# Smallholders' Transformation to Business Enterprise in Africa: *A Reality or a Mental Illusion?*
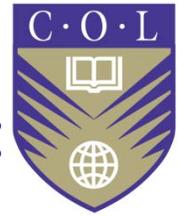
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*Based on the Lifelong Learning for Farmers (L3F) Programme facilitated by Makerere University, Uganda; Kenya Aids Intervention and Prevention Project (KAIPPG); Siaya Seed Savings and Credit Cooperative Society, Kenya; Ugunja Community Resource Centre, Kenya; and Matumaini Mapya, Tanzania.*

## Introduction

Africa has a long history of intertwining agriculture and trade. However, despite this history, Garlick (1967) argues that Africa has faced challenges in transitioning from entrepreneurs to entrepreneurial organizations due to various socio-economic and historical factors. The economic efficiency of micro and small enterprises, including agricultural enterprises, is a major concern in Africa's development process. For example, as Eluhaiwe (2013) points out, micro, small and medium enterprises (MSME) in Nigeria absorb a similar amount of employment as countries like India and Japan, but they have significantly smaller contribution to GDP.

This presentation conceptualises the issue of smallholder efficiency in a holistic manner and a case study is presented to show that the transition from smallholder farming to agricultural business enterprise can be a reality. The case study is based on a programme *Lifelong Learning for Farmers* (L3F) supported by the Commonwealth of Learning and implemented by Kenya AIDS Intervention and Prevention Project Group (KAIPPG) and Makerere University, Uganda.

The specific objectives of the study are:

1. To determine the profit and profit efficiency of backyard poultry in Kenya and assess the role of L3F;
2. To delineate the influence of empowerment in determining profit;
3. To emphasize the need for integrating social capital, financial capital and human capital in a holistic manner to strengthen the smallholders' transformation to business in Africa.

## Challenges in Transformation

An entrepreneur is a person who combines the factors of production such as land, labour, capital and organisation for producing and marketing goods and services to maximise profit. Subsistence farmers in developing countries have traditionally adapted loss-minimisation strategies (Wayne, 1978) and hence a transition to a profit maximisation approach requires a substantial support system. An interesting study conducted in Ghana, Kenya and Nigeria identifies the condition of the economy, capital mobilization and capacity building as the major challenges faced by small entrepreneurs (Benzing and Chu, 2012). Van Royen (2010) argues that "the vast majority of Africa farmers are characterized by low technologies , poor transportation and market access , limited access to production loans, poor business plans resultant from poor feasibility studies, lack of monitoring and evaluation and poor training (cited by Mmbengwa et al., 2012: 7165).

**Lifelong Learning for Farmers (L3F) and Small Holders Entrepreneurship**

L3F focuses on linking three types of capital; social capital, human capital and financial capital. An effective linkage of these three capitals will help in spiraling the development process as shown in figure 1.

