



The Strategic  
**JOURNAL of Business & Change**  
MANAGEMENT

ISSN 2312-9492 (Online), ISSN 2414-8970 (Print)



[www.strategicjournals.com](http://www.strategicjournals.com)

Volume 5, Issue 2, Article 44

**EFFECTS OF FUNDING FARMERS' SPECIAL PROJECTS IN KITUI, KENYA. A CASE STUDY OF KENYA FOREST SERVICE**

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**Accepted: May 1, 2018**

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**ABSTRACT**

*This study explored the effects of funding farmers' special projects in Kenya. The specific objectives of the study were; farmers training, project investment, farmers welfare and empowerment. This study adopted a mixed research design approach of exploratory, descriptive and quantitative. All the independent variables were anchored on relevant theories under this study. The target population for this study was 189 key officials from the 63 Farmer Field School projects in Kitui County. The study used a census survey to all FFS projects within the county under the study. Sampling techniques were used in this census to technically pick three key people who were assumed to be relevant to this study, since they are involved in one way or the other in decision making on FFS projects. The entire variables in this study were anchored on theories. The Data was collected with the help of instruments which was both structured and semi-structured. Data consisted of both primary and secondary data. Pilot test was done to the instruments to disclose their reliability and validity before the actual collection of data. Data was analyzed with the help of Statistical Package for Social Sciences (SPSS) version 21 and the findings of the study were presented in form of pie charts, graphs, tables and figures. The study found out that training, project investment, welfare of farmers and empowerment had a positive effect on the funding of farmers' special projects in Kitui, Kenya. The study therefore recommended that farmers should be encouraged to take loans as this has a great impact in their welfare and the projects should be introduced in other counties throughout Kenya.*

**Key Terms:** *Farmers Training, Project Investment, Farmers Welfare, Empowerment*

## INTRODUCTION

The term 'farmer field school' was first used in Indonesia in 1990 Van Rijn, Burger & Den Belder (2010) to refer to gatherings of farmers on a weekly basis throughout a cropping season to observe, analyze and develop their knowledge of field processes in order to make locally responsive field management decisions together. Developed in the late 1980s by the United Nations Food and Agriculture Organization (FAO), the Farmer Field School approach was first applied in Indonesia to reach large numbers of farmers with basic scientific knowledge in pest management. The FFS approach now brings together concepts, methods, and techniques from a variety of fields to help farmers around the world learn new techniques, make informed decisions, and solve local problems. The Project also trained a single gender-based group to produce chocolate (Waarts, Ge, Ton, & Jansen, 2012). The women were members of a cooperative, which is also a beneficiary of the Project. However, a supervision visit discovered that the cooperative's board of directors had replaced the women and were using the funds to produce chocolate without the women's participation. The implementing agency and the Bank advised the cooperative to rectify these actions or it would be ineligible for more funds (Vel, Creed & Narayan, 2012). This situation has been resolved. The Project also created mixed-gender groups. The working question is to what extent men allow equal participation and to what extent women are ready to take such roles. Although results vary, tentative findings suggest that men if involved will also do better in the FFS projects. The FFS approach emerged out of a concrete, immediate problem. Farmers in Indonesia were putting their crops, their health and their environment at severe risk through massive abuse of highly toxic pesticides promoted aggressively by private industry and government (Wijesinghe, Ten,

& Foreman, 2012). Pest species were becoming resistant and in some cases resurgent. What was called for was a large-scale decentralized programme of education for farmers wherein they become "experts" in managing the ecology of their fields bringing better yields, fewer problems, increased profits and less risk to their health and environment. The Integrated Pest Management Farmer Field School (IPM-FFS) and a corresponding large-scale Indonesian programme were developed in response to these conditions (Vel *et al.*, 2012).

Quality is one of the important aspects of all projects. The level of success of construction projects greatly depends on the quality performance. The Pakistan construction sector is facing quality related issues, which lead to ineffective and inefficient projects in terms of cost of overrun, delays and excessive rework. The major factors are client, effective project management, building effective construction team, and environment in which project is conducting. The findings of (Waarts *et al.*, 2012), shows that continuous improvement, training of employees, effective communication, and building an effective project team are the factors affecting quality. The quality problems are due to management, improper planning, carelessness, lack of training and improper use of materials.

There major problems with quality performance in the Malaysian FFS project Industry. These problems are lack of technical person availability, lack of awareness about quality management system, and lack of training workers. According to Wijesinghe, Ten, & Foreman (2012), discuss the factors that can improve the quality of construction projects. These factors are correct estimation of cost, implementation of ISO 9000, effective utilization of resources, implementing new technologies, proper planning and improving quality control system. For good performance in quality of construction

projects, the following factors are necessary, joint working, mutual objective, no blame culture, introducing quality assurance methods, effective management team of contractors, no enforcement of bureaucracy and politics. Quality problems occur due to lack of continuous improvement in process, and internal auditing problems. Lack of trust with supplier, poor training system and communication gap among project participants are factor contributing to poor quality performance (Yorobe, Rejesus, & Hamming, 2011). The FFS approach is an innovative, participatory and interactive learning approach that emphasizes problem solving and discovery based learning. FFS aims to build farmers' capacity to analyze their production systems, identify problems, test possible solutions, and eventually encourage the participants to adopt the practices most suitable to their farming systems (Vel *et al.*, 2012). FFS can also provide an opportunity for farmers to practice and test/evaluate sustainable land use technologies, and introduce new technologies through comparing their conventional technologies developed with their own tradition and culture.

FFS is usually a time bound activity involving a group of commonly 20 to 30 farmers. It is facilitated by extension staff or increasingly by farmer facilitators (FFs). The method emphasizes group observation, discussion, analysis, presentation, and collective decision making and actions. The basic component of FFS is setting up of a Participatory Comparative Experiment (PCE), commonly referred to as Participatory Technology Development (PTD), whereby the farmers put the FFS concept into practice. A PCE can be developed using subjects of agriculture, livestock, forestry, agroforestry, livelihoods and others (Waarts *et al.*, 2012). Presentation of PCE findings by participants is a key activity in the FFS's learning process. It encourages participants to present their findings, experiences

and knowledge in front of other FFS members while defending their opinions on findings and decisions made. Such process builds self-confidence, particularly for women, poor household members, or minority group members. Since the late 1980s, support to agriculture has moved from top-down agricultural extension towards more participatory approaches which better suit smallholders. One such approach is the Farmer Field School (FFS), an adult education intervention which uses intensive discovery-based learning to promote skills. Although an estimated 12 million farmers have been trained by FFS in over 90 countries across Asia, Africa and Latin America, the effectiveness of this approach has long been a subject of debate.

In developing countries, FFS was first introduced on a large scale in rice production in Indonesia (Vel *et al.*, 2012). It is there where a new training concept, the so-called Farmer Field Schools (FFS) was used as a tool to improve farmers' knowledge and empower them to make more informed decisions on pest control. FFS has also been introduced into African agriculture with the expectation that it could raise agricultural productivity and thus contribute to poverty reduction (Yorobe *et al.*, 2011). Numerous studies have been carried out to examine the economic impact of the FFS on pesticide use and yield. Other studies looked at the diffusion of the concept and found that without intensive and good quality training the FFS approach will not spread from farmer to farmer by itself (Vel *et al.*, 2012). On the other hand, it was well established that FFS is successful in improving farmer knowledge and can help farmers to reduce pesticide use (Waarts *et al.*, 2012).

Farmer Field Schools were first developed in Indonesia and other South East Asian countries in the late 80's early 90's, focusing particularly on Integrated Pest Management, and can be considered as part of "farmer-led" and "group-

based” extension approaches (Yorobe *et al.*, 2011). The term comes from the Indonesian words "Sekolah Lapangan", which simply means “Field School” (Waarts *et al.*, 2012). Vel *et al.* (2012) mentioned that between 1990 and end of 1999 over two million rice farmers from Asia participated in Farmer Field Schools. In Africa this movement was introduced in 1995, in Ghana, through the efforts of the FAO Global IPM Facility, and after that in Mali (1997) and other countries in the Eastern and Southern parts of the continent.

Ethiopians traditionally organize themselves to do certain things; traditional insurance schemes and savings association are the most common of such customary institutions. All the farmer field school initiatives covered here use them as an essential first step in the mobilization and animation process. This generates the initial trust needed to animate people to initiate their own development. But the farmer field school initiatives do not necessarily aim to empower the traditional institutions *per se*; the traditional institutions may not be democratic or desirable, and they may not have a place in the government’s long-term development strategy (Van Rijn, Burger & Den Belder, 2010).

