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Socio-Economic Factors Influencing Farmers' participation in Demand driven extension services among small scale farmers: A Case of National agriculture and livestock extension programme (NALEP) In Moiben, Uasin Gishu County, Kenya

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Abstract

Demand-driven agriculture extension services emphasize the need to provide services that meet the needs and priorities of farmers. In Kenya demand driven extension services were implemented through National agriculture and livestock extension programme (NALEP) that started in the year 2000 and ended in December 2011. The programme generally aimed at providing efficient extension services for increased production, food security, higher incomes and improved environment. Though the programme targeted rural populations engaged in agriculture, with a specific focus on pro-poorness and non-discriminatory access to the program not all farmers in Moiben Sub County participated. The purpose of this study was to access socio-economic factors that influenced farmers' participation in NALEP among small scale farmers in Moiben, Uasin Gishu County. The study adopted descriptive survey method and the sampling frame comprised of respondents drawn from household heads, department of Agriculture extension officers and farmer representatives. Analysis of the study findings revealed that only age and level of education of the household head influenced farmers' decision to participate in NALEP programme. The study recommended that Uasin-Gishu County should sensitize the farmers on the importance of participating in extension programmes and invest on education in order to improve on literacy level that affects participation significantly.

Keywords: Demand-driven, agricultural modernization, adoption of innovations, agricultural extension, farmer participation.

1. Introduction

Agricultural extension encompasses the entire set of organizations that support and facilitate farmers engaged in agricultural production to solve problems and to obtain information, skills, and technologies to improve their livelihoods and well-being. It is considered to be an important service in increasing agricultural productivity and attaining sustainable development. Its role is to help people identify and address their needs and problems. There is a general consensus that extension services if successfully applied, should result in outcomes which include observable changes in attitudes and adoption of new technologies, and improved quality of life based on indicators such as health, education and housing. In recent years, many developing countries have reaffirmed the essential role that agricultural extension can play in agricultural development (Birner *et al.*, 2006 [4], Anderson & Feder 2007) [3]. This renewed interest in extension is linked to the rediscovery of the role that agriculture needs to play in reducing persistent rural poverty (World Bank, 2007) [28]. Negative experiences with extension in the past have sparked considerable debate worldwide about the best way to provide and finance agricultural extension. Many countries have recognized the need to revive agricultural extension services as a means of reaching marginalized, poor, and female farmers and addressing new challenges, such as environmental degradation and climate change.

In recognition of this, the Kenya Government in 1998 initiated the National Agricultural Extension Policy (NAEP) to strengthen agricultural extension and advocated for demand-driven extension services and participation of other players in the delivery system (Republic of Kenya, 2004) [25]. The policy was prepared to enhance both public and private sector providers of extension service.

This was an attempt to find a different path of adequately resolving the complex, systemic issues that faced rural communities. This shift was agitated by an increasing recognition of the

socio-economic and agro-ecological conditions of resource poor farmers as being complex, diverse and risk-prone. There was also a general realization that research and extension agencies did not have the capacity to generate a variety of technologies to the level required by farmers. Moreover, the diversity and complexity of rural livelihoods means that efforts to alleviate poverty in rural areas had to be multifaceted and holistic (Amudavi, 2003) [21]. NAEP served as the instrument by which the Ministry of Agriculture, Livestock and Fisheries facilitated extension under the National Agriculture and Livestock Extension Programme (NALEP) and the NALEP Implementation Framework (Republic of Kenya, 2004) [25]. In Moiben, the National Agriculture and Livestock Extension Programme was started in July 2000, and lasted until December 2011. The programme aimed at uplifting productivity, encouraging commercialization and enhancing resilience through the increased use of agricultural technologies and improved inputs, using demand driven and participatory agricultural extension approaches.

