

## **Human Resource Development in Agriculture Extension and Advisory Services in Kenya**

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**ABSTRACT:** Agriculture extension and advisory services is a multidisciplinary discipline based on human interaction seeking to improve the livelihoods of farming communities and individuals by providing information and technologies. The training of extension staff is important as it has a bearing on their effectiveness in the office and in the field. This study sought to determine the HRD activities in agricultural extension and advisory services in the public and private sector. The study was done in 5 counties in Kenya and a total of 440 agricultural extension agents were sampled from the public and private extension service. HRD activities focused on formal and in-service training. 68 % of the respondents had attended formal education to improve their education with the majority 63.5 percent, having trained at the diploma level from certificate level while 21.1 % had undergone training at the degree level from diploma level. The main areas of specialization were Agricultural education (34.1 %), General agriculture (28.1 %) and Horticulture (11.7 %). The inclusion of non-agricultural areas of specialization such as Sustainable development and Strategic planning and management show the multidisciplinary nature of agriculture. In-service courses attended were in the form of short courses, seminars, or workshops. These were clustered in five general areas; Crop Management, Management, Agricultural Economics, Agricultural Extension, and Animal Science. Most respondents (40.9 percent) had undergone training in Crop management which covered various crop enterprises from breeding to postharvest management. The shift of agricultural policy toward business orientation is reflected in 13.0 % the respondents specializing in Agricultural Economics. These HRD activities show commitment of agricultural extension providers to improve the competencies of their staff to deliver effective services to farmers. The wide range of formal and in-service courses attended also reflects the need to meet the management and technical requirements of a pluralistic and demand driven extension service.

**Keywords:** HRD, Extension service, Formal education, In-service training

### **INTRODUCTION**

The role of the agricultural sector in Kenya is of great importance because it directly influences the country's economic growth and will continue to feature prominently in the country's development agenda as a basis for food security, employment creation and foreign exchange generation (GoK, 2010). The sector also accounts for 65 percent of Kenya's total exports and provides more than 18 per cent of formal employment and over 70 percent of informal employment is in the rural

areas (GoK, 2010). Vision 2030 has identified agriculture as one of the key sectors to deliver the 10 per cent annual economic growth rate envisaged under the economic pillar. To achieve this growth, transforming smallholder agriculture from subsistence to an innovative, commercially oriented and modern agricultural sector is critical (GOK, 2010). The development of an efficient agricultural sector stimulates the national and rural economy by improving incomes, food security and living standards and this is the role of the national extension system (GOK, 2008).

### ***The Changing Context of Agricultural Extension Service in Kenya***

The extension system through the late 1990's has been plagued with poor management and diminishing funding resulting in inefficiency, ineffectiveness and non-delivery of services (Evenson and Mwabu, 2001; Republic of Kenya, 2001). This was as a result of the changing internal and external environments in agriculture and the Structural Adjustment Program (SAP) instituted by the World Bank and International Monetary Fund (IMF). This had a major impact on the organizational, institutional and manpower aspects of the national agricultural extension service. To reverse and revamp the negative trend in extension service delivery, the Ministry of Agriculture and Rural Development (MOARD) formulated the National Agricultural Extension Policy (NAEP) to guide implementation of appropriate actions under the National Agriculture and Livestock Extension Programme (NALEP). This led to a pluralistic extension model in which the government takes the role of a facilitator for many other groups involved in extension (McMillan, Husein & Sanders, 2001; Republic of Kenya, 2000; Republic of Kenya, 2001). The extension policy in Kenya was redefined further through the Strategy for Revitalizing Agriculture (SRA) as part of the Economic Recovery Strategy for Wealth and Employment Creation (ERSW&EC) with the objective of modernising agriculture, improving research and extension services, promoting partnerships, and accountability for efficient extension service. The move towards privatization, demand-driven, grass-root, bottom-up approaches and decentralization has focused planning, implementation and coordination of extension activities at the district, divisional level and local level initiatives. The district is the government's development planning unit where funds are disbursed and managed by the District Agricultural Officer (DAO) while the division is the implementation level (Republic of Kenya, 2001; MOARD, 2000). The DAO provide technical backup and staff training through subject matter specialists (SMS) to the divisional level staff who in-turn train Frontline Extension Staff (FEW) and Technical Assistants (TA). The responsibility for extension service therefore lies with the district and more heavily on the divisional teams.