The farmer field school approach was introduced on a small scale in Kenya in 1995 by the FAO special program for food security, of which Kenya was one of 15 piloting in the countries. Five Ministry of Agriculture and Livestock Development extension workers attended a six months’ training on the farmer field school approach in the Philippines to build up the national capacity in this approach (Waarts *et al.*, 2012). The farmer field school approach was developed in Asia for small-scale rice farmers to learn integrated pest management practices. Although efforts had been made to apply the approach to other farming situations, the experience was still quite limited outside rice and integrated pest management. Bringing the

approach to Kenya required a range of adaptations to make it applicable for African farming systems, where a wide diversity of crops are grown and pests are not necessarily the major production problem (Troy University, 2013). Kenya has also experienced some challenge on the areas of farmer field schools projects: land- and water-related constraints, long distances between farming communities, limited national funding for extension, unpredictable weather and frequent droughts. A couple of years later, several new farmer field school initiatives were initiated and the approach expanded and modified to cover new topics. The UNDP-funded Promoting Farmer Innovation Farmer Field School project, starting in 2001, included farmer field schools on such diverse topics as bee keeping and soil management (Todo & Takahashi, 2011). At about the same time the International Livestock Research Institute also initiated a livestock field school project to adapt the methodology to health and production issues of smallholder dairy production. In Central Kenya an FAO funded initiative focused on export vegetable production, and a Kenya Agricultural Research Institute (KARI) legume network pilot project attempted to scale up soil fertility management technologies. In Eastern and Central Kenya, KARI, ETC-East Africa and LEI-WUR also initiated integrated soil nutrient management activities (Troy University, 2013).

### **Statement of the Problem**

Funding of Farmer Field School project is a subject that has become topical in academic literature. According to Sarkis (2012), interest is mirrored by the increasing attention in the funding of farmer field school project by governments and World Bank around the world to minimize their impact on community livelihood. Despite this increasing popularity, there are still several areas of farmer field school project (FFS) that require further research studies particularly as effects of funding

farmer field schools projects under Kenya Forest Service (KFS) in Kenya. Funding of Farmers' special project has been identified as a key issue of sustainable community livelihood (Colauto & Barros, 2013). Therefore this study sought to examine the effects of funding farmers' special projects under Kenya Forest Service in Kenyan context and this was in line with the findings of (Large & Thomsen, 2011), who had done research on farmer field schools project in Bungoma county and recommended a further studies in other counties.

Despite the afore-mentioned study, the available studies have only focused on farmer field project aspects but none of them touched on the effects of funding of farmer field school project in Kitui County in Kenya. This prompted a study to be done in this area of FFS projects in order to validate whether there is any significance with the existing literature. Noteworthy was that the available studies were from outside the county hence, the need to do a research in the Kenyan context and compare the findings with other studies from other counties in Kenya.

The findings from this study established the existing gap, which filled the new knowledge gained, so as to be used by policy makers, academicians and Government agencies for best practices during discussions and prudent decisions related to FFS projects in future. This will enhance performance of the FFS project (Colauto & Barros, 2013). This study therefore seeks to explore what past scholars have said on the effects of funding FFS project and test viability of best project practices and its long-run relationship to the improvement of community livelihoods in Kitui County. The study sought to fill the existing gap after establishing the real cause of the problem in the farmer field schools projects in Kitui County.

## **Objectives of the Study**

The general objective of this study was to establish the effects of funding of farmers' special projects in Kenya. The specific objectives were:-

- To determine how training influences funding of farmer field schools project in Kenya.
- To find out how project investment influences funding of farmer field schools projects in Kenya.
- To establish the effect of farmers welfare on funding of farmer field schools projects in Kenya.
- How empowerment influenced funding of farmer field schools projects in Kenya.

## **LITERATURE REVIEW**

### **Theoretical Review**

### **Theory of Change**

Theory of change is considered to be relevant in understanding the effect of training of farmers on influence of funding of farmer field schools projects in Kenya and hence provides the theoretical background for this study. According to (Ajani & Onwubuya, 2010), farmer field school programmes aim to provide skills to improve agricultural, health and environmental outcomes, and empower farmers. Achieving these outcomes means training suitable facilitators, targeting appropriate farmers to attend the full training schedule and undertaking activities to promote dissemination and diffusion. Participants should gain knowledge and adopt new practices, which in turn should increase yields. The policy environment should be conducive to impacts being achieved, which means input prices and other incentives should not discourage farmers from adopting FFS-promoted practices. Where production is for market, there should be

reasonable market access (Achonga, Lagat & Akuja, 2011).

### **Theory of Investment**

Theory of investment is considered to be relevant in understanding the effects of project investment on funding farmer field schools projects in Kenya and hence provides the theoretical background for this study. According to Camargo (2011), economic theory can give a reasonably good account of how the level of investment activity influences effective demand and employment. If only we knew more about the determinants of investment! But, unfortunately, our knowledge in this direction is still very meager. One might well ask, what is wrong with the theory of investment? Or, perhaps, what is wrong with the subject matter itself! For one thing, this variable-the pivot of modern macroeconomics-has apparently lived a somewhat nomadic life among the various chapters of economic theory. Perhaps it has not stayed long enough in anyone place. Perhaps it has been ill-treated (Davis, 2009).

The first of these notions of investment is the transfer of a certain amount of wealth from one ownership, or employment, to another. In a closed economy it may be possible for single individuals or firms to carry out such "spot investment" operations. But for the economy as a whole it is obviously not possible to make any total net addition to any kind of capital equipment in this manner. In modern terminology the total net investment resulting from such operations is zero. The second classical notion of investment is derived from the idea of capital as a revolving stock. If each capital item has a certain durability, or service life, a certain replacement per unit of time is required to maintain the total stock. A part of gross current output must be "invested" each year in order to keep the stock of capital constant (Farquhar, 2012).

It is extremely important to be aware of this use of investment in the sense of replacement, such as when we consider older theories of the connection between investment and the rate of interest. The "classical" ideas on this point bear no direct relation to the "investment schedules" found in modern macro theories of the Keynesian type. The "classical" reasoning is simply this: Assume that, at a lower rate of interest, it becomes profitable to apply more capital. When this larger amount of capital is somehow accumulated, it will require a larger annual rate of replacement. Consequently, if we compare various stationary conditions, each corresponding to a particular rate of interest, the annual gross investment such as replacement will be the larger the lower is the rate of interest.

This also means that a desire for more capital in any particular circumstance is, implicitly, the same as a desire for a higher rate of gross investment such as replacement. None of this has to do with the dynamic process of increasing (or decreasing) the amount of capital. In particular, the speed of transition from one amount of capital to another (i.e., net investment) is a question of an entirely different nature, as far as economic behavior is concerned. Wick sell for one, is absolutely clear on this point. His theory of the relation between capital and interest is a theory concerning alternative, stationary amounts of capital (Hill & Jones, 2010).

### **Welfare Theory**

Welfare theory is considered to be relevant in understanding the effect of farmers' welfare on funding farmers' field schools projects in Kenya and hence provides the theoretical background for this study. According to Ali & Sharif (2012), it is reasonable to say that Adam Smith (1776) has played an important role in the development of welfare theory. The reasons are at least two. In the first place, he created the invisible hand idea that is

one of the most fundamental equilibrating relations in Economic Theory; the equalization of rates of returns as enforced by a tendency of factors to move from low to high returns through the allocation of capital to individual industries by self-interested investors. The self-interest will result in an optimal allocation of capital for society. He writes: "Every individual is continually exerting himself to find out the most advantageous employment for whatever capital he can command (Hill & Jones, 2010). It would be for its own advantage, indeed, and not that of society, which he has in view. But the study of his own advantage naturally, or rather necessarily leads him to prefer that employment which is most advantageous to society" (Hill & Jones, 2010). Adam Smith played an important role in the development of welfare theory, in an attempt to explain the "Water and Diamond Paradox", he came across an important distinction in value theory. At the end of the fourth chapter of the first book in Adam Smith's celebrated volume *The Wealth of Nations* (1776), he brings up a valuation problem that is usually referred to as *The Value Paradox*. Adam Smith was aware of supply and demand without being able to produce anything fresh about the fundamental ideas upon which these concepts rest.

### Systems Theory

Systems theory is considered to be relevant in understanding the effect of empowerment on funding farmer field schools projects in Kenya and hence provides the theoretical background for this study. According to Danida (2011), Systems theory provides the manager with a tool for analyzing organizational dynamics without providing a specific theory about how an organization should be managed. The recognition of systems theory that all organizations consist of processing inputs and outputs with internal and external systems and subsystems is helpful in providing a functional

overview of any organization. One answer to this was to create the systems approach to management which attempts to synthesize and integrate the various schools of management into one coherent and cohesive management theory. Systems theory blends many different theories into one common functional system where all of the activities of the organization are grouped into processes such as inputs, homeostasis, parameters, processing, outputs and feedback. Systems theorists emphasize that every system has interacting and interrelated subsystems (Hill & Jones, 2010). These systemic interactions with other systems are continually adapting to dynamically changing internal and external environmental processes. Systems exist within a continuum of change. Organizational systems can be analyzed in terms of their subsystems such as operations, production, finance, marketing, personnel etc. These organizational subsystems are further analyzed in terms of their interactional processing with their internal subsystems and external systems.