In Kenya agriculture accounts for 65 per cent of Kenya's total exports; provides more than 18 per cent of formal employment; accounts for more than 70 per cent of informal employment in the rural areas, and generally provides a livelihood for close to 80 per cent of the Kenyan population. Extension has however not lived up to its expected impact. (Republic of Kenya, 2011) [24]. Chambers (1993) [6] gave various reasons to explain this failure. In the 1950s and 1960s, the problem was said to be farmers' ignorance, apathy, inadequate social arrangements and lack of local leadership. In the 1970s, the problem was said to be farm level constraints such as lack of credit and poor access roads. In the late 1980s, the lack of participatory processes was identified as one of the primary causes of economic decline and social disintegration. In the 1990s, the failure was attributed to lack of technological 'fit' to the needs of the potential adopters. From year the 2000, it has been attributed to poor governance and lack of institutional innovations to ensure greater efficiency and accountability in the mobilization, organization and control of national resources.

NALEP incorporated a partnership concept that entailed participation of the various stakeholders in agricultural sector, a move that involved farmers directly in setting and fulfilling their own development goals. This made extension "demand driven", increased efficiency and put in place alternative funding procedures, promoting gender issues in extension and supporting efforts to curb environmental degradation.

2. Materials and Methods

The sampling frame for this study comprised of household heads, Ministry of Agriculture extension officers, Community Based Organizations (CBOs), and farmer representatives in Moiben Sub-County Uasin Gishu County. In order to ensure that representative samples are derived from each category of respondents a formula by Yamane; (1967) [30] was used to determine the sample size. The Sub-County was divided into 10 clusters according to locations. Simple random sampling was used to select 5 clusters (focal areas) and to get the required sample size in the cluster. Purposive sampling was also used to identify small scale farmers who were farmers with land of 10 acres and below because only small scale farmers were relevant to the study. 5 focal areas selected (clusters or locations) included Chepkoilel, Sergoit, Moibeki, Koitoror and Moiben. Questionnaires and interview schedules

were used to gather information relevant to this study. The study utilized descriptive and inferential analysis techniques. The sample size was determined from the formula proposed by Yamane cited by Isreal (2009) which state that:

$$n = N / (1 + N(e)^2)$$

Where n=sample size

N=target population size

e = level of precision (sampling error)

Therefore, N=26796 households and e=7%.

$$n = 26796 / (1 + 26796(0.07)^2)$$

$$= 26796 / 132$$

$$= 203 \text{ households}$$

3. Results and Discussions

3.1. Gender of the respondents

The respondents were asked to indicate their gender. Figure 1 summarizes the results obtained about the respondents' indications.

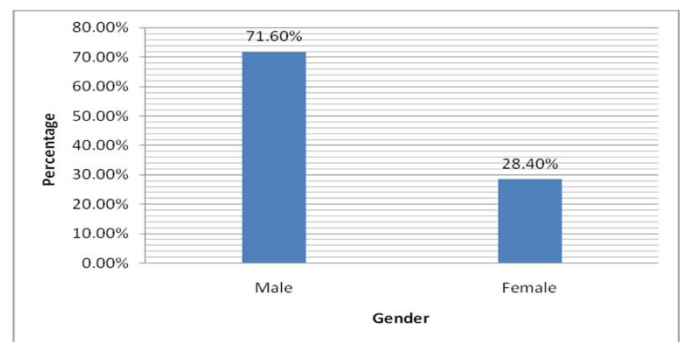


Fig 1: Gender of Household Heads

The study found out that 71.6% of the household heads were male while 28.4% were female. This shows that male headed households dominate the small scale farming community in Moiben Sub-County. The respondents were largely household heads, hence the large male representation.

3.2. Age of the Respondents

The respondents were asked to indicate their age in years as summarized in Figure.2.