*Figure 1: L3F Approach*
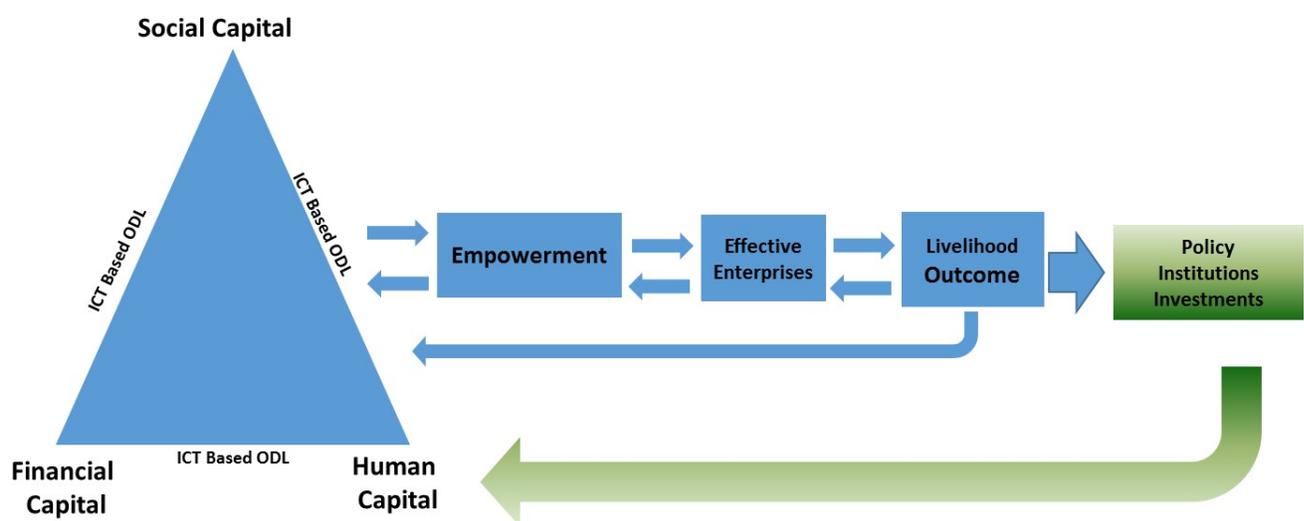


A holistic approach including these linkages will help strengthen the empowerment of participating communities, leading to effective enterprises, which in turn will strengthen livelihood outcomes.

The L3F approach, based on Roling's (1988) framework, consists of the following premises:
- Agricultural extension is a facilitation process through which a community is empowered to manage agricultural knowledge systems and agricultural information systems.
- Extension takes place in the context of already established social capital such as cooperatives, self-help groups (SHGs), and associations etc., which form a strong active utiliser constituency. Cognitive social capital is a precondition for lifelong learning.
- The community is not a mere consumer of information, but a partner in knowledge management and dissemination.

- Facilitating Self-Directed Learning and Horizontal Transfer of Knowledge using Open and Distance Learning (ODL) methodologies among the active utiliser constituency is an important dimension of L3F.
- Learning and extension can be a self-sustaining process with secondary stakeholders supporting L3F within a win-win framework. For instance, blending rural credit with appropriate capacity building can lead to better performance in terms of productivity, returns and non-performing assets (NPA) levels. These gains would lead the financial institutions to support L3F.
- Capacity building will also enlarge the market for bank credit among small and marginal farmers and among other marginalised sections of the rural poor, particularly women. ODL will be able to strengthen the capacity building process by reaching a large number of people at a reduced cost. It will also help to reduce the opportunity costs of the farmers, particularly women, in learning.
- Modern Information and Communication Technologies (ICTs) such as rural internet kiosks, rural tele-centres, mobile phones, community radio, etc. can facilitate the capacity building process in a spatial-temporal context which is financially viable, economically feasible and socially acceptable.

The secondary stakeholders like financial institutions, ICT companies and markets as well as the rural poor as primary stakeholders stand to gain with the above premises, which are based on a win-win framework. This strategy can help primary stakeholders enhance their businesses and engage secondary stakeholders to help build a self-sustainable, self-replicable process

*Social Capital, Entrepreneurship and L3F*

Human capital and financial capital have been dealt with in detail while assessing the challenges of small farmers' enterprises. As Percoco (2012:351) argues, "most.....studies have considered the role of supply and demand factors, with relatively less attention being paid to non-material factors" such as social capital. The role of social capital has not been adequately described in the studies on small farmers' enterprises in Africa even though one occasionally comes across references to the need for networking among the stakeholders.

Recognition of the importance of social capital in economic and social development has grown in recent years. OECD (2001:41) describes social capital as the "networks together with shared norms, values and understandings that facilitate cooperation within or among groups". Coleman (1988) describes it as "productive potential" which is derived from relationships between actors. A substantial number of studies have linked social capital to economic development. As a resource embedded in relationships among people, social capital strengthens and facilitates cooperation, reciprocity and risk-sharing in a collective form through norms, values, rules and regulations, thereby stimulating economic growth and social development (Putnam, 1993).