The decentralization of extension service provision further emphasizes the need for extension staff to have additional skills, in technical areas, communication skills (written, oral, computer and internet use skills), leadership, management and personal skills at all management levels. Most extension workers have been trained as crop or livestock specialists and have little or no training in the social sciences; therefore, most are not trained in how to organize farmers into producer groups or other types of farmer organizations (Cho and Boland, 2004; Swanson, 2008). Buford, Bedeian, and Lindner, (1995) found that

agricultural agents need to possess relevant managerial behavioural dimensions that include oral communication, planning/organizing, leadership, decision making/judgment, initiative, objectivity, development of co-workers, perception, sensitivity, management control, collaborativeness, written communication, behavioural flexibility, organizational sensitivity, and assertiveness.

As a means of appropriate technology generation and dissemination to the farming community, agricultural extension facilitates this function. According to Van den Ban and Hawkins (1996) agriculture extension is a public service for HRD of workers in agribusiness sector, including farmers. However, the function of agricultural extension is not only seen as vehicle for spreading scientific and technical progress and technology transfer but aims at the holistic development of the people. An extension agent is not simply seen as a technical innovation motivator, but is gone beyond a human resource development leader to help in institution building and mobilization of resources in the community. The training of extension staff is important as it has a bearing on their effectiveness in the office and in the field (Rogers, 1996; Qamar, 1997). The competence and qualifications of staff determine the effectiveness of any agricultural extension service. Studies show that improvement in farmers' knowledge; skills, attitude, efficiency and productivity are positively correlated to the training level and quality of extension staff (Crowder, Lindley, Bruening & Doron, 1999; Rogers, 1996). This study was designed to identify Human Resource Development (HRD) activities in the agricultural extension service in Kenya in light of changing trends in agriculture production, extension strategies and cross-cutting issues that have implications on the way extension workers are trained. Identifying these trends will help design relevant courses and inform curriculum development in tertiary institutions to ensure that the curriculum addresses the needs of both the public and private extension service providers.

The work of extension is to broaden and strengthen peoples' knowledge and skills not only those related to production and commercialization but also those concerning daily life and consumption (Republic of Kenya, 1997). The changes and adaptations are necessary in agricultural education in order for it to more effectively contribute toward improved food security, sustainable agricultural production and rural development (Crowder et al., 1999). These changes must be reflected in the training program for extension staff. According to Rogers (1996), poor training of agricultural extension staff has been identified as part of the problem of the relative ineffectiveness of much of extension in the field. The study based on this premise, sought to identify training needs in order to develop agricultural undergraduate and in-service programs that meet these challenges of working in pluralistic extension system.

### ***Human Resource Development in Agriculture***

Human Resource Development is an important factor in capacity building and improving the overall efficiency of functionaries involved in implementation, monitoring, evaluation, research and extension programmes. Training is a major component of Human Resource Development. Systematic training, planning, management and its implementation by making best utilization of resources available within the country helps in bringing about desirable changes in knowledge and upgrade skills of extension functionaries associated with the process of agriculture development. The importance of training in capacity building of extension experts is key in strengthening of extension services and dissemination of agricultural technology to the farming community. The basic assumption underlying HRD is that most people joining organization have inherent desires to continuously improve the quality of their lives to learn more and to be better performers in future. To meet these expectations, the organization needs to adopt positive practices and to bridge the possible gaps on a continuous basis

#### ***Training of Extension Staff***

The training of extension staff is of three types.