### Conceptual Framework

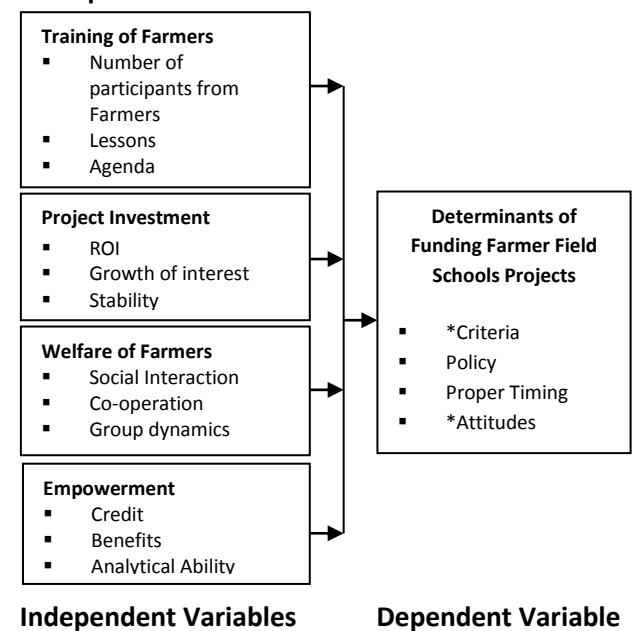


Figure 1: Conceptual Framework



## Training of Farmers

The FFS approach requires a degree of facilitation and skilled facilitators, which are difficult to sustain beyond the life of the pilot programmes. FFS typically promotes better use of agroforestry, which requires hands-on experience to encourage adoption. As a result, diffusion is unlikely and has rarely occurred in practice. The Project is applying the Farmer Field School (FFS) approach to work with communities and small farmers to adopt land use planning and management practices that incorporate agroforestry, natural resource management, and biodiversity conservation (Hunger & Wheelen, 2011). The FFS approach provides participatory training that is both forestry extension tool and a form of adult education. The FFS encourages participation of subproject participants and other farmers from the same or nearby communities. Most communities are in remote areas. Commutes are difficult and expensive. Most community members are also monolingual and have low levels of literacy. The FFS approach mitigates these disadvantages through visual and pragmatic techniques and a friendly environment, ideal for teaching people with low literacy levels and farmers with small and medium-size land holdings (Hoque & Chia, 2012).

Projects on farmer training in Integrated Pest Management (IPM) in developing countries using the Farmer Field School (FFS) approach are still widely implemented by donor organizations including for example the World Bank. This is in spite of criticism that such projects are fiscally unsustainable and are not always effective in changing pest management practices or in improving farm performance and have only limited diffusion effects (Hunger & Wheelen, 2011). On the other hand it was shown that FFS can improve farmer knowledge in pest identification and improve their ecosystems understanding. Also it

was found that public investments in integrated pest management programs on cotton in several Asia countries showed good rates of return (Hoque & Chia, 2012). Moreover, in China, where bollworm-resistant transgenic cotton varieties have been widely introduced, FFS was found to be effective in helping to realize the potential of pesticide reduction that between varieties offer.

The following are some of the reasons for development agencies to incorporate FFS into extension services. Structured implementation process; FFS provides and enables participants to learn firsthand benefits of testing new technologies in PCE and to understand the behavior of introduced crops. The FFS experience can as well assist them to recognize misunderstandings and avoid errors in farming practices or beliefs, related problems, or can it provide the broad range of skills needed to support improved productivity at the farm level. However, FFSs offer integrated learning opportunities for a period of one year in which participating farmers acquire problem solving capabilities that can encourage proactive behavior and positive attitude towards an often uncertain future (Hunger & Wheelen, 2011).

The FFS training program utilizes participatory methods “to help farmers develop their analytical skills, critical thinking, and creativity, and help them learn to make better decisions” (Hanson, Melnyk & Calantone, 2011). Such an approach, in which the trainer is more of a facilitator, rather than an instructor, reflects a paradigm shift in extension work. As an extension approach, the FFS concept does not require that all farmers attend FFS training. Rather, only a selected number of farmers within a village or local farmers’ group are trained in these informal schools, which entail weekly meetings in a season-long training course (Gockowski, Asamoah, David, Gyamfi & Kumi, 2010). However, in order to disseminate new

knowledge more rapidly within the community, selected farmers receive additional training to become farmer-trainers, and are expected to organize field-school replications within the community, with some support from public sources. Furthermore, all FFS graduates are encouraged to share their knowledge and experiences with other farmers within their local village and community organizations.

These farmer-to-farmer diffusion effects are expected to bring about cost-effective knowledge diffusion and financial sustainability, issues that have hampered many public extension systems in both developed and developing countries (Hanson, 2011). The main focus on this study was on component (ii) which is Community Driven Enterprise Investment support. This component comprised of the largest element of the project, facilitating group-based investments in sustainable farm forestry enterprises and related measures. It aims at increasing family incomes and promoting sustainable recourse utilization.

Farmer trainings level and use of environmental advisory services will boast the FFS. It consists of an overview of recent data, complemented by all information on definitions, measurement methods and context needed to interpret them correctly. The farmer trainings level and use of environmental advisory services article is part of a set of similar fact sheets providing a complete picture of the state of the agri-environmental indicators in the EU.

The indicator gives indications of farmers' training levels by means of information on the number of participants from the farming, food and forestry sectors in environmental training actions supported by rural development policy and farmers' use of environmental advisory services by means of information on the number of farmers' applications for the use of environmental advisory services

supported within the rural development policy. It is measured by the following indicators: Main indicators: Number of participants from the farming, food industry and forestry sectors in vocational trainings and information actions devoted to the environment and its share out of the total participants in vocational trainings supported by rural development policy; Number of farmers' applications for the use of environmental farm advisory services and its share out of the total number of farmers' advisory service applications supported by rural development policy (Hunger & Wheelen, 2011).

### **Project Investment**

The Farmer Field School (FFS) approach was originally designed as a capacity-building investment to improve farmers' knowledge and decision-making skills and foster empowerment. FFS are now widely used to train farmers on diverse topics such as integrated production and pest management (IPPM) of annual and perennial crops, soil management, livestock production, gender awareness and (Hanson et al.,2011).As the approach grows in popularity worldwide, more attention is being paid to assessing its. Reflecting the flexibility of the FFS approach, which has resulted in it being adapted for various objectives, no framework or methodological guidelines for impact assessment have been developed. Gockowski *et al.*(2010) groups impact from integrated pest management (IPM) FFS into 3 domains: technical, social and political, and identifies a number of immediate and developmental impacts.

There may also be crop specific challenges in measuring yield improvement as an FFS impact. Not being able to assess yields over a full cropping cycle during the course of the FFS, determining an appropriate post-training time lag for assessing

yield and difficulties in obtaining accurate yield data in situations where farmers do not know their farm size and have large, multiple, dispersed farms that are difficult and time consuming to measure, are some of the methodological challenges specific to FFS on perennial crops (Hunger & Wheelen, 2011). Yield assessment may be further complicated by the cyclical yield patterns of some tree crops such as citrus and cocoa. These impact assessment challenges justify using a mix of technical and social parameters to measure FFS impact on perennial crops in the short and long term. But where combining social and economic impact assessments in a single study is not feasible due to different requirements in experimental design (Hanson *et al.*, 2011) and the need to keep interviewing time to a minimum to avoid farmer and interviewer fatigue, it may be necessary to identify intermediary output indicators that can be measured relatively easily.

### **Welfare of Farmers**

Farmers' welfare is a major concern in this extension and training approach, as farmers have the opportunity to learn and apply ecological principles, master and apply critical thinking skills, acquire leadership skills, and master applied discovery approaches that allow them to gather, systematize, and expand local knowledge (Hunger & Wheelen, 2011). In Bangladesh, for instance, School participants spontaneously created peasant organizations and took an active role in experimentation, innovation and technology adaptation (Bartlett, 2004). Besides, as underlined by Hanson *et al.* (2011), "empowerment has become increasingly crucial for farmers who face a variety of contending forces related to technology, politics, world markets, and society, which can marginalize them if they are not proactive".

FFS is about practical, hands-on topics. In the FFS, the field is the teacher, and it provides most of the

training materials like animals, crops and real problems. Any new "language" learned in the course of study can be applied directly to real objects, and local names can be used and agreed on. Participants are usually much more comfortable in field situations working with the real objects than in classrooms (Hanson *et al.*, 2011). The success of any FFS is dependent on the selection of the right farmers.

The selected farmers must have some experience in the FFS subject like rice farming, vegetable farming, and goat farming. Experience creates farmers' interest in subject matter of an FFS. They share their experiences on the topic, which creates discussion during the FFS. Sharing experiences and having live discussions create an environment of participatory learning, which is the heart of any FFS. Mistakes in selecting the right farmers to participate in an FFS may result in apathy during discussions and may spoil the cooperative learning environment. A gender matrix may be prepared to best appreciate farm activities performed by men and women in a family. Such a matrix may help determine whether to select a man or a woman member of a family to participate in an FFS. The following guidelines can be considered during the selection of the farmers: willingness to attend all FFS meetings throughout the season, full-time farmers, energetic and a balance of young, and old and a mix of men and women (Islam, 2010).