Two types of social capital are generally referred to: structured social capital and cognitive social capital. Structured social capital refers to the roles, rules, procedures and networks that facilitate information-sharing, collective action and decision-making through established roles. Cognitive social capital is measured by trusts and norms generated from cognitive and interactive processes and reinforced by trust, reciprocity, collective-identity, shared norms, beliefs and recognitions that contribute to mutually beneficial collective action. Cognitive social capital emerges from continuous interactions, dialogues and debates. It helps in reducing the transactions costs, mobilizing investment and providing scale advantages. Percoco's study in Italy establishes the significant elasticity of entrepreneurship to social capital (2012). Many development interventions such as cooperatives, microfinance and Self-help Groups are based on the premise of social capital.

The development of cognitive social capital among the participating farming communities is an important condition for L3F. Communities have to go through a process of mobilization and organization, before financial and human capitals are linked.

*Human Capital and L3F*

Strengthening human capital is a precondition for development. In L3F, human capital has been perceived purely from learning, knowledge acquisition, reflective practices, skills, and competencies among the participating farming communities. The initiative is based on a participatory approach in which everyone is a "learner" and interactive learning is the crucial aspect of the programme. The initiative integrates the concepts of andragogy and heutagogy in a blended learning format. Such blended learning takes place in the context of vertical flow of knowledge (from universities, research institutions, secondary stakeholders to the primary stakeholders) and horizontal flow of knowledge (between the primary stakeholders in the context of community knowledge management). The horizontal flow of knowledge is encouraged through group and community based learning to strengthen self-directed and self-determined learning. Semi-structured asynchronous learning is emphasised in the context of vertical flow of knowledge, whereas structured group-based learning as well as informal learning are encouraged in the horizontal flow of knowledge.

Learning materials are developed at the local level with the participating community playing a major role. The process of developing, using, reusing (and in some case abandoning) learning materials is highly dynamic and spatial-temporal in nature. However, the quality of the learning is under constant monitoring both by the community as well as by the experts.

Most L3F participants are illiterate or semi-literate, and therefore the learning takes place in a multi-media context using audio-visual interaction; hence, ICT plays a vital role in L3F. The technology is placed in the socio-cultural context, keeping in view the financial feasibility, infrastructural viability and social acceptability. Since mobile phones have penetrated rural areas, they are used to strengthen learning wherever relevant. Other self-learning technologies such as CDs/DVDs and mass media such as community radios are also exploited to strengthen learning.

*Financial Capital and L3F*

Inadequate capital formation is a common characteristic of agricultural and animal husbandry sectors in many developing countries. This has resulted in limited access to financial capital and sub-optimal utilization of resources. Institutional credit has not reached the smallholders effectively. Though microfinance is slowly gathering momentum, it is yet to make a substantial impact on the smallholders.

Given these conditions, L3F negotiated with financial institutions and put forth the following premises:

- Unexploitative, mutually reinforcing contractual relationships between rural producers and formal public and private sector through schemes such as "buy-back" arrangement, contract farming etc., would promote rural entrepreneurships and the advantage of such relationships would promote formal public and private sector to support L3F among rural community in future.
- If rural credit is blended with appropriate capacity building (particularly in financial literacy, enterprise management, credit management etc.), the performance of rural credit would be much better vis-à-vis productivity, returns and non-performing assets (NPA) levels.
- Capacity building would also enlarge the market for bank credit among small and marginal farmers and among other marginalized sections of the rural poor particularly women.
- The modern information and communication technologies through structures such as rural internet kiosks, rural telecentres, mobile phones, community radio etc can facilitate the capacity building

processes in a spatial-temporal context, which are financially viable, economically feasible and socially acceptable.

- The introduction of table banking and microfinance at the group level will enable to develop a financial discipline among members and enable them to move towards macro-finance.

Financial institutions as well as the rural poor stand to gain if this hypothesis is proven and the financial institutions can use this strategy to enhance their businesses. In addition to capacity building, the financial institutions could also use ICT facilities to reduce the transaction costs associated with lending.

*Empowerment and Entrepreneurship*

In recent times, an increasing number of studies have started to look at the role of gender diversity in the performance of firms. The presence of women on corporate boards seems to play a role in firm performance (Nolandi et al, 2016). Hunt et al (2015) found that gender diverse companies are "fifteen percent more likely to have financial returns above their respective national industry medians". However, the gender dimensions of smallholder enterprises in Africa have not attracted adequate attention.

