

Effect of entrepreneurship training of smallholder farmers on soybean productivity and household incomes in Lango Sub-region, Northern Uganda

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Abstract

The soybean value chain has a potential to increase smallholder farmers' incomes and has significant growth potential yet soybean farming households lack services such as education which is tailored to address the real challenges they face in maximizing profits from farming. There is thus a need to integrate entrepreneurship training. This study determines the effect of entrepreneurship training on soybean productivity and household income in Lango Sub-region, Northern Uganda. The project was implemented in selected villages (Aumi Abongwen, Omolodyang, Apongimalo) in Bbala sub-county, Kole District and (Anyamazi, Inomo) in Chegere and Apumi sub-counties respectively in Apac District. using exploratory study and experiential learning approach, we conducted soybean value chain mapping in two phases and Entrepreneurial skill training of 220 farmers out of which 150 trained farmers were randomly selected for the study and 450 untrained farmers were used as a control. The random sampling method was followed for selecting the respondents. The preliminary findings indicate that majority 56.67% of the respondents are women and 67.17% of the respondents stopped with education at primary level with 6.7% having no formal education. Study revealed that real earning of the farmers who have participated in the training increased by 380,000Ushs. It can be inferred from the study that entrepreneurship training should be scaled up to increase the productivity and income of smallholder farmers as it significantly increase their income.

Key words: Entrepreneurship, experiential learning, household income and productivity, livelihood, value chain

Résumé

La chaîne de valeur de soja a un potentiel pour augmenter les revenus des petits agriculteurs et dispose d'un potentiel de croissance significatif (Dathine. 2011), même si les ménages agricoles manquent de services tels que l'éducation qui est adaptée pour répondre aux vrais défis auxquels ils sont confrontés dans la maximisation des profits issus de l'agriculture. Il est donc nécessaire d'intégrer les compétences entrepreneuriales. Cette étude détermine l'impact de la formation des compétences entrepreneuriales sur la productivité de soja et le revenu des ménages dans la sous région de Lango, au Nord de l'Ouganda. Le projet a été

mis en œuvre dans certains villages (AumiAbongwen, Omolodyang, Apongimalo) dans le sous comté de Bbala, District Kole et (Anyamazi, Inomo) dans les sous comtés de Chegere et d'Apumi sous-comtés respectivement, dans le district d'Apac. En utilisant des études exploratoires et l'approche de l'apprentissage expérientiel, nous avons réalisé la cartographie de la chaîne de valeur de soja en deux phases et la formation des compétences entrepreneuriales de 220 agriculteurs sur lesquels 150 formés ont été sélectionnés pour l'étude et 450 agriculteurs non formés, et sont été utilisés comme contrôle. La méthode d'échantillonnage aléatoire a été suivie pour la sélection des répondants. Les résultats préliminaires indiquent que la majorité de 56,67% des répondants sont des femmes et 67,17% des répondants avaient arrêté l'éducation au niveau primaire avec 6,7% n'ayant aucune éducation formelle. L'étude a révélé que le revenu réel des agriculteurs qui ont participé à la formation a augmenté de 388.000Ushs. Il peut être déduit de l'étude que la formation de compétences entrepreneuriales devrait être élargie pour augmenter la productivité et les revenus des petits agriculteurs car il augmente considérablement leurs revenus.

Mots clés: apprentissage expérientiel, compétences entrepreneuriales, les revenus et la productivité des ménages, moyens de subsistance, la chaîne de valeur

Background

Soybean (*Glycine max*) is one of the legume crops which have been receiving more and more attention in the developing countries like Uganda and it's one of the widely grown crops in Lango sub-region. The crop has a potential to increase smallholder farmers' incomes and has significant growth potential because of the current local and regional market that provides an opportunity for value addition and product diversification through value stream. This can increase farmer's income and improve the livelihoods of very poor farming households as well as enhance the soil nutrient status. However, like most crops, soybean value chain is characterised by the presence of actors with very limited entrepreneurial capacity leading to smallholder farmers having low productivity products, poor postharvest handling and lack of value addition as a result, the profit maximisation efforts by the farmers always show discouraging incentives. This calls for a need to integrate entrepreneurial skills in order for them to increase their production and marketability of soybeans. The objective of the study was to determine the impact of entrepreneurship training of smallholder farmers on their household in Lango sub-region, Northern Uganda.

Literature summary

Recent literature on entrepreneurship starts with the Schumpeter's view on entrepreneurship. He described an entrepreneur as "an idea man and a man of action who possesses the ability to inspire others, and who does not accept the boundaries of structured situations. He is a catalyst of change, instrumental in discovering new opportunities, which makes for the uniqueness of the entrepreneurial function" (Schumpeter, 1949). Based on this description several other authors added other entrepreneurial characteristics. From literature it can be concluded that an entrepreneurs' most prevalent characteristics are: risk-taker, provider of capital (from own resources but also by attracting other resources), innovator and, a person

who identifies possibilities of profit making (Chell *et al.*, 1991; Wärneryd, 1988; Elfring, 1999). The entrepreneur is the individual responsible for the process of creating new value -an innovation and /or anew organisation- (Bruyat and Julien, 2001) and change (Audretsch, 2002).