- a) Pre-service training: Training received prior to employment.
- b) Induction training which the staff receives immediately upon joining an extension organization.
- c) In-service or on-the-job training that extension staff are expected to receive from time to time during the course of their employment. (Qamar, 1997).

This paper focuses on the professional development of agricultural extension staff in Kenya from two perspectives. The first is formal higher education to improve basic qualifications and secondly in-service training that is work related. In-service training can be on or off the job training.

#### ***Pre-Service Education and Revitalization in Agricultural Universities***

Good pre-service training enables individuals enter into service with confidence, competence and motivation and need relatively less induction and lengthy in-service training, leading to savings in terms of time, energy and cost. This consequently, results in improved performance and output of extension organization due to better contribution of individual employees from the very beginning (Qamar, 1997). There have been initiatives to develop responsive training program for the revitalization of the agricultural extension profession in sub-Saharan Africa under the Sasakawa Africa Fund for Extension Education (SAFE) in 1993 at the University of Cape Coast in Ghana and in 1997 at Alemaya University of Agriculture in Ethiopia. The main focus of SAFE was the training of mid-career extension staff working with

ministries of agriculture and NGOs engaged in agricultural and rural development and involved revitalization of the agricultural extension by upgrading experienced mid-career extension staff to earn a BSc degree in agricultural extension. The institutions were helped to increase their flexibility, develop client-driven training program, acquire relevant core instructional materials, forge partnerships and linkages and mobilize internal resources both human and financial to sustain their program (Crowder et. al, 1999). The study sought to determine HRD activities toward upgrading extension staff in formal education programs. These are significant investments by employers in capacity building of agricultural extension staff as most diploma, degree and postgraduate programs take between 2 to 4 years and are often off-the-job.

#### ***In-Service Training***

In-service education has been defined as education delivered in a structured setting that enables one to become more competent professionally (Reid et al., 1992). In-service education program should provide extension field staff with opportunities for learning about new ideas, advancements in technology and address current extension concepts, environmental and conservation issues, improved production patterns, modern cultural and pest management practices and market options (Crowder, 1996; Lindley, 1999). The potential of in-service training is far reaching if it is well planned as a supplement to pre-service education that has correctly done its job because time, personnel, and financial resources for in-service training are limited. Lindley (1999) found that in-service education was being used to make up for what should have been learned at the pre-service level and that the available time to learn about new things is reduced and the value of in-service training is diminished. A training needs assessment done for agricultural and natural resources sector (Republic of Kenya, 1992) found that agricultural agents specialize too early, lacked industrial exposure and were unable to serve multi-production oriented farming in diverse agro-ecological zones therefore employers have to invest further in them before they could be of use. Most donor-funded projects with an extension component have in-service training as a major activity and substantial funds while almost no attention is being paid to the pre-service education of field-level extension staff (Lindley, 1999; Crowder et al., 1999). This has become a mechanism that is being used to treat the symptoms instead of the root problem. Donor funded extension projects rarely include the review and revision of pre-service curricula as a part of a comprehensive approach to improving field-level extension work in Africa (Rogers, 1996). Reid et al. (1992) considers the training costing, establishment of training standards and whether training program have been based on identified needs important in investigating existing training program and in planning for training. The study explored these factors of in-service training to

determine level of training need and relevance. This will avoid endless rounds of in-service training offered to make up for what should have been learned at the pre-service and on the job training that tends to be specific reducing labour mobility and flexibility (Republic of Kenya, 1997). This formed the premise of the study to determine prevalent technical knowledge and process skill training.

### **Objectives and Research Questions**

The purpose of this study was to identify Human Resource Development (HRD) strategies in agricultural extension in public and private extension organizations in Kenya. The following questions guided the study.

### **Specific Objectives**

- d) Identify the type formal educational programs undertaken by extension agents?
- e) Identify the type of in-service programs undertaken by extension agents?

### **Research Questions**

1. What formal educational programs do agricultural extension agents undergo?
2. What type of in-service programs do agricultural extension agents attend?