While gender diversity plays a role in enhancing firm performance, it will be inadequate without empowerment. A disempowered entrepreneur will not be in a position to combine the factors of production such as land, labour capital and organization and maximize profit. In this context, empowerment translates into the fifth factor of production. This is a logical progression of the view that knowledge is the fifth factor of production (Harcourt, 2012). Kabeer (1999) defines empowerment as "the expansion in people's ability to make strategic life choices" in terms of three interrelated dimensions—resources, agency and achievements. Such a definition assumes that empowerment enables people to translate knowledge into action to make strategic life choices. Therefore, empowerment could be a better factor of production than knowledge. The role of this fifth factor of production has not been clearly addressed while promoting entrepreneurship in Africa.

In L3F, empowerment is seen as outcome of the interplay between social, human and financial capital. Empowerment is expected to lead to better management of the enterprises as illustrated in figure 1.

**L3F in KAIPPG**

KAIPPG initiated L3F activities during 2009-2010 among women affected with HIV/AIDS in the western region of Kenya. It went through the phases of mobilisation, organisation, capacity building, technical support and systems management. The communities and the various stakeholders came together for 'mutual conscientisation' so that the agenda of each stakeholder was well understood by others. Once the communities understood that the L3F programme fitted with their felt needs, KAIPPG facilitated the communities to organise themselves into support groups. It introduced 'table banking' as a form of community banking in which the support groups came together and participate in saving as well intra-group and inter-group lending. These support groups were federated into a Savings and Credit Cooperative (SACCO).

The community and experts identified the normative needs as well as the felt needs vis-à-vis learning. Financial literacy, SACCO management, agricultural productivity, poultry management and marketing were identified as the key areas of learning. Courses were developed in consultation with experts, marketing agencies, the government extension system and the communities, and delivered through radios, DVDs and other blended learning methods. Thus, the social capital and human capital were built among these groups. Some of these groups showed interest in starting backyard poultry enterprises. With the knowledge and practice gained through learning and table banking, they developed their business plans.

The savings and lending in the 'table banking' in groups attracted the confidence of the commercial and cooperative financial institutions who gave them short-term loans to start poultry enterprises.

## Methodology

The study looks into the profit efficiency of backyard poultry enterprises in rural Kenya. The study used primary data collected through a structured questionnaire administered to three categories of backyard poultry farmers. Using stratified sampling, three categories were identified: i) the members of the L3F programme involved in poultry; ii) those who are not participating in the L3F programme but were members of support group; and iii) those who were neither members of L3F nor in the support groups. The last two groups were the control groups.

The sample size was determined by the size of the population engaged in backyard poultry farming. Proportionate sampling was used to get the sample size (table 1).

*Table 1: Sample Structure*

|  | Population | Sample size |
|---|---|---|
| L3F Village List | 98 | 98 |
| Non-L3F Village List but on KAIPPG program | 105 | 61 |
| Non L3F non KAIPPG Village with poultry | 100 | 60 |
| Total | 303 | 219 |

   ❖ *Sample size for 5% margin of error, 99% Confidence level, response distribution of 50%*

## Measuring Empowerment

The measurement of empowerment poses a number of challenges; however, despite these challenges, a number of agencies have recently developed empowerment indices (IFPRI, CARE). Empowerment is a not a unilinear, homogenous process; there are different dimensions and different levels of empowerment. In order to represent these different dimensions, COL developed a three dimensional framework for measuring empowerment through an index (Carr et al, 2015). The Three-Dimensional Empowerment Framework consists of *Realm* (at Household, Community and Enterprise levels), *Aspect* (addressing Psychological/ Emotional, Social/ Cultural, Economic/ Entrepreneurial and Political/Legal aspects) and *Degree* (acquiring knowledge, having the desire, accessing the means and translating into action). Using 7-point Likert items, an attitudinal questionnaire was developed based on the framework. The 7 point scale was chosen as it offers a more reliable measure for items used to calculate a cumulative scale, and also offers the opportunity for a more nuanced assessment of empowerment. The empowerment index ranges from 0 to 1, with 0 depicting least empowered or highly disempowered and one reflecting highly empowered. This index was tested through a study in collaboration with Makerere University in Uganda. The study looked at the "relationship between a community-centric learning process and empowerment in selected villages in Uganda" (Carr et al, 2015:1). Based on a study of two villages, it evaluated the role of the L3F programme, developed and supported by COL, in empowering farming communities.