### **Empowerment**

Empowerment is one of the important aspects of all projects. The level of success of construction projects greatly depends on the empowerment. The Pakistan FFS sector is facing empowerment related issues, which lead to ineffective and inefficient projects in terms of cost of overrun, delays and excessive rework. This research is carried out to scrutinize the factors, that have triumphed and

adverse effect on the FFS projects. A questionnaire was developed based on identified factors to take opinion of construction experts. After their feedback a statistical analysis tool such as chi-square and weighted mean method (WMM) were used to rank the significance level of these factors (Kaguru, 2010).

Empowerment is one of the important key performance indicators of a FFS project which may cause cost overrun and time delays. Quality control (QC) and quality assurance organizations are established only as a result of prescribed requirements. In FFS sector quality control can be looked upon as client satisfaction, relation with cost, and enough time to obtain anticipated quality. Empowerment and quality assurance system has been developed by an international standard organization (ISO) for improving quality and overcoming the quality related problems. For quality ISO 9001 series have been developed and can be applied to all type of projects (Islam, 2011),

Empowerment is affected by shortages of resources, materials, equipment, design changes, error in cost estimation and lack of budget. The other factors affecting quality are deficiencies in scheduling, inappropriate planning and unclear evaluation standards. The significance of these factors depends on type of projects, working environment and local culture. The basic aim of this research is to identify the success and adverse factors that have significant effect on quality performance of FFS projects of Pakistan. The factors were ranked based on chi-square and weighted mean statistical analysis (Kaguru, 2010).

The empowerment and quality are key functions in all infrastructure development environments like cost and time. It becomes one of the vital factors in any FFS project. In FFS projects lack of quality results in delays, cost overrun, and unsafe structure.

There are three types of costs associated with quality. First one is appraisal cost: the cost of testing and inspection, second one is failure cost: the cost of rework and third one is prevention cost: the cost of maintenance and better design. Many researchers have been carried out both in developed and developing countries to investigate the factors that have a substantial effect on the quality of FFS projects. Some literature is explained below to highlight the factors affecting quality of construction projects (Kohtamaki, Kraus, Makela, & Ronkko, 2012).

Empowerment, quality and availability of regulator documentation has been ranked by the consultants' respondents in the 1<sup>st</sup> position and by the owners' and contractors' respondents in the 2<sup>nd</sup> position. Quality and availability of regulator documentation is more important for consultants because it affects the performance of consultants and community satisfaction. This result is in line with Islam (2011), as this factor affects the contractors' performance because it affects regular and community satisfactions. It can be understood, that there is a strong agreement between owners and contractors for ranking all regular and community satisfaction factors because they are more related to contractors' performance and client satisfaction. Generally, it can be said that 3 parties are in agreement for ranking these factors (Kohtamaki, *et al.*, 2012).

### **Effects on Funding of Farmer Field Schools Projects**

Strengthening observation capability and increasing knowledge ownership through discovery based learning. FFS does not rely mainly on information and techniques brought by extension agents and transferred to farmers. Instead, it aims to encourage farmers' systematic observation and informed decision making based on discovery based learning so that new knowledge and practices are

generated by the farmers themselves. This process stimulates ownership of the learning process and ensures local adaptation. The main role of extension workers is to enhance farmers' skills in practicing new ideas, discovering their own solutions, and developing coping strategies to deal with ever changing situations. Technologies practiced under FFS usually are site specific and suitable to the farmers who use them because the FFS participants themselves set up learning sites and put technologies into practice. As a result, adoption rates are usually high among FFS members. Transfer of knowledge to neighbors is also common in FFS since learning results are based on farmers' experiences applicable to their neighbors (Colauto & Barros, 2013).

**Building self-confidence and enhancing decision-making capacity:** FFS is not about transferring and teaching knowledge and techniques, as it is the case in conventional extension. The FFS approach empowers farmers in various aspects through confidence building and decision making exercises. Unlike in other extension approaches, farmers in the FFS approach are facilitated to take a lead in learning sessions under a participatory manner. Every FFS session allocates time for presentation of field observations followed by group discussion. In addition, participants in FFS are divided into sub groups and discussions among sub group members are encouraged. These exercises involving tangible field results usually provide a foundation for participants to "own" the learning process, build their confidence and personal skills, and thus become empowered in their farming activities and collaborating with other farmers in finding solutions.

**Minimizing risks in experimenting with new practices:** It is risky for subsistence farmers to switch from their conventional land use practices to new ones based only on information or short

training sessions provided by extension workers. They simply cannot afford crop failures when trying out new systems. FFS provides farmers with the opportunity to try out new practices on a group farm where risks are minimal, and potential losses would be shared by group members. Learning sites are usually very small in size; sufficient only to test and compare new technologies and farmers' own conventional farmers' practices. They need only to contribute a half day per week of their time to participate in FFS, while they can continue working on their own food crops using their conventional farming methods. FFS does not promote new methods in isolation from regular farmer practices; rather it provides an opportunity for the participants to test and compare alternatives in a relatively risk free environment with measurable figures for discussion and debate among participating farmers. FFS is therefore a less risky approach for subsistence farmers compared to most conventional extension methods.

**Changing deep-rooted beliefs and practices:** Farmers have a wealth of knowledge, which is usually based on their experience. It is also true that they are sometime based on misconceptions. Wrong ideas or false deep rooted impressions cannot be easily swept aside through short term training or field visits. FFS provides an analytical structure and season long regular interactions with the field, facilitators, and other FFS members, which enables participants to learn firsthand the benefits of testing new technologies in PCE and to understand the behaviour of introduced crops. The FFS experience can as well assist them to recognize misunderstandings and avoid errors in farming practices or beliefs (Colauto & Barros, 2013).

**Developing problem-solving capabilities:** A farmer is an agricultural entrepreneur who has to deal with constantly changing natural and socio economic circumstances. To be successful, a farmer needs a

range of skills including natural resource management, accounting, marketing, negotiation, problem solving and conflict management. Without such capacities, farmers may be unprepared for uncertain events caused by political and economic unrests as well as climate change. Any one off training event cannot provide solutions for all farm related problems, nor can it provide the broad range of skills needed to support improved productivity at the farm level. However, FFSs offer integrated learning opportunities for a period of one year in which participating farmers acquire problem solving capabilities that can encourage pro active behavior and positive attitude towards an often uncertain future.

## **Empirical Review**

### **Training of Farmers**

It can be hypothesized that FFS training contributed three things: knowledge of how and why cultural practices help to control pests and diseases and the correct technique and timing for carrying out practices. The last two aspects need field verification and are not discussed here (Kaguru, 2010). Overall, FFS graduates performed better on the knowledge test than non-FFS farmers and had significantly higher average test scores in four out of six subject areas. Similarly, a higher proportion of non-FFS farmers compared with FFS graduates (53% compared with 39%) had received formal training in the past on various aspects of cocoa production practices, mainly from government extension agents, an indication that field schools provided technical knowledge and information on pruning, black pod, shade and pest management that the majority of other farmers do not have access to loans (Islam, 2011).

A common facet of past impact analyses of Farmer Field School projects is that data were being used that did not allow the definition of good

counterfactual scenarios because no control area was available or only insufficient baseline data existed. Also comparisons were based on only two observation points before and after the training. In addition, most of these studies concentrated on simple performance parameters like knowledge, pesticide use and yield but did not include for example impact on the environment. In this paper we use a set of panel data that were collected over a period of four years covering at maximum of 10 rice-growing seasons from three groups of farmers. The analysis presented here is an advancement of an earlier study that looked at the short-term impact of FFS in Thailand (Kohtamaki, *et al.*, 2012).

As an extension approach, the FFS training concept does not require that all farmers must attend FFS training. Rather, only an exclusive figure of farmers within a village or local farmers group are trained in such a way that these informal schools, which demand weekly meetings in a season-long training course are fully equipped with modern techniques. However, in order to transfer new knowledge more speedily within the farming community, selected farmers receive additional skill based training to become farmer-trainers and are expected to organize field school imitations within the community, with some support from public sources. In addition, all FFS trained members are motivated to share their knowledge and experiences with other farmers of the local village (Kuye & Oghojafor, 2011).

These farmer-to-farmer diffusion effects are expected to bring about cost-effective knowledge diffusion and financial sustainability issues that have hampered many public extension systems in both developed and developing countries. FFS training aims to affect farmer's knowledge, which can be interpreted broadly to include the possession of analytical skills, critical thinking, and ability to make better decisions, as well as familiarity with agricultural practices, adoption of

new technologies and understanding of interactions within the agricultural ecosystem. Improved knowledge is, in turn, reflected in farmers' cultivation practices, input management, and crop yields (Kaguru, 2010).

### **Project Investment**

Training in rural areas takes place at all levels and includes many forms and methodologies. For the analysis of training in IFAD supported projects, the all-encompassing 'capacity-development' was found to be too broad. Priority was given to training of beneficiaries and not to training of staff, including field staff, despite the fact that these forms of training and capacity-building absorb large budgets in IFAD supported projects. The selected priorities were AET, agricultural extension services and TVSD (Ajani & Onwubuya, 2010).