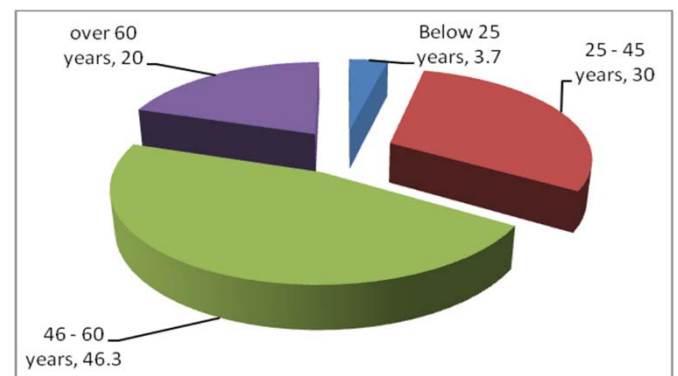


Fig 2: Age of household heads

The study findings indicated that most of the household heads in the study area were aged between 25-60 years with median age class of 46-60 years. In this study old age was operationalized as over 65 years old while younger farmers were less than 25 years old.

3.3. Level of education of the respondents

The respondents were asked to indicate the highest level of formal education that they had attained. The level of education of the respondents ranged from no formal education at all through primary education and secondary education to tertiary education as indicated in the findings shown in figure 3.

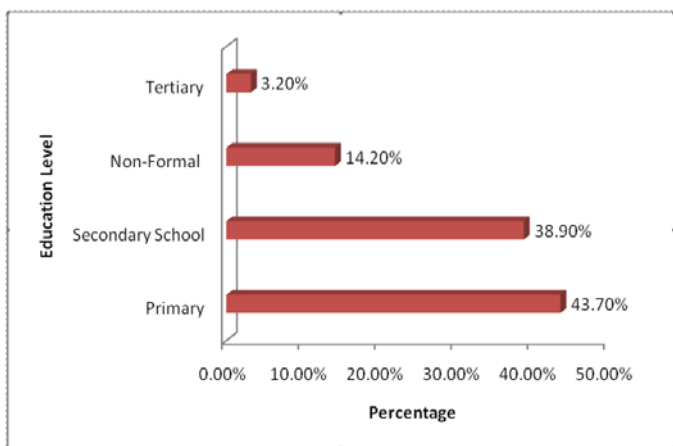


Fig 3: Education level of the respondents

Information gathered from the respondents indicated that, 57.9 % of the respondents had not proceeded beyond primary school education. Further analyses revealed that majority of the participants were those educated to secondary level and that 99% of those who went to secondary school participated in NALEP.

3.4. Family Size

The family size of the respondents included all the people living within that household. The respondents were asked to indicate the number of people living in their homes and their responses are summarized in Figure 4.

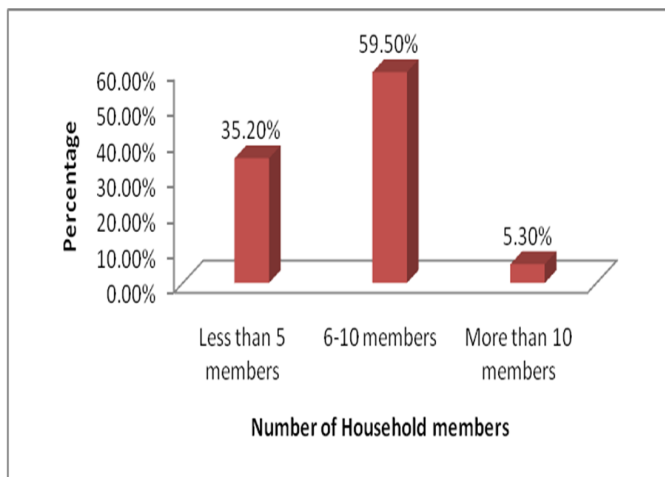


Fig 4: Number of household members

The figure reveals that 59.5% of the households in Moiben Sub-county had between 6 to 10 family members. Agriculture is labour intensive and therefore large households have adequate labour required during technology introduction.

3.5. Farm size

Land size owned by the individual households reflects access to land, an important production resource for increasing agricultural production. Results are shown in figure 5.