*Empowerment by group*

Using this methodology to measure empowerment, data was collected among the respondents in the present study and the index scores were calculated for the three sample groups. The L3F group has a whole has a higher mean empowerment score than both the SHG group and the non-L3F/SHG group. The L3F group's

mean empowerment score is approximately 15.5% (.13005) higher than the non-L3F/SHG group and 13.5% (.09771) higher than the SHG group. In terms of gender, L3F men and L3F women have higher mean empowerment scores than their counterparts in the other two groups. Within all three groups, men have higher scores than women; however, L3F women have higher empowerment scores than men in both the non-L3F/SHG and SHG groups. Furthermore, the L3F group is much closer to gender parity than the other two groups as seen in figure 2.

*Figure 2: Empowerment Score by Gender among the Three Sample Groups*
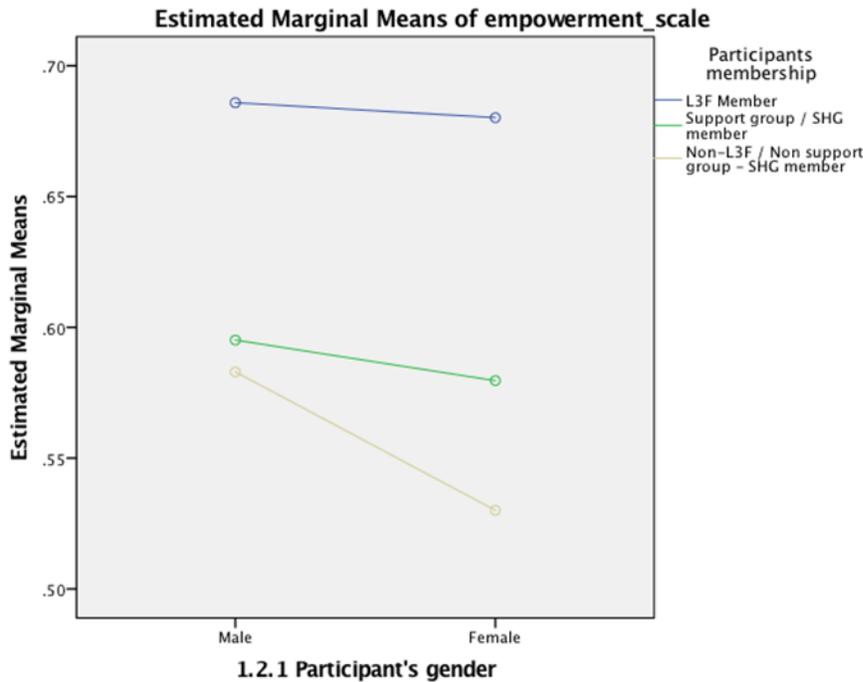


Additionally, two multiple linear regressions were performed in order to predict empowerment index scores using multiple variables of interest. The initial regression was run using just L3F participation and gender as the independent variables. This model is statistically significant with approximately 50% of the variation in empowerment scores accounted for by L3F and Gender ($R^2$=.504). As evident in table 2, L3F involvement is the most significant determinant of empowerment. As per Cohen (1988) this is a very large effect size. In this model both L3F involvement and gender are significant predictors of empowerment. A second regression was run, incorporating additional control variables including age, years of formal education, and net household income. This model is also statistically significant and can explain approximately 51% of the variation in empowerment scores; however, as evident by the minimal increase in the $R^2$ value, the addition of the new variables does not add much value to the analysis. Age and years of farming were not significant predictors in this model, and net household income, while statistically significant, has an almost negligible effect on empowerment scores. L3F involvement and gender remain as significant predictors in this model.