The tea industry in Kenya provides livelihood to over three million people along the value chain. The industry started in the first quarter of the 20th century in Kenya and has continued to increase in terms of production and total acreage. The World agriculture in the twenty-first century faces three main challenges: assurance of food security, rural livelihoods and income as well as conserving and protecting natural resources. The World Food Summit and the Millennium Development Goals (MDGs) have been devising ways to mitigate against the aforementioned challenges. Agriculture is expected to assure food security in a range of settings, now and in the future, and is increasingly called upon to produce positive environmental, social, and economic benefits (Kuye & Oghojafor, 2011). The two sectors include; Kenya Tea Development Agency which manages approximately six hundred thousand small scale farmers and multi-nationals sector for example Unilever/Lipton teas, James Finlay's and George Williamson holdings manage privately plantations

and estates of tea. The volume and frequency of plucking tea leaves enhances net revenue for small scale tea farmers in Kenya (Ali & Sharif, 2012).

The unique approach of FFS has also been applied to animal production in a few countries on a few occasions. However, the approach has not gained the same level of popularity as in the production of agriculture crops. Reasons for not using this approach in animal production include a longer production cycle in comparison to crops, more costs to manage larger numbers of observation units in comparison to agricultural crops, and a lack of literature and guidelines available on implementing FFS for animal production.

Animal farming, like crop farming, has been in practice in rural areas in many parts of the world since ancient times. Knowledge, skills and the art of animal farming are passed over generations. People in rural areas have their own practices for raising animals (Ali & Sharif, 2012). They are able to maintain their animals to a certain level of productivity, whereas new developments in technology result in higher levels of productivity stemming from modifying existing practices of feeding, breeding, housing, animal health care and marketing. There is a huge effort all over the world to disseminate such proven technologies from research stations to the farmer field for adoption. Different extension approaches are in practice with varying degrees of success, measured by the adoption rate of technology by farmers. There are technologies that can increase the productivity of an animal (Ajani & Onwubuya, 2010).

### **Welfare of Farmers**

Environmental assessment which normally yields an environmental impact statement consists of a rigorous study that involves a thorough documentation of existing conditions, an

identification of impacts, and a comparative examination of impacts arising from the FFS welfare project alternatives. A growing number of development planners and managers now recognize that East Africa is an excellent preventive planning tool, provided that it is implemented early in the project development sequence Ajani & Onwubuya (2010). East Africa generally have three objectives: to present to managers and decision makers a clear assessment of potential impacts which a project or a strategic level initiative may have on overall environmental quality; to apply to a project or a strategic level initiative a methodology which assesses and predicts impacts and provides, the means for impact prevention and mitigation, the enhancement of project benefits, and the minimization of long-term impacts; and to provide a specific forum in which consultation is systematically undertaken in a manner that allows stakeholders to have direct input to the environmental management process.

Three of the most important steps in East Africa are screening, scoping, and analysis of alternatives (Camargo, 2011). The screening stage provides a preliminary evaluation of the magnitude of potential impacts and determines whether further study such as a full East Africa is needed. The scoping stage should indicate clear spatial and temporal boundaries for the EA. The analysis of alternatives should yield a well-informed decision on the transport solution and the optimal project design, based on consultation with stakeholders and experts, as well as a careful technical examination of each alternative (Friis-Hansen, Duveskog & Taylor, 2012).

The primary concerns were the loss of land and relocation issues. However, as the project road essentially was confined to the existing road alignments, with only minor realignments and improvements to the horizontal and vertical curves

to achieve the desired geometric criteria and to meet road safety requirements, the physical disruption in human settlements and natural environment was minimal. The FFS welfare activities were implemented with minimum property relocation and compensation issues. GOL had engaged a Property Consultant to value the extent of damage and recommended the amount of compensation to be paid before commencement of works. This avoided further project implementation issues. A budget of UA 10,000 was allotted as compensation for houses and properties loss due to the project. The affected properties ranged from small to large quantities of loss of land for agriculture, residential and commercial purposes; and demolition of buildings located in the road reserve (Friis-Hansen & Duveskog, 2012).

### **Empowerment**

Good empowerment makes the FFS project successful. The empowerment can be increased by studying and improving the factors that affect the quality significantly. In this research, we have identified these factors and took feedback via questionnaires from agricultural practitioners. The critical factors identified are continuous improvement, joint working, communication, technical person availability, ISO certification and procurement unit of the contractor. The identified factors are for general farming, including digging, cultivation, planting and harvesting. The FFS should acknowledge these factors on a priority basis when conducting FFS project. The Agricultures should implement new technologies; build an effective risk management team as well as quality management team. Daily supervise the material as well as work.

According to Friis-Hansen *et al.*, (2012) describes quality as the world's oldest documented profession. Quality professionals use a number of definitions to define project quality. Quality in its



simplest form can be defined as: 'meeting the customer's expectations,' or 'compliance with customer's specification.' No matter what definition we follow for quality, it becomes very complex when we try to put it into actual practice. For a user, quality is nothing but satisfaction with the appearance, performances, and reliability of the project for a given price range (Friis-Hansen *et al.*, 2012).

In the realm of project management, the schedule, cost and quality achievement is also referred to as the iron triangle. Out of these three aspects, it is the achievement of schedule and cost compliances that the project management is attending to most of the time. In order to achieve the schedule and cost objectives, project quality is sometimes also overlooked (Lund, Saethre, Nyborg, Coulibaly & Rahman, 2010). Although many studies have recognized the importance of maintaining and doing quality FFS projects these aspects are sacrificed in lieu of achieving short-term objectives, such as handing over of some critical structures, or only part of the structures falling in the critical path (Friis-Hansen *et al.*, 2012).

In the long term, poor empowerment can hurt reputation, and if the company continues in the same way it might have to close its shop for want of new projects. If a number of construction companies of a country start neglecting the quality aspects in their projects, this also starts reflecting on the reputation of the country. According to Lund *et al.*, (2010) emphasizes that the control of the performance of the installation, building or engineering structure should be managed in the same way as the management of time and cost. In a recent survey conducted among Indian construction professionals, it has also been found that, out of the five commonly used project performance criteria compliances to schedule, cost, quality, no-dispute

and safety – the quality compliance has come second next to schedule compliance.

Delivering projects of poor quality can have far reaching consequences. Dinpanah, Mirdamadi, Badragheh, Sinaki & Aboeye (2010) quotes one that was recorded during the reign of a Babylonian king. If a builder constructed a house but did not make his work strong with the result that the house which he built collapsed and so caused the death of the owner of the house, the builder shall be put to death. Realizing these aspects, the present study was undertaken to suggest ways to improve quality as well as to take care of certain critical factors that may lead to loss of quality (Lund *et al.*, 2010). Helping the FFS companies to identify the critical attributes responsible for achieving the desired quality level success factors and also to find the attributes adversely affecting the project quality failure factors has been the motivating factor behind this study. It is realized that maximization of the success factors and minimization of failure factors will ensure the construction industry realizes its quality goals (Dinpanah *et al.*, 2010).

The rationale for undertaking the project was to provide all-weather access to the agricultural areas of Mpharane, Corn-Exchange, Kolojane, St Theresa and Bela Bela which in turn would introduce more opportunities for economic growth. The sector goal was to facilitate economic development and poverty reduction by improving the efficiency of the national transport infrastructure particularly in the rural areas (Erbaugh, Donnermeyer, Amujal, & Kidoido, 2010). The project was designed to assist the rural people through increased access to markets and basic social services at lower costs, facilitate and improve traffic movements to and from the region, reduce vehicle operating costs and maintenance costs. The project specific objectives were to reduce vehicle operating costs and road maintenance costs and to improve the quality of

road transport service levels. The project comprised three key components: Civil works through upgrading of 25 km of existing gravel road to a Class B bitumen road standard of a width of 7.0m carriageway and 1.0m paved shoulders on either side; Consultant services for pre-contract and supervision services of the above civil works; and Project audit services (Farquhar, 2012).

### **Effects on Funding of Farmer Field School Projects**

Regular and sufficient funds allocation for FFS monitoring is a necessary condition to ensure project sustainability. This allocation must be based on a sound FFS planning program. Although the government has expressed willingness to strengthen its maintenance regime, the lack of funds continues to be a dissuading factor. Adequate institutional capacity and expertise of the Farmer field school based on planning and executing monitoring works is another necessary condition to ensure project sustainability in particular and the overall FFS network in general. Enforcement of safety measures and preservation of existing safety equipment's on FFS are key to ensure customer satisfaction (Erbaugh, Kibwika & Donnermeyer, 2010b).

The FFS Operations directorate administered the contract and supervision of the project. The FFS had sufficient experience and capacity to supervise the road construction works. The technical unit of the FFS was staffed by qualified personnel during project implementation. In order to ensure proper coordination, monitoring and supervision of implementation, the FFS designated one of its engineers with the requisite qualifications and experience to act as the project coordinator. An appropriately qualified person was designated for this function, which included preparation of progress reports, processing of payment certificates and the preparation of the Borrower. The assigning

of an engineer for this purpose acceptable to the Bank was included as a loan condition (Erbaugh *et al.*, 2012).