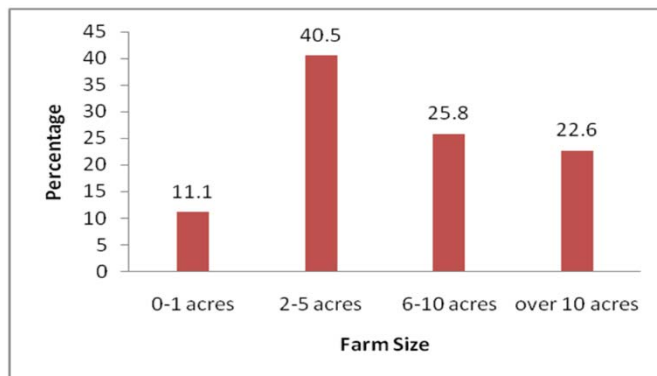


Fig 5: Respondents' farm size in acres

The study revealed that 51.6% of the respondents had farms of a maximum of 5 acres.

Land tenure system

On land tenure system, 70.5% of the respondents had land title deeds (private land) as shown in Table 1.

Table 1: Land tenure system in Moiben

Land Tenure System	Frequency (Farmers)	Percent (%)
Private	134	70.5
Communal	27	14.2
Trust Land	26	13.7
Leased	3	1.6
Total	190	100

The study findings suggests that majority of the small scale farmers had registered land which makes them more secure and can easily participate in a program of choice including NALEP. Security of tenure gives farmers the ability to secure credit by using the farm title deed as collateral and allows the farmer to invest on permanent soil conservation structures. The results were subjected to regression analysis with participation in NALEP programme being a dependent variable. Participation was reflected by farmers contact with extension officers. The results indicated that only age of the household head and the level of education of the household head were significant ($p \leq .05$). This is presented in Table 2.

Table 2: Logistic Regression Analysis of Socio-Economic Factors Influencing Farmers' Participation in NALEP Programme

Model	Std. Error	Standardized Coefficients	T	Sig.	
1	(Constant)		10.730	.000	
	Gender	.180	-.052	-.672	.502
	age of respondent	.053	-.416	-4.128	.000
	level of education	.039	-.197	-2.362	.019
	family size	.034	.068	.766	.445
	farm size	.026	-.158	-1.939	.054
		.026			

This shows that age and level of education influenced farmers' participation in NALEP programme. The findings are important as they show that other socio-economic characteristics (gender of household head, family size, and farm size) did not prevent farmer households from participating in NALEP.

Respondents' age increased their likelihood of participating in NALEP. The positive association on age and participation indicates that the older the respondent, the greater the chances of participating in an extension programme; this indicates that

the probability of participating in an extension programme is higher among older respondents than younger respondents. The average age of the respondents in this study was found to be 42 years and it indicates that the majority (76.3%) fell in the age bracket of 25 to 60 years old which meant that they were within the productive group and thus were able to participate in NALEP, thus age was not a limitation in Moiben. 49.3% of the respondents interviewed were in the age bracket of 46-60 years. According to Eldoret East development plan of 2008-2012, 53% of the population in Moiben was in the age bracket of 15-64 years. This according to the development plan was the active or economically active group and that at 65 years an individual becomes less productive and dependant. Most farmers in Moiben fell in the age bracket that is productive and with adequate experience in farming and are therefore in suitable position of deciding whether or not to participate in an extension programme.

This is consistent with research work done by Okunade (2007) [21] in a study of Nigerian women farmers who found a significant positive relationship between age and adoption of farm technologies. He concluded that the older the farmers were, the more their years of farming experience and hence the better the decision the farmer would make in adopting new technologies.

Cross- tab tabulation of the findings further revealed that 100% of respondents between the ages of 46 to 60 years and 89% those over 60 years participated in NALEP. It was also revealed that 99% of those educated to secondary school participated in NALEP as indicated in table 3.