### **Population and Sampling**

The total number of extension staff in the target population was 7,318 under the national extension system. Extension agents from the Ministry of Agriculture were

5,100 while those from the Ministry of Livestock were 2,218 (MOA, 2008; MOLD, 2008). However, since the total number of extension staff in the accessible districts was 705 a proposed sample size of 255 was obtained from sample size table published by Israel (1992) at a confidence level of 95 per cent and  $\alpha = 0.05$ . The study involved multistage sampling; first through purposive sampling of nine districts and private extension organizations. The following counties were used in the study and formed the accessible population; Machakos, Bungoma, Trans-Nzoia, Uasin-Gishu, Elgeyo-Maraket, and Kilifi drawn from four provinces as shown in Table 1. These counties and private extension organizations are in different agro-ecological zones with diverse agricultural activities. This ensured that the study captured the different challenges facing extension workers. Secondly, sampling of extension staff under the Ministry of Agriculture (MoA) and the Ministry of Livestock Development (MoLDF) was done using proportional stratified random sampling. This technique ensured that all subgroups in the population are represented (Borg & Gall, 1989; Wiersma, 1995). Proportional allocation was then used to select extension agents in the two categories (FEW and SMS). This was to avoid any bias towards FEW's training needs and to enable reasonable comparison. A total of 440 extension agents were sampled; 325 from the public sector and 115 from the private extension service. Extension workers in the study had a minimum diploma in an agricultural related discipline.

Table 1. Distribution of extension agents by county and extension organization

County	Population	Number of respondents	Percent
Trans Nzoia	119	61	13.9
Uasin Gishu	120	33	7.5
Keiyo/Maraket	67	29	6.5
Kilifi	106	55	12.5
Machakos	119	74	16.9
Bungoma	174	83	16.6
Farming Systems Kenya (FSK)	Accessible	6	1.4
Kericho (TRF)	Accessible	14	3.2
KARI Kitale	Accessible	10	2.3
KARI Katumani	Accessible	12	2.7
Meru (BAT)	Accessible	3	0.7
Mumias (MSC)	Accessible	56	12.7
Total		440	100.0

## **MATERIAL AND METHODS**

The data was collected using a questionnaire based on the survey research design. The questionnaire was designed to collect demographic data of the respondents

and solicit information on formal education and in-service training the extension agents had undergone. Each section had additional open-ended questions soliciting further views in the various items. The items were developed from a synthesis of the researcher's experience and from a

review of relevant literature in agricultural extension. The data collected was analyzed using descriptive and inferential statistics to explain the results of the study. Descriptive statistics including means, standard deviations, frequencies and percentages were used to summarize data from the objectives.

## RESULTS AND DISCUSSION

A summary of the respondents' demographic characteristics is presented in Table 2. The public run extension service under the Ministry of Agriculture and the Ministry of Livestock Development accounted for 325 of the respondents while 115 respondents were employed in privately run extension service; research institutions, NGO's and agro-based companies.

Subject Matter Specialists (SMS) had a minimum professional qualification of a degree in an agricultural related discipline and constituted 38.4 percent ( $n = 169$ ). The highest level of qualification was at PhD level ( $n = 4$ ) and Masters level ( $n = 37$ ). The large number of diploma holders, 61.6 percent, presents a potential for in-service training to upgrade their qualifications. It was predetermined that the lowest cadre of extension staff would be diploma holders. This group constituted 61.6 percent of the respondents and were categorised as front line workers (FEW). Subject Matter Specialists (SMS) had a minimum of a degree in an agricultural discipline and constituted 29.1 percent. Those with higher qualifications and work in administrative and supervisory posts constituted 9.3 percent of the respondents. This indicates the high level of qualified personnel in agricultural extension that could be attributed to employers' commitment to professional development (MoA, 2010). The high number of diploma holders indicates a potential for further training. Swanson et al. (1990) proposed a functional ratio of FEW to SMS to be approximately 1 to 4-5, or about 20% of SMSs with at least an M.Sc. degree, or equivalent training, and extensive field experience. The findings compare favourably compared with Thailand and Trinidad where the SMS: field extension agent ratio is (1:8), Nigeria (1:27) and Syria (1:68) (FAO, 1996). Contrary to these findings, Oladele and Mabe (2010) reported that in South Africa 87.5% of the respondents had a diploma as the highest educational qualification. The majority of extension staff were in their mid career stage as indicated by a mean age of 42.21 years ( $SD = 8.124$ ). The number of years worked ranged from less than one year to 34 years with a mean of 16.13 years ( $SD = 9.289$ ). The respondents had hardly changed employment (Mean = 0.62;  $SD = 1.268$ ) and could be attributed to depressed employment opportunities in the agricultural sector and loyalty to their respective employers.