The Government of Kenya national policy for FFS is anchored on the need to streamline the project sub-sector putting an emphasis on maintenance and rehabilitation and selective upgrading. The overall objective is to have a network capable of supporting social and economic activities, providing access to communities mainly those isolated rural districts and linking district centers. Government policy in the road sub-sector is incrementally placing less reliance on force account labor and creating more opportunities for local contractors (Mancini, 2011). A major step in promoting the local FFS industry is the provision of a regular flow of routine monitoring works to the local contractors who have been trained in labor-based FFS techniques by the project agencies. The development and implementation by the road agencies of routine monitoring activities through contracting is vital to help create the competitive market, whereby qualified experts gradually develop into medium sized firms able to take on more complex project works (Erbaugh *et al.*, 2012).

The actual distribution of the transport infrastructure is unbalanced as a result of past investments in the agriculture sector in Kenya, which have been oriented since 1967 towards the primary transit and import/export corridors of the lowlands serving the emerging manufacturing sector along the border with RSA. Most traffic originates and terminates in the lowlands, with the exception of the route to the Kenya Highland Water Project (LHWP) dam and tunnel sites and the Bank-financed World Bank project. To redress the current imbalances in the distribution of the network, the Bank is financing a study covering two important penetrating projects that will provide access to the rural areas (Mancini, 2011).

## METHODOLOGY

This study adopted a mixed research design approach of exploratory, descriptive and quantitative designs. The design refers to a set of methods and procedures that describe variables and involves gathering data that describe events and then organizes, tabulates, depicts, and describes the data. The targeted population for this study was 189 key officials from the 63 farmer field school project in Kitui County in Kenya. This comprised of project chairperson, KFS representative and agricultural officer. The three key officials were selected per their nature of duties.

## RESULTS

### Study Variables

#### Training

The first objective of the study was to find out how training had effect on funding farmers projects in

Kenya. The respondents were therefore presented with questions and statements aimed at answering the resultant research question. The findings of the study are discussed below as explored by the research questionnaire.

The study sought to find out the extent to which respondents agreed with the statements about the influence of training farmers. According to the findings, respondents strongly agree that training is very influential as shown by a mean of 20, while project investment and farmers welfare are also equally agreed with a mean of 19.98. The findings concurs with Herzberg's (1959) two factors theory found that hygiene factors which are factors whose absence motivates, but whose presence has no perceived effect. They involve things that when you take them away, people become dissatisfied and act to get them back; like decent working conditions, company policies, pay, benefits (like health insurance), security and interpersonal relationships. In general, these are extrinsic items.

**Table 1: Extent to which respondents agreed with the statements on training of FFS have effect on farmers**

	very low extent	low extent	moderate extent	great extent	very great extent	Mean	Stdev
<b>Level of training skills</b>	7.7	15.4	15.4	26.9	34.6	20	9.5
<b>Training Experts</b>	11.5	11.5	19.2	30.8	26.9	19.98	7.9
<b>Rate of training by KFS</b>	3.8	11.5	23.1	50	11.50	19.98	16.2

#### Project Investment

The study sought to find out the extent to which the project investment influence Farmers projects performance in KFS. From the findings, 15.40% of the respondents indicated that the rate return on investment greatly affect FFS projects performance in KFS, 26.90% indicated that the project investment influences FFS project performance in

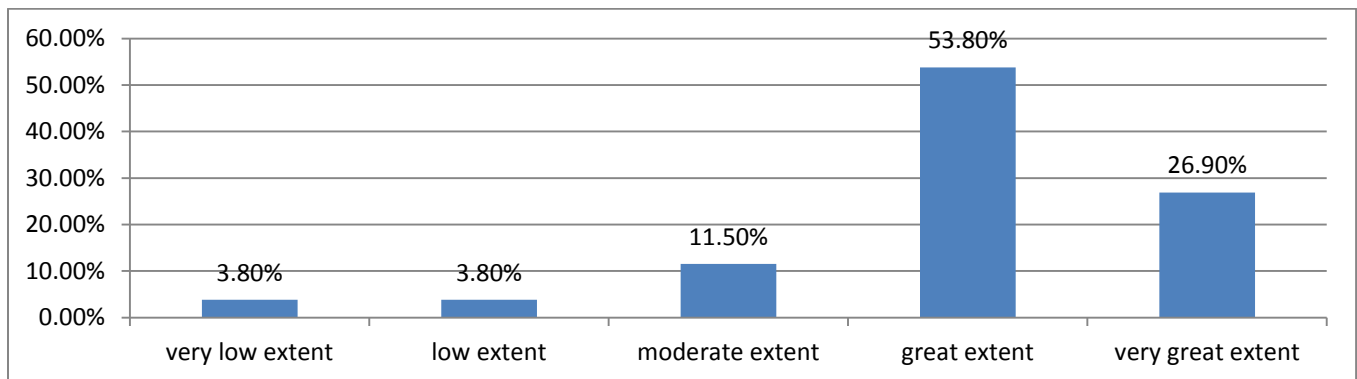
KFS to a great extent, 38.50% of respondents indicated that the project investment influences FFS project performance to moderate extent, 15.40% of respondents believed that the investment influences FFS project performance in KFS to a low extent and 3.80% of respondents felt that the project investment influences FFS project performance to a very low extent.

**Welfare of Farmers**

The study sought to find out the extent to which farmers welfare influence FFS projects performance in KFS. From the findings, 26.90% of the respondents indicated that the farmers welfare to a very great extent affect FFS projects performance in KFS, 53.80% indicated that welfare of farmers influences FFS project performance in KFS to a great extent, 11.50% of respondents indicated that the welfare of farmers influence FFS project performance to moderate extent, 3.80% of respondents believed that welfare of farmers

influences FFS project performance in KFS to a low extent and 3.80% of respondents felt that the welfare of farmers influences FFS project performance to a very low extent as shown in the figure below.

Various literature sources support this finding [Van Marrewijk, 2007; Nieminen & Lehtonen, 2008; Bellini & Canonico, 2008]. They found that, the two main themes of the top four factors for failed projects are people (communication between team and customers; executive support; user involvement) and processes dealing with change.

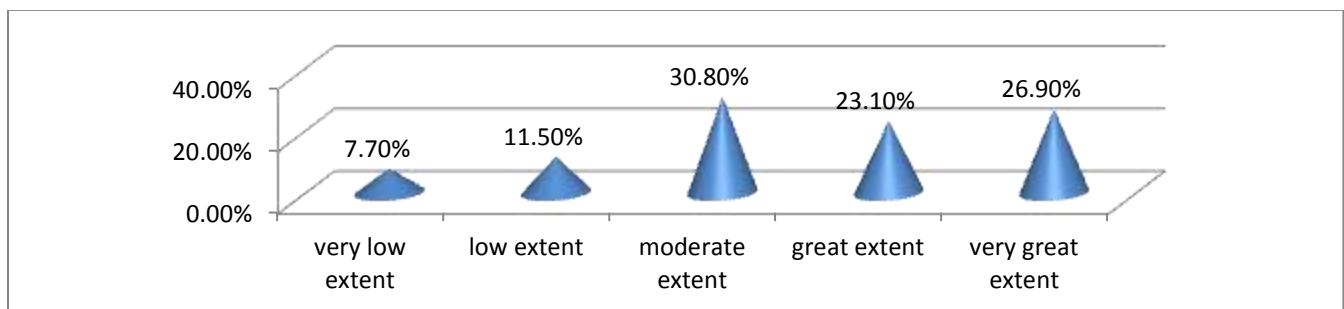


**Figure 2: Extent to which welfare of farmers had effect on FFS Projects**

**Empowerment**

The study sought to find out the extent to which knowledge and empowerment improves farmers' knowledge of intercropping. From the findings, 30.8% of the respondents indicated that empowerment moderately affect FFS projects performance in KFS, 11.50% indicated that empowerment influences FFS project performance

in KFS to a low extent, 23.10% of respondents indicated that empowerment influences FFS project performance to a great extent, 7.70% of respondents believed that empowerment influences FFS project performance to a very low extent and 26.90% of respondents felt that empowerment influences FFS project performance to a very great extent as shown in the figure below.



**Figure 3: To what extent does empowerment have effect on FFS projects in KFS?**

## Regression Analysis

In addition, the researcher conducted a linear multiple regression analysis so as to test the relationship among variables (independent) on

factors that influence FFS projects performance in Kitui, Kenya. Statistical package for social sciences (SPSS) was used to code, compute and analyze the measurements of the multiple regressions for the study.

**Table 2: Model summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.756 <sup>a</sup>	.572	.198	.421

Coefficient of determination explains the extent to which changes in the dependent variable can be explained by change in the independent variables or the percentage of variation in the dependent variable (FFS projects performance in Kitui in Kenya) that is explained by all the four independent variables (training, investment, welfare and empowerment).

The four independent variables that were studied explain only 57.2% of FFS projects performance in Kitui in Kenya as represented by  $R^2$ . This therefore means that the other factors not studied in this research contribute 42.8% of FFS projects performance in Kitui, Kenya. Therefore, further research should be conducted to investigate the other factors (42.8%) that influence FFS projects performance in Kitui, Kenya.