According to Rudmann *et al.* (2008) In agriculture, entrepreneurship is particularly relevant because farmers need to find ways to adapt their businesses to the changing structural environment. Smit (2004) stated that the development of agri-entrepreneurship is one of the necessities for the agricultural development of a country which depends on the importation of food to meet the demand of a growing population.

According to many development practitioners, entrepreneurship is the driving force bringing innovations to the marketplace and establishing a community of high-growth firms therefore investing in entrepreneurial skill development is key. Muhammad and Nawawi (2007) also supports the role of training programs to make farmers become more creative, innovative, motivated and skillful. Benhabib and Spiegel (1994) found that countries that invest in human capital development are better positioned to identify new opportunities and to develop and adopt new technologies.

Methodology

The study was conducted in Apac and Kole district. A multi-stage sampling procedure was used to select farmers from Apac and Kole Districts for interviewing. A simple random sampling method was used for selecting the sampled population. A total of 600 smallholder famers including male and female were selected using random sampling as the sample size. The sample size of the project beneficiaries (Trained farmers) were 150 farmers and the control were 450 farmers. Each questionnaire was administered to the farmers in personal interviews. The questionnaire was pre-tested and adjusted to capture all the relevant data for analysis.

We determined the average treatment effect on the treated (ATT) farmers, that is, the causal effect of Entrepreneurial skill training on household income. For a given participant we have the *observed mean outcome under the condition of participating in the project* as $E(Y_1 | D = 1)$ and the unobserved (hypothetical) mean outcome that the participant would have realised had they not indeed participated in the project as $E(Y_0 | D = 1)$. Equally, for a given non-participant we have the observed mean outcome under the condition of non-participating in the project as $E(Y_0 | D = 0)$ and the unobserved (hypothetical) mean outcome that the non-participant would have realised had they indeed participated in the project as $E(Y_1 | D = 0)$. E is the expectation operator. Following Rosenbaum and Rubin (1983) and Caleindo and Kopeinig (2008), the parameter of interest in this study was the ATT and was given as

$$ATT = E(Y_1 - Y_0 | D = 1) = E(Y_1 | D = 1) - E(Y_0 | D = 1)$$

Our central interest of impact evaluation is not in $E(Y_0|D = 0)$, but in $E(Y_0|D = 1)$. Therefore, PSM uses balancing scores to extract, for comparison, the observed mean outcome of those non-participants who are most similar in observed characteristics to the participants, that is, it uses $E(Y_0|D = 0)$ to estimate the counterfactual, $E(Y_0|D = 1)$. In order for the true parameter to be estimated, we require that $E(Y_0|D = 1) - E(Y_0|D = 0) = 0$. This ensures that the ATT is free from self-selection bias. The causal effect of Entrepreneurial skill training on household income was analysed using propensity score matching method. The respondents were matched using Age, whether or not one belong to a farmer group and the Education level.

Research application

The matching showed people who are older and people with high education level have less chances of participating in the training while people who belong to farmer groups have high chance of participation (Table 1).

Table 1. Effect of Entrepreneurship training on smallholder's income.

Matching method	Trained	Non trained	Match from non-trained	ATT	Std.Err.	t- value
Nearest neighbor	150	450	143	380,000	32448.266	11.696**
Kernel matching	150	450	206	373,000	37435.068	8.761**
Stratified matching	150	459	206	373,000	41312.745	9.039**

Note: ** indicate significance at 5% levels.

Source: Authors' estimate from field survey data (March – June 2014).

The result indicates that a sample of 150 farmers trained in entrepreneurship were matched with 143 non-trained (control) out of 450 sampled farmers for control using nearest matching method as shown in the table above. The average treatment effect on treated (ATT) indicates that the real earning difference between trained (treated) and the non-trained (control) is 380,000Ushs (about US\$ 150). This means that the farmers who participated in the entrepreneurial skill training earn 380000Ushs more than the farmers who never participated.

Rosenboun bound sensitivity method was used to test the potential effects of unobservable factors. In order to analyse the hidden bias, a dummy variable was generated for income by taking the value above and below the median. The gamma was increased to 7 to see the potential effects of Entrepreneurship training. On testing the potential hidden bias on farmer's income, the result showed that the estimated effect is not sensitive to unobserved selection bias confirming the true impact of Entrepreneurial skill training program.

Recommendations

Findings from the study imply that farmers need a range of entrepreneurship training to increase their earnings from Agricultural production and it can be inferred from the study that entrepreneurship training should be scaled up to increase the productivity and income of smallholder farmers.

The positive results achieved by the entrepreneurship training indicate that similar kinds of projects by the government and other NGOs should be replicated or scaled-up to increase agricultural productivity in general and household income in particular.

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