Women constituted 29.5 percent of the respondents. In public sector it is envisioned that women form 30 percent of the wage labour (MOA, 2008). This compares

favourably with the Kenya government statistics that indicate that female workers constitute 30% of the overall wage employment and they have the highest representation in educational services employment (45%) (Economic Survey, 2007). Oladele and Mabe (2010) in a study in South Africa reported that the 82.5% of the respondents were male. The trend of the results agrees with Saito and Weidemen (1990) that extension profession is male dominated in Africa.

This could also be attributed to efforts in gender mainstreaming in agriculture by the Ministry of Agriculture in line with Government policy. The results compares favourably with Thailand, Trinidad and Nigeria where it was estimated that about 28 %, 31 % and 22% respectively, of field extension staff were female (FAO, 1996). There is recognition of the role female agriculturalists play in agriculture because customs and traditions in Africa often mean that women farmers are less likely to communicate adequately with male agricultural staff than with female staff, therefore increasing the numbers of female graduates employed in the agricultural organizations is vital to addressing the fundamental gender constraints of agricultural systems (Ekwamu et.al., 2009).

### *Respondents education and training*

To differentiate between in-service training and education, respondents were first asked to indicate if they had attended higher education to improve their education and this was followed with a question on in-service training. The results are presented in the following subsections.

### *Higher education attended by respondents*

Table 3 presents the findings of the higher education attended by the respondents'. Of the total number of respondents ( $n = 440$ ), 68 percent had attended formal education to improve their education with the majority 63.5 percent, having trained at the diploma level from certificate level. This is in line with the Ministry of Agriculture policy to face out extension agents with certificate qualification and to have better qualified staff at the farmer/extension service interface. 21.1 percent of the respondents had undergone training at the degree level from diploma level. This reflects the commitment of the extension service providers to improve the quality and competencies of their staff to deliver effective services to farmers. The main areas of specialization were Agricultural education (34.1 %), General agriculture (28.1 %) and Horticulture (11.7 %).

Of interest is the inclusion of non-agricultural areas of specialization such as Sustainable development and Strategic planning and management that are important to effective design, implementation and management of extension service. Hoag (2005) argued that Extension's survival depends on addressing new societal problems and

reaching new audiences in a timely fashion. Agricultural extension is required to cope with the increasingly technological and specialized nature of farm production problems and extension agent specialization is expected to increase credibility with commercial farmers and extension service productivity via specialization (Ahmed & Morse, (2010); Hoag, (2005)).

#### ***In-service courses attended by respondents***

A majority of the respondents had attended in-service training, accounting for 88.9 percent (n = 390) of the respondents had attended in-service programs and of these, local training accounted for 73.2 percent while the rest attended regional and international training. A wide range of in-service courses was attended by the respondents. In-service training is designed to meet job requirements and improve competencies that have direct impact on work performance. Table 4 presents the respondents in-service courses attended. These were clustered in five general areas; Crop Management, Management, Agricultural Economics, Agricultural Extension, and Animal Science. Most respondents (40.9 %) had undergone training in Crop management and covered various crop enterprises from breeding to postharvest management. Details of the courses under each cluster are presented in Annex A.