Table 3: Cross-Tab Tabulation of Socio-Economic Characteristics Versus Nalep Participation (Within Groups)

Socio-economic Characteristics	Frequency (yes)	Frequency (total)	Percent age (%)
Gender			
Male	125	136	91
Female	45	54	83
Age (Years)			
Less than 25	0	7	0
25 -45	48	57	84
46 -60	88	88	100
Over 60	34	38	89
Education			
Non-formal	23	27	85
Primary	72	83	87
Secondary	73	74	99
Tertiary	2	6	33
Family Size			
Less than 5 members	64	67	96
6 -9 members	97	113	86
10 and above	9	10	90
Land Size (acres)			
0 -1	11	21	52
2-5	71	77	92
6-1	46	49	94
Over 10	42	43	98

Small scale farmers in Moiben Sub-County had the limitation of education because most of them (57.9%) never attended formal education or were educated up to primary school and therefore their participation in NALEP was limited. Further analyses revealed that majority of the participants were those educated to secondary level (38.9%) and that 99% of respondents in this category participated in NALEP.

Mignouna, *et al.* (2011) [20] established that level of education of the household head increases a farmer's ability to obtain,

process, and use information relevant to the adoption of new technologies. Therefore a more educated household head will be more interested in participating in an extension programme because he will be eager to obtain information on modern production technologies and try the technology. Further, education catalyses the process of information flow and leads persons to explore as wide as possible, different pathways of getting information about agriculture and food security (Ersado, 2001). Education increases the probability of joining an extension program.

The findings of this study revealed that respondents with low level of education were reluctant to participate in NALEP as a source of agricultural information which resulted to limitation of information flow among this group. Further analysis however revealed that only 33% of those educated to tertiary level and beyond participated in NALEP. This can be explained by the fact that the programme was too involving and this group of individuals was committed elsewhere while some went to look for white collar jobs.

According to the findings of the analysis, gender, family size, farm size and land tenure system tended to be less probable in influencing the decision of a farmer to participate in NALEP.

On gender, male headed households dominate the small scale farming community in Moiben Sub-County. The respondents were largely household heads, hence the large male representation. Therefore the researcher concluded that production in Moiben is expected to be higher as the men are the household heads and thus the decision makers which is in line with the culture of the indigenous community, the Nandi.

Family size was not significant because 59.5% of the households in Moiben Sub-county had large families of between 6 to 10 members. It is expected therefore; that a larger household size were affect positively the decision of adopting new technologies and therefore the urge to participate in NALEP programme. In this study family size was not a stumbling block for Moiben farmers to participating in NALEP because they had large families.

Most of the small scale farmers in Moiben Sub-County had farms of a maximum of 5 acres. These findings are in agreement with a study by Gitu (2004) [9] which observed that due to continued land fragmentations in Kenya, 89% of the households in the country are living in less than 7.5 acres of land. The results are also consistent with an internal impact assessment survey conducted by NALEP (2007) that indicated that 71.8% of famers involved in the programme owned between 1 to 5 acres of land, reflecting some success in targeting small scale farmers. The study findings suggests that a majority of the small scale farmers had registered land which makes them more secure and can easily participate in a programme of choice including NALEP.

In conclusion, the most limiting socio-economic characteristic on farmers' participation in Demand driven agriculture extension services among small scale farmers in Moiben Sub-County was low level of education.

4. Conclusions and Recommendations

4.1 Conclusions

Most of the small scale farmers in Moiben Sub-County were aware of the existence of NALEP through their contact with the local agricultural extension officers. Though NALEP was introduced in the whole sub-County some farmers did not participate in the programme. Analysis of the study findings revealed that only age and level of education of the household head were the socio-economic factors that influenced farmers' decision to participate in NALEP.

5. Recommendations

In order to facilitate farmers' participation in extension programmes and make extension services more efficient and effective in Moiben Sub-County and the entire Uasin-Gishu County, this study made the following recommendations:

- i) Interventions through mass media and awareness programmes should be introduced in order to sensitize and enlighten the entire community on the importance of participating in development programmes in order to improve farm productivity.
- ii) Uasin-Gishu County should invest in education in order to improve on level of education in Moiben which will facilitate farmers' participation in development programmes.
- iii) The County should consider employing more extension officers and improve rural road network in order to improve on the frequency of farmers contact with extension officers and enhance easy access to extension services.
- iv) For effective and efficient extension services Uasin-Gishu County should prioritize agriculture in its budgetary allocation.

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