*Table 2: L3F and Gender Model*

| Model ($R^2$= .504) | Unstandardized Coefficients | | Sig. |
| --- | --- | --- | --- |
| | B | Std. Error | |
| 1      (Constant) | .560 | .006 | .000 |
| L3F | .117 | .008 | .000 |
| Gender (male) | .021 | .009 | .017 |

## Measuring profit and profit efficiency

We estimated the determinants of profit and profit efficiency of poultry enterprises using the stochastic frontier framework. Following the standard in frontier analysis, we started with the assumption that the poultry profit function is:

$$q_i = f(z_i, \beta)\xi_i$$

Here, $q_i$ is profit, $f(\cdot)$ is the frontier profit technology, $z_i$ are inputs and input-prices, and $\xi_i$ is the level of inefficiency for firm i, with $\xi_i \in (0,1]$. When $\xi_i < 1$, the firm is not making the most of the inputs given the technology embodied in the function f. Assuming that the profit function is linear in logs, defining $u_i = -ln\xi_i$, and allowing for a classical regression error term $v_i$, we get the following:

$$lnq_i = \beta_0 + \sum_k \beta_k lnz_{ki} + v_i - u_i. \qquad (1)$$

We further assumed that $v_i$ and $u_i$ are i.i.d over the observations in the data, and that they were distributed as following:

$$v_i \sim N(0, \sigma_v^2), \qquad u_i \sim N^+(\mu, \sigma_u^2), \qquad with\ truncation\ point\ at\ 0.$$

We first estimated equation 1 to get estimates of $(\beta_0, \beta_k's)$ and the predicted profit inefficiency term $u_i$ for each observation. Here, we included empowerment as an input and tested whether it determines profit. We then regressed the predicted profit efficiency term on a set of farmer and household characteristics, including participation in the L3F programme, to conclude whether L3F affects profit efficiency.

## Profit by Group

Income from poultry consists of revenue from selling eggs, birds and manure in the market and the value of home consumption of output from poultry. Market revenue is reported directly in the survey for the period 2014-15. The dependent variable of interest, annual profit from poultry farming is the difference between total revenue and total cost during the reference period 2014-15. The average annual profit from poultry farming is about Kshs 12,036. Figure 3 plots the average profit from poultry farming by membership in L3F and SHG groups. It shows that the average profit is higher for L3F participants and the differences between L3F and non-L3F participants are statistically significant.

*Figure 3: Average Measured Profit from Poultry by Group Membership*
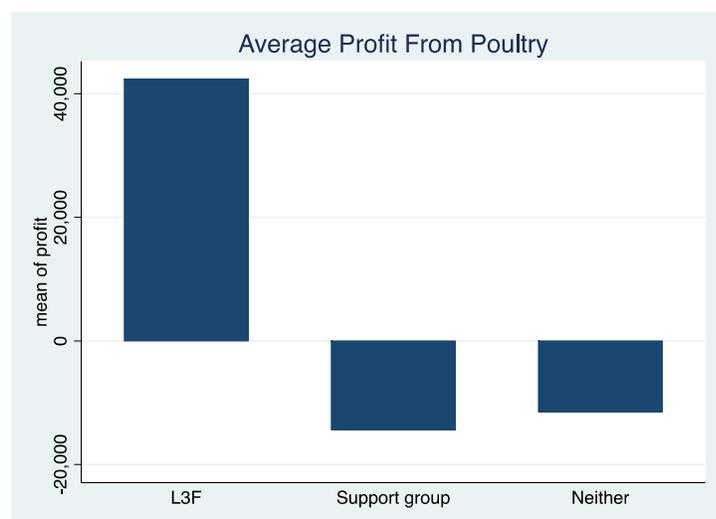


### Determinants of profit: the Stochastic Frontier Analysis

For stochastic frontier analysis of the profit function outlined in equation 1, log of profit was first assumed to be a function of four inputs; log of the number of birds purchased in 2014, log of the average number of family members who worked in poultry farming in 2014-15 (averaged over half-year periods), the log of hired labor (in days) in 2014-15, and the log of the empowerment index constructed using a questionnaire administered at the time of survey. We allowed log profit to additionally depend on the log of purchase price of birds in 2014 and the log wage of hired labor in 2014-15. To be precise, the log of birds, family labor and hired labor, and log of prices takes the log of the variables plus one to ensure that the variables were defined for zeros as well. In the sample, 40% of the poultry farmers have negative measured profit.[1] We dealt with this by replacing the log of profit with zeros for households with negative profit (effectively assuming that their profit in levels is equal to Kshs 1). To account for this truncation at zero, we included an additional explanatory variable NPI (equal to 1 if profit is positive and equal to the absolute value of profit if profit is negative).[2]