Ango et.al. (2011) and Cho and Boland (2004) found that majority of the extension personnel were trained in

agronomy of food and cash crops in Nigeria and Myanmar respectively. Training in Agricultural Extension and Management was undertaken by 21.0 percent and 10.0 percent respectively, of the respondents indicating their importance in extension service delivery. The shift in policy from subsistence towards a business orientation is reflected in 13.0 percent of the respondents undertaking courses in Agricultural Economics. Training in specialist areas such as Statistical data analysis, Environmental conservation, Food safety and quality management, Food security, Agro-forestry and Soil and water conservation was undertaken by 13.0 percent of the respondents. Ahmed and Morse (2010) in a study of Minnesota county agents found that agent specialization had allowed them to focus on their area of expertise, develop and deliver relevant high-quality extension programs. The effectiveness of the extension agents determines the success or failure of an extension program and depends on their ability to address new needs and opportunities, and yet be flexible enough to react promptly and creatively to problems. Lack of integrated training that addresses immediate problems has resulted in ad-hoc stopgap trainings and organizations should adopt systematic development training (Gooderham & Lund, 1992). This can be done through an effective in-service training program that supports knowledge based extension service (Riviera & Alex, 2008).

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Meru (BAT)	Accessible	3	0.7
Mumias (MSC)	Accessible	56	12.7
Total		440	100.0

Table 2. Demographic Characteristics of Respondents

Demographic Characteristic	Frequency	Percent
Extension Organization		
Public service	325	73.9
Private	115	26.1
Research institutions	50	11.3
NGO	6	1.4
Agro-based industry	59	13.4
Total	440	100.0

Category of respondent			
FEW SMS	Diploma	271	61.6
		169	38.4
	Degree	128	29.1
	Masters	37	8.4
	PhD	4	0.9
Total		440	100.0
Gender	Male	310	70.5
	Female	130	29.5
	Total	440	100.0
Age	< 30	40	9.1
	31-40	105	23.9
	41-50	254	57.7
	51-60	41	9.3
	Total	440	100.0

FEW: Frontline extension workers

SMS: Subject Matter Specialist

Table 3. Respondents Higher Education and Area of Specialization

Education	Frequency	Percent
Attended formal education to improve qualifications		
Yes	299	68.0
No	141	32.0
Total	440	100.0
Level of formal institutionalized education		
Certificate to diploma	190	63.5
Diploma to degree	63	21.1
Degree to masters	41	13.7
Masters to PhD	5	1.7
Total	299	100.0
Areas of Specialization		
Agricultural education	102	34.1
General agriculture	84	28.1
Horticulture	35	11.7
Soil science	23	7.7
Agricultural engineering	18	6.0
Agriculture and home economics	17	5.7
Sustainable development	11	3.7
Strategic planning and management	9	3.0
Total	299	100.0

Table 4. Summary of Respondents In-Service Courses Attended

Course area	Frequency	Percent
Crop Management	160	40.9
Management	38	10.0
Agricultural Economics	50	13.0
Agricultural Extension	82	21.0
Animal Science	11	3.6
Others	50	13.0
TOTAL	390	100.0

## CONCLUSION

The findings of the study demonstrate the commitment of agricultural extension organizations toward improving the competencies of extension agents on and off-the-job to deliver effective services to farmers. The wide range of formal and in-service courses attended

reflects the need to meet the management and technical requirements of a pluralistic and demand driven extension service (GOK, 2010). The diversity of in-service courses could be an indicator of gaps in the formal curriculum and contemporary issues in agricultural extension that need to be addressed at the pre-service level. The role of the extension agents therefore emerges as knowledge workers

who would give advisory and consultancy services to the target groups. Extension agent specialization included non-agricultural areas of specialization such as Sustainable development, value addition, food security, strategic planning, agro-forestry and management and these cross-cutting areas should be incorporated in the design of curricula. Most of the non-technical training focused on agricultural extension and management and is therefore recommended that these courses be incorporated in agricultural undergraduate and diploma courses.

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