**Table 3: ANOVA<sup>b</sup>**

Model	Sum of Squares	df	Mean Square	F calculated	Sig. (p-value)
1 Regression	29.216	4	7.3041	75.38	.000 <sup>a</sup>
Residual	2.036	158	.0969		
Total	31.252	162			

To test for the overall significance of the model the hypothesis formulated,

$H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$  (model is not significant)

Vs.

$H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0$  (model is significant)

The F calculated value (75.38) is greater than F critical value  $F(4,21)$  which is 2.84 at 95% confidence level, we therefore reject the null

hypothesis and conclude that the model parameters are significantly different from zero hence the model is significant and can be used for further analysis. Again, using the p-value 0.04 is less than  $\alpha$  value 0.05 therefore we also reject the null hypothesis and conclude that the model is significant.

**Table 4: Coefficient of determination**

Model		Unstandardized Coefficients		Standardized Coefficients		Sig. (P value)
		B	Std. Error	Beta	t	
1	(Constant)	2.235	.864		2.587	.017
	Training	.173	.094	.379	.848	.005
	Investment	.132	.156	.163	.847	.006

Welfare	-.324	.123	-.526	-2.622	.016
Empowerment	.171	.144	.217	1.190	.024

**Source: Research 2015**

The researcher conducted a multiple regression analysis so as to determine the relationship between dependent and the four independent variables. The SPSS generated data in table 4 above helps in formulating the equation ( $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon$ ) which becomes:

$$E(Y) = 2.235 + 0.132X_1 + 0.173X_2 + 0.171X_3 - 0.324X_4$$

Y is the dependent variable (FFS projects performance in Kitui, Kenya),  $X_1$  is investment,  $X_2$  is training,  $X_3$  is empowerment, and  $X_4$  is welfare.

According to the regression equation established, keeping all factors under study (training, investment, welfare and empowerment) constant at zero the expected project performance is 2.235. The data findings analyzed also show that keeping all other independent variables at zero, a unit increase in investment will lead to a 0.132 increase in the project's performance, while a unit increase in training will lead to 0.173 increase in project performance, a unit increase in empowerment will lead to a 0.171 increase in project performance whereas a single unit increase in welfare will lead to a 0.324 decrease in project performance. From the absolute t-values above the highest is 2.622 indicating that welfare contribute the most or rather is the most significant to projects performance.

Therefore, this means that at 5% significance level and 95% level of confidence, investment had a 0.06 level of significance, training, welfare and empowerment had 0.05, 0.016, 0.024 level of significance respectively. This further concludes that empowerment is the most significant factor at 0.024.

**CONCLUSIONS AND RECOMMENDATIONS**

The study found out that training had a positive effect on the funding of farmers' special projects in Kitui, Kenya with a P value of 0.005. The findings of the study was further in line with the respondent's opinions as 46.2% agreed professional certification influence FFS projects performance, 38.5% agreed project investment and Technical experience, influence FFS projects performance whereas 30.8% agreed that employee level of education is significant. These findings therefore conclude that Kenya Forest Service should consider taking their employees for professional certifications/training as one of the best practice for the organization to achieve maximum performance in FFS projects.

From the results, the study reveals that project investment has positive effect on funding of FFS projects in Kitui in Kenya. This was evidenced by the P value of 0.06. These findings were agreement with the results by the respondents as shown by 38.50%, that investment affect funding of farmers special projects performance to a great extent, that the rate of return affects funding of FFS project performance by 42.3% and stakeholders embracement affect performance of FFS projects by 53.80%. Therefore, the findings point out that investment is a key factor that influences performance of FFS projects in Kitui in Kenya and KFS to be specific.

The study revealed that the welfare of farmers had improved through the funding of FFS projects in Kitui in Kenya with a P value of 0.016. The findings from the respondents' of this study therefore reveal that most of the farmers were involved in decision/policy formulation before the initiation of

all these projects by KFS. Therefore, Kenya Forest Service have a role to play in promoting the livelihoods of the farmers in Kitui through the FFS projects.

The study found out that empowerment has greatly improved the quality of the projects in Kitui, Kenya. According to the findings of the study, empowerment had a P value of 0.024. Furthermore, from the findings, respondents strongly agree that all stakeholders were working in collaboration with Kenya Forest Service in Kitui, Kenya as shown by a mean of 20, while all interested parties were monitoring and evaluating the project so as to maintain quality are also equally agreed with a mean of 19.98. From these findings, it's clear that KFS should uphold the culture of empowering the farmers both intrinsic and extrinsic in order to achieve optimal goals in all FFS related projects.

### **Conclusion**

The study concluded that training, project investment, welfare of farmers and empowerment, have significant effect on the funding of FFS projects success. The experience, expertise and the decisions made by KFS in project implementation has great impact on the outcome of funding these projects. Respondents in this study felt that training is a key factor and plays a major role in the success of FFS projects by KFS. The improvement of the farmers' welfare is a key aspect to the farmers. According to the respondents of this study, participating in FFS improves farmers' knowledge on farming technology. Participants had, on average, 41 per cent more knowledge this is based on intercropping, that is plant agricultural crops with trees. Education level and on-the-job training were found to have a moderate influence in the funding of FFS projects whereas technical experience and professional certifications were agreed to have a very great influence on FFS

projects in Kitui in Kenya. The findings also indicated that project investment have been a major factor that on the effect of funding FFS projects in Kitui in Kenya. The results by the respondents also revealed that the rate of the return on investment, duration and standard of living since the initiation of FFS projects, moderately had an effect on the funding of FFS projects in Kitui, Kenya.

### **Recommendations**

- KFS with the financial institutions should encourage farmers to take loans as this has greatly improved not only the projects but also the farmers' livelihood. With a good welfare for farmers, the economy of the county improves in many ways.
- KFS in collaboration with other stakeholders should train more farmers in other counties across Kenya so as to attain the 10% forest cover by 2030.
- FFS projects are effective in improving intermediate and final outcomes for participating farmers. These beneficial impacts have been recorded across the different types of field school curricula and should therefore be encouraged.

### **Recommendation for further research**

This study was a milestone for future research in this area. The findings emphasize the importance FFS projects which comprises training, project investment, welfare of farmers and empowerment. From the fact that the study was a case study of a single county and therefore cannot be used to generalize the entire country, there is need to carry out similar research in other counties in order to establish whether the independent variables under study explain the effect of funding farmers' special (FFS) project in Kitui, Kenya.

## REFERENCES

- Achonga, B.O., Lagat, J.K. & Akuja, T.E. (2011). "Evaluation of the Diversity of Crop and Livestock Enterprises among Agro-biodiversity Farmer Field Schools (ABD-FFS) and non-ABD-FFS Households in Bondo District, Kenya", *Journal of Applied Biosciences*, vol. 38, pp. 2496–2507.
- Ajani, E.N. & Onwubuya, A. (2010). "Farmer Field School [FFS] and Junior Farmer Field and Life School [JFFLS] as challenges to agricultural extension development and practice in Nigeria", *Journal of Agricultural Extension*, vol. 14, no. 1
- Ali, A. & Sharif, M. (2012). "Impact of Farmer Field Schools on Adoption of Integrated Pest Management Practices among Cotton Farmers in Pakistan", *Journal of the Asia Pacific Economy*, vol. 17, no. 3, pp. 498–513.
- Camargo, C., (2011). Use of Data to Assess Performance and Welfare of Community, *Community Services Review*, 33, 330-339.
- Carlberg, E., Kostandini, G. & Dankyi, A. (2012). "The Effects of Integrated Pest Management Techniques (IPM) Farmer Field Schools on Groundnut Productivity: Evidence from Ghana", selected paper prepared for presentation at the Agricultural & Applied Economics Association's 2012 Annual Meeting.
- Colauto, E.A. & E. Barros, (2013). "Key Issues of Sustainable Community Livelihood", *World Development* 16(2): 16-30. University of Nairobi.
- David, S. & Asamoah, C. (2011). "Farmer Knowledge as an Early Indicator of IPM Adoption: A Case Study from Cocoa Farmer Field Schools in Ghana", *Journal of Sustainable Development in Africa*, vol. 14, no. 4, pp. 213–224.
- Davis, K., Nkonya, E., Kato, E., Mekonnen, D.A., Odendo, M., Miiro, R., Nkuba, J. & Okoth, J. (2012), "Impact of farmer field schools on agricultural productivity and poverty in East Africa", *World Development*, vol. 40, no. 2, pp. 402–413.
- Davis, K., Nkonya, E., Ayalew, D. & Kato, E. (2009). "Assessing the Impact of a Farmer Field Schools Project in East Africa", *25th Annual Conference of the Association for International Agricultural and Extension Education (AIAEE)*, San Juan, Puerto Rico, 24–28 May.
- DANIDA (2011). "Evaluation of the Farmer Field School Approach in the Agriculture Sector Programme Support Phase II, Bangladesh", Evaluation Department, 167 Ministry of Foreign Affairs of Denmark.
- Dinpanah, G., Mirdamadi, M., Badragheh, A., Sinaki, J.M. & Aboeye, F. (2010). "Analysis of Effect of Farmer Field School Approach on Adoption of Biological Control on Rice Producer Characteristics in Iran", *American-Euroasian Journal of Agricultural and Environmental Science*, vol. 7, no. 3, pp. 247–254.
- Duveskog, D., Friis-Hansen, E. & Taylor, E.W. (2011). "Farmer field schools in rural Kenya: a transformative learning experience", *Journal of Development* <http://www.tandfonline.com/doi/abs/10.1080/00220388.2011.561328>



Erbaugh, J.M., Donnermeyer, J., Amujal, M. & Kidoido, M. (2010a), "Assessing the Impact of Farmer Field School Participation on IPM Adoption in Uganda", *Journal of International Agricultural and Extension Education*, vol. 17, no. 3, pp. 5–17.