As the table 3 shows, a one percent increase in number of birds bought in 2014 is associated with a 1.1% increase in annual profit. Number of family members employed in poultry farming has a statistically insignificant and small effect on profit, whereas the number of hired labor days in 2014-15 in poultry farming has an estimated elasticity of 0.36, implying that a 1% increase in hired labor days is associated with a 0.36% increase in annual profit. While higher wages for hired labor is associated with lower profits (an estimated elasticity of -0.27), a one percent increase in the purchase price of birds is associated with 0.1% higher profits. The latter might reflect higher quality of birds. A key result is that the empowerment index is a statistically significant determinant of profit from poultry farming, and has a relatively large estimated elasticity. A percent increase in the empowerment index is estimated to increase annual profit from poultry farming by 2.3%.

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[1] Due to timing issues while measuring costs and revenue, measured profit in this report might not accurately reflect the level of profit that households earn in reality. Measurement error in the dependent variable (that in uncorrelated with the regressors and the regression error term) usually causes the standard error of the coefficient estimates to be bigger, and does not lead to biased estimates.

[2] See http://www.uu.nl/sites/default/files/rebo_use_dp_2007_07-17.pdf for more details on this.

*Table 3: Estimates of Stochastic Frontier Profit Function*

| Dependent Variable | $Log\ profit^a$ |
|---|---|
| Log number of birds bought in 2014 | 1.105*** |
| | (-7.04) |
| Log family labor in 2014-15 | 0.0614 |
| | (-0.27) |
| Log hired labor days in 2014-15 | 0.359*** |
| | (-4.44) |
| Log empowerment index | 2.284** |
| | (-2.93) |
| Log purchase price of birds in 2014-15 | 0.109* |
| | (-2.46) |
| Log wage for hired labor in 2014-15 | -0.267*** |
| | (-4.22) |
| Log negative profit indicator | -0.990*** |
| | (-44.66) |
| Intercept | 8.032*** |
| | (-3.8) |
| Sample size | 210 |

a: Equals zero if profit is negative
* $p<0.10$, ** $p<0.05$, ***$p<0.01$
T-statistics are reported in parentheses.

*Profit efficiency by group*

The average profit efficiency for the sample is 65.8% when log profit is used as the dependent variable. L3F participants on average have a profit efficiency of 67%, compared to 64.7% for the rest of the sample.

*Table 4: Predicted Profit Efficiency*

| Predicted profit efficiency | Log profit approach |
| --- | --- |
| Average | 65.8% |
| Average - L3F farmers | 67.0% |
| Average – non-L3F | 64.7% |
| Average – non-L3F/SHG | 64.0% |

**Conclusion**

The challenges in transitioning from smallholder farming to a profitable micro-enterprise are myriad and complex, and therefore necessitate a clearer understanding of the processes that lead to such a transition. Through a case study of backyard poultry farmers in rural Kenya, this paper has outlined processes that lead to increased profit and profit efficiency, looking specifically at the role of the Lifelong Learning for Farmers Programme and empowerment. The key findings of this paper are: (a) L3F members have significantly higher empowerment index scores than the non-L3F control groups; (b) L3F membership is the strongest determinant of empowerment; (c) empowerment, measured as an index, is a statistically significant and an elastic determinant of profit from poultry farming, and (d) L3F participants have higher profits and profit efficiency in poultry farming on average.

 L3F, with its holistic approach to strengthening social, human and financial capital leads to empowerment. Empowerment as a fifth factor of production is a significant determinant of profit, with L3F participants showing significantly higher profit and profit efficiency than their counterparts in the two control groups. The linkages between L3F and empowerment, and empowerment and profit clearly emerge from this study. These findings suggest that through a holistic approach of linking social, financial and human capital an empowerment process cab be initiated, which in turn can make the smallholder business a more profitable one; otherwise, this transition will remain a mental illusion.

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