, to increase income, farmers opt to do value addition. Chipping and frying are costly and labor-intensive and that is why many farmers did not engage in them.

Table 3: Forms of value addition practiced by the Irish potato farmers in Bomet County

Type of value addition	Freq-uency	Percent	Valid Percent	Cumulative Percent
None	64	32	32	32
Grading	1	0.5	0.5	32.5
Sorting	133	66.5	66.5	99
Chipping	1	0.5	0.5	99.5
Frying	1	0.5	0.5	100
Total	200	100	100	

Source: Own computations, 2018.

Determinants of value addition among Irish potato farmers in Bomet County

Determinants of value addition in potatoes were estimated using the Binary Logistic model adopted from the methodology by Nyota (2011). Hosmer and Lemeshow Test are statistically insignificant (P = 0.907) indicating that the model fits the data well as shown in Table 4. Overall prediction success was 92.3 percent. The model is statistically significant indicating that the explanatory variables estimated reliably distinguished between the value adders and non-value adders (P = 0.006). Nagelkerke R-square value is 0.421 indicating that 42.1 percent of the variation observed in value addition among potato farmers was explained by the combined effects of all the independent variables in the model specified.

Results indicate that group membership (P = 0.013), cost per unit of potatoes (P = 0.041), and total land size (P = 0.058) were key variables that significantly influenced value addition. That is, being a member of a group that deals with Irish potato production decrease the farmer's probability to engage in Irish potatoes value addition by 0.127 times. The reason is that the majority of farmer groups in Bomet County deals with only production matters that include input sourcing but not marketing. The groups are also characterized by a lack of funds, corruption, and ineffectiveness in service delivery due. Contrary findings are reported in Ndegwa (2000) and Orinda *et al.* (2017) who found that group membership positively influences value addition decisions among sweet potato farmers in Kenya. Orinda *et al.* (2017) noted that farmers in groups exchange ideas/information, achieve economies of scale, incur fewer costs and ensures collective production, marketing and training thus increasing the probability of practicing value addition. Similar results are also reported in Oluoch *et al.* (2016). The study found that farmer marketing groups had a stronger bargaining power in the market compared to farmers selling individually.

The results further indicate that the cost per unit of potatoes produced increases with the level of value addition. That is if the farmer is willing and able to increase the cost of production by 1 unit increase the chances of value-adding by 1.012 times. The increased cost of Irish potato production reduces farmers' income and profits. Since the increased cost of production reduces profits, farmers are forced to carry out value-added activities to access premium prices to increase profit levels. A study by Orinda *et al.* (2017) noted that farmers who practice value addition in groups incur fewer costs and hence the ability to increase farm incomes.

Increasing land size under Irish potatoes by 1 acre, increases farmer's chances of practicing value addition by 27.362 times. In Kenya, the majority of farmers own small land sizes of up to 2.5ha (Adeleke *et al.,* 2010). This means that increasing land under Irish potatoes will increase yields which in turn lower production costs. Increased yields and low production costs will enable farmers to have enough money to carry out value addition activates. Results concur with those of Omitti *et al.* (2007) and Okello *et al.* (2009) who found that value addition practices are crucial for small-scale farmers when they want to penetrate the market and increase household income. That is, farmers who own small land sizes should engage in value addition activities. Contrary results are however reported in Orinda *et al.* (2017) who found that as land size increases, farmer's probability to adopt value addition activities in sweet potato production decreases and vice versa.

Table 4: Binary logistic regression of the factors affecting value addition among Irish potato farmers in Bomet County

Variables	B	S.E.	Wald	D.f	Sig.	Exp(B)
Group membership potato related	-2.061	0.826	6.224	1	0.013	0.127**
Cost per unit of potatoes	0.011	0.006	4.195	1	0.041	1.012**
Price per unit	0.419	0.741	0.320	1	0.572	1.520
Gender of decision-maker	-0.147	0.837	0.031	1	0.860	0.863
Total land size			6.211	2	0.045	
Total land size(1)	3.309	1.747	3.589	1	0.058	27.4*
Total land size(2)	1.387	1.709	0.658	1	0.417	4.002
Education secondary	0.531	1.119	0.225	1	0.635	1.701
Education tertiary	0.955	0.867	1.214	1	0.271	2.598
Education university	16.357	8044.1	0.000	1	0.998	1.2704
Quantity harvested	-0.007	0.010	0.523	1	0.470	0.993
Distance to the selling point	1.314	0.809	2.640	1	0.104	3.721
Total value addition income	0.636	0.482	1.738	1	0.187	1.888
Constant	-11.872	6.639	3.198	1	0.074	0.000*
Omnibus tests: P<0.05 (0.006)						
Nagelkerke R^2 = 0.421						
Hosmer and Lemeshow: P>0.05 (0.907)						
Correct overall percentage prediction: 92.3						

Source: Own computations, 2018. D.f means Degress of freedom, B is the coefficients of the estimated variables. EXP(B) is the odds ratio of the estimated variables. *, **, *** means significant at 10%, 5% and 1% respectively. S.E – Standard Errors.