Erbaugh, J.M., Kibwika, P. & Donnermeyer, J. (2010)b. "Assessing Extension Agent Knowledge and Training Needs to Improve IPM Dissemination in Uganda", *Journal of International Agricultural and Extension Education*, vol. 14, no. 1, pp. 59–70.

Farquhar, J.D. (2012). *Case study research for business*. London: Sage Publication.

Hill, C. & Jones, G.R. (2010). *Strategic management theory: An integrated approach*, 9<sup>th</sup> edition. Mason, OH: Cengage Learning

Friis-Hansen, E., Duveskog, D. & Taylor, E.W. (2012). "Less noise in the household: the Impact of Farmer Field Schools on Gender Relations", *Journal of Research in Peace, Gender and Development*, vol. 2, no. 2, pp. 044–055.181

Friis-Hansen, E. & Duveskog, D. (2012). "The Empowerment Route to Well-being: An Analysis of Farmer Field Schools In East Africa", *World Development*, vol. 40, no. 2, pp. 414–427.

Gockowski, J., Asamoah, C., David, S., Gyamfi, I. & Kumi, M.A. (2010). "An Evaluation of Farmer Field School Induced Changes in Ghanaian Cocoa Production", *Journal of International Agricultural and Extension Education*, vol. 17, no. 3, pp.3-4.

Hanson, J. D., Melnyk, S. A. & Calantone, R. A. (2011), "Defining and measuring alignment in performance management", *International Journal of Operations and Production Management*, Vol. 31, No.10, pp. 1089-1114

Hoque, Z. and M. Chia. (2012) Competitive forces and the levers of control framework in a manufacturing setting: a tale of a multinational subsidiary. *Qualitative Research in Accounting and Management*.9 (2): 123-145

Hunger, J.N. and Wheelen, T.L. (2011). *Essentials of Strategic Management*, 5th edition. Upper Saddle River, NJ: Prentice Hall

Islam, A. E. (2011), "Proposing a Performance and Change Management Framework", *International Journal of Finance and Management*, Vol. 1, No. 2, pp. 111–123.

Kaguru, J.K. (2010). *A survey of strategy control practices of parastatals in Kenya*. Nairobi: Unpublished MBA research project of the University of Nairobi.

Kohtamaki, M., Kraus, S., Makela, M., & Ronkko, M. (2012). The role of personnel commitment to strategy implementation and organisational learning within the relationship between strategic planning and company performance. *International Journal of Entrepreneurial Behaviour & Research*, 18(2), 159-178.

Kothari, C.R (2011). *Research Methodology. Methods and Techniques*. New Delhi: New Age International Publishers. (2nd Edition).

Kuye, O.L. and Ogbojafor, B.E.A. (2011). Strategic control and corporate performance in the manufacturing industry: Evidence from Nigeria. *European Journal of Social Sciences*, Vol.22 No.2. New York: Routledge.

Lund, T., Saethre, M.G., Nyborg, I., Coulibaly, O. and Rahman, M.H. (2010). "Farmer Field School – IPM Impacts on Urban and peri-Urban Vegetable Producers In Cotonou, Benin", *International Journal of Tropical Insect Science*, vol. 30, no. 1, pp. 19–31.

Mancini, F. (2011). "Impact of Integrated Pest Management Farmer Field Schools on Health, Farming Systems, the Environment, and Livelihoods of Cotton Growers in India", Wageningen University.

Mariyono, J. (2011). "Double Gains in Productivity: Impacts of Integrated Pest Management Technology on Productions of Rice and Soybean in Java", *Journal of Agricultural Technology*, vol. 7, no. 1, pp. 19–28.

Maryan, N. N. (2012). Analysis of the relationship between strategic planning and competitive advantages in Jordanian banks. *Interdisciplinary Journal of Contemporary Business Research*, 4(8), 220-238.

Mugenda, M. and Mugenda, A. (2008). *Research Methods, Quantitative & Qualitative Approaches*; Nairobi: Acts Press.

Musyoka, S.W. (2011). *Strategic control at the National Social Security Fund, Kenya*. Nairobi: Unpublished MBA research project of the University of Nairobi.

Nandama, W.N. (2010). *Strategy evaluation and control by pharmaceutical manufacturer and distributors in Kenya*. Nairobi: Unpublished MBA research project of the University of Nairobi.

Naik, L.G.Y.K., Jahagirdar, K.A., Natikar, K.V. and Hawaldar, Y.N. (2010). "A Study on Knowledge and Adoption of Integrated Crop Management (ICM) Practices by the Participants of Farmers Field School on Maize", University of Agricultural Sciences, Dharwad.

Olanya, M., Nelson, R., Hakiza, J., Ewell, P., El-Bedewy, R., Kakuhenzire, R., Namanda, S., Kasheija, I., Wagoire, W., Ngombe, B. and Musoke, C. (2010). "Comparative Assessment of Pest Management Practices in Potato Production at Farmer Field Schools", *Food Security*, vol. 2, no. 4, pp. 327–341

Otido, C.N. (2011). *Competitive strategies adopted by Kenyan cement firms in a turbulent business environment*. Nairobi: Unpublished MBA research project of the University of Nairobi

Owolabi, S. A., & Makinde, O. G. (2012). The effect of strategic planning on the corporate performance in university education: a study of Babcock University. *Kuwait Chapter of Arabian Journal of Business and Management Review*, 2(4), 27-44.

Pananurak, P. (2010). "Impact Assessment of Farmer Field Schools in Cotton Production in China, India and Pakistan", *Pesticide Policy Project, Special Issue Publication Series No. 14*, Institute of Development and Agricultural Economics, Leibniz University of Hannover, Germany.

Rajan Saxena, marketing management, Tata Mcgraw hill, New Delhi, 2010.

Rao, N.V., Ratnakar, R. and Jain, P.K. (2012). "Impact of Farmer Field Schools in KVK Adopted Villages on Level of Knowledge and Extent of Adoption of Improved Practices of Paddy", Indira Gandhi National Open University.

Rebaudo, F. & Dangles, O. (2011). "Coupled Information Diffusion-Pest Dynamics Models Predict Delayed Benefits of Farmer Cooperation in Pest Management Programs", *PLOS Computational Biology*, vol. 7, no. 10, pp. 1–10. REAd Revista Eletrônica de Administração, 69(17): 298-329.

Rejesus, R.M., Yasar, M., Mutuc, M.E.M., Lapitan, A.V., Palis, F.G. & Chi, T.T.N. (2010). "Sending Vietnamese Rice Farmers Back to School: Further Evidence on the Impacts of Farmer Field Schools", draft article edition.

Todo, Y. and Takahashi, R. (2011). "Impact of Farmer Field Schools on Agricultural Income and Skills: Evidence from an Aid-Funded Project in Rural Ethiopia", JICA Research Institute Working Paper, No. 30, May 2011.

Troy University (2013). *Troy University Rugby School Sports Team*. Facebook page, 26 October, 2013. [Online] Available: <https://www.facebook.com/TroyUniversityRugby/posts/542040272544872>. Accessed: 3 May 2016

Van Rijn, F., Burger, K. & Den Belder, E. (2010). "Impact Assessment in the Sustainable Livelihood Framework – a case of the DE Foundation Coffee Support Project", paper presented at the Impact Evaluation Conference ISS&AIID.

Vel, P., Creed, B., & Narayan, R. S. (2012). The corporate strategy of Dubai Duty Free. *Asian Journal of Business and Management Sciences*, 2(6), 40-52.

Waarts, Y.R., Ge, L., Ton, G. and Jansen, D.M. (2012). "Sustainable Tea Production in Kenya; Impact Assessment of Rainforest Alliance and Farmer Field School Training", Wageningen University.

Wijesinghe, J. C., Ten, E. E., & Foreman, J. (2012). An empirical investigation into formalized strategic planning in small and medium enterprises (SMEs) in Srilanka. *2nd International Conference on Management Proceeding, 11th-12th June, 2012, Holiday Villa Beach Resort & Spa, Langkawi Kedah, Malaysia*

Wu, L. (2010). "Farmer Field School and Bt Cotton in China – An Economic Analysis", Pesticide Policy Project, Special Issue Publication Series No. 15, *Institute of Development and Agricultural Economics, Leibniz University of Hannover*, 179 Germany.

Yorobe, J., Rejesus, R.M. and Hammig, M.D. (2011). "Insecticide Use Impacts of Integrated Pest Management (IPM) Farmer Field Schools: Evidence from Onion Farmers in the Philippines", *Agricultural Systems*, vol. 104, no. 7, pp. 580–587