CONCLUSIONS AND RECOMMENDATIONS

The study found that group membership (P = 0.013), cost per unit of potatoes (P = 0.041), and total land size (P = 0.058) were key variables that significantly influenced value addition. That is, being a member of a group that deals with Irish potato production decrease the farmer's probability to engage in Irish potatoes value addition by 0.127 times. Besides, if the farmer is willing and able to increase the cost of production by 1 unit increase the chances of value-adding by 1.012 times. Finally, the study found that increasing land size under Irish potatoes by 1 acre will increase the chances of value addition in Irish potatoes by 27.362 times. From the results, it is critical for farmers to join farmer groups and increase acreage under Irish potato production to reduce cost per unit. Farmers should also adopt modern value addition technologies to increase value-added products and hence reduce cost per unit of potato production.

REFERENCES

Adeleke. S, Abdul.B. and Zuzana, B. (2010). *Trends constraints and opportunities:* Small Holder Agriculture in East Africa. Working paper, No105.

Birachi, E., Karume, K., Kyamuhangire, W., Wanjiku, C., Mugabo,J., Tumwesigye, S., Kasenge, V., Banabana, J., Mtengwa, W., Nyamwaro, S., Bikuba, G., Habugisha, P., Lubanga, L., Nyamurinda, B., Mandefu, P., Gafaranga, J. and Kamugisha, R. (2013). Expanding market access and value addition in selected agricultural value chains: The role of IAR4D in the Lake Kivu Pilot Learning Site.

Durr, G. and Lorenzl, G. (1980). Potato production and Utilization in Kenya. Lima: Department of Agricultural Institute of Socio-Economics Economics of Agricultural Development University of Nairobi Technical University Berlin: International Potato Center.

Food and Agriculture Organization (2008). *International year of the potato* Rome: Food and Agriculture Organization of the United Nations.

Food and Agriculture Organization (2009). Agriculture, trade and food security issues and options in the World Trade Organization negotiations from the perspective of developing countries. Vol. II Country case studies. Rome: Food and Agriculture Organization of the United Nations

Government of Kenya (2012). District Agricultural Officer. *Bomet Annual Report.*

Government of Kenya (2013). Ministry of Planning: *Bomet County Development Profile.*

Government of Kenya (2014). Agricultural Sector Development Support Programme report Agricultural Sector Development Support Programme (Bomet County) *Value chain development report, Bomet County.*

Greene, W. H. (2000). *Econometric analysis*, 4th ed. Prentice-Hall, Upper Saddle River, New Jersey: Prentice-Hall.

Haverkot, A. J. and Struik, P. C. (2015). Yield levels of potato crops: Recent achievements and future prospects. *Field Crops Research,* 182:76-85.

Heckman, J. (1976). *Annals of economic and social measurement*, *Vol V*: Sanford V Berg. National Bureau of Economic Research. (pg 475-492).

Hoffler, H. and Ochieng, B. (2008). *High commodity prices*- Who gets the money? Preliminary findings for the world food day 2008. Integrated Value Chain Analysis of Leather Sector in Kenyan institutions: implications for smallholder women's honey income in arid and semi-arid lands of Kenya. *The African Association of Agricultural Economists Conference proceedings*, (2007) 383-386

Kothari, C. R. (2004). *Research Methodology*. *Methods and techniques.* 2nd Ed. New Delhi: New Age International (P) Ltd.

Ndegwa, J. M. (2000). A Research Process and Methodology Focusing on Indigenous Kenyan Chickens. *Proceedings of the International Network for Family Poultry Development Symposium During the XXI. World's Poultry Congress, 20-24 August 2000, Montreal, Canada, pp3-12.*

Norris, E. and Batie, S. (1987). Virginia farmers' soil conservation decisions: An application of Tobit analysis. *Southern Journal of Agricultural Economics,* 19(1): 89-97.

Nyota, H. N. (2011). Transaction Costs and other Determinants of Choice of Compliance Arrangements with Global-GAP Standards among Smallholder French Bean Farmers: The Case of Kirinyaga South District, Kenya Department of Agricultural Economics, University of Nairobi. http://erepository.uonbi.ac.ke: 8080/xmlui/handle/11295/13952. Accessed on 25th June 2018.

Okello, J., Kwikiriza, N., Kakuhenzire, R., Parker, M., Schulte, G. and Pambo K. (2009). Micro and meso-level issues affecting potato production and marketing in the tropical highlands of Sub- Saharan Africa: The known and the unknowns

Oluoch, A., Lagat, J. and Langat, J. (2016). Evaluation of Effects of Value addition in Sweet Potatoes on Farm Income in Homabay County, Kenya. *Journal of Economics and Sustainable Development*, 7 (20): 1-4.

Omitti, J., Otieno, D., McCullogh, E., Nyanamba, T. (2007). Strategies to Promote Market –

Oriented smallholder agriculture in developing countries: *A case of Kenya, The African Association of Agricultural Economists conference proceedings* (2007) 259-264.

Orinda M., Lagat, J. and Mshenga, P. (2017). Analysis of the Determinants of Sweet Potato Value Addition by Smallholder Farmers in Kenya. *Journal of Economics and Sustainable Development, 8 (8): 1-11.*

Pryanishnikov, I. and Zigova, K. (2016). Multinomial Logit Models for the Austrian Labor Market. *Austrian Journal of Statistics*, *32*(4): 267–282. https://doi.org/10.17713/ajs.v32i4.461

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