

**FACTORS INFLUENCING SUSTAINABILITY OF DONOR  
FUNDED PROJECTS: A CASE OF SMASSE PROJECT IN TETU  
SUB-COUNTY, KENYA**

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**DECLARATION**

This research report is my original work and has not been presented for a degree or any other award in another University or institution of higher learning.

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This research report has been submitted for examination with my approval as the University Supervisor.

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## **DEDICATION**

I dedicate this work to my Wife Peninah, and to my brothers and sisters.

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## **ABBREVIATIONS AND ACRONYMS**

<b>CBAM</b>	Concerns Based Adoption Model
<b>DEO</b>	District Education Officer
<b>DPC</b>	District Planning Committee
<b>DQASO</b>	District Quality Assurance Officer
<b>DTOTs</b>	District Trainer of Trainees
<b>EFL</b>	Foreign language
<b>ICT</b>	Information and communication Technology
<b>INSET</b>	In-service Education and Training
<b>JICA</b>	Japan International Cooperation Agency
<b>MDGs</b>	Millennium Development Goals
<b>NACOSTI</b>	National Commission for Science, Technology and Innovation
<b>SMASSE</b>	Strengthening of Mathematics and Science in Secondary Education
<b>SPSS</b>	Statistical Package for Social Sciences
<b>TOTS</b>	Teachers Trained At National Level
<b>ASEI</b>	Activities Student Experiment and Improvisation
<b>PDSI</b>	Plan Do See and Improve

## ABSTRACT

The purpose of the study was to establish the factors influencing the sustainability of donor funded SMASSE project in Tetu sub-county. The study was guided by three research objectives. Research objective one sought to determine the extent to which financial resources influence the sustainability of SMASSE project, research objective two sought to establish how principals support influence the sustainability of SMASSE project while researcher objective three sought to assess how teachers' attitude influence the sustainability of SMASSE project in Tetu sub- County. The study found out that financial resources contributes the sustainability of SMASSE project to a great extent as indicated by majority 91(62.8%) of teachers. Findings on the influence of teachers' attitude and the sustainability of SMASSE project revealed that Science and mathematics teachers' attitude toward SMASSE influence the sustainability of the project as indicated by majority 76(52.4%) of teachers. The study also found out that teacher's attitudes towards SMASSE project is acquired from INSETS attended. Majority 121(83.4%) of teachers strongly agreed that teachers attitudes influence future behavior of SMASSE project, 127(87.6%) of teachers disagreed that all science staff were trained with skills related with what they were doing, teachers further strongly agreed that Professional development programs for science teachers are beneficial in changing teachers' attitudes and that SMASSE INSET provides a basis for thoughtful planning for effective teaching. Based on the findings of the study, it was concluded that financial resources contributes to the sustainability of SMASSE project to a great extent. The study also concluded that funding affects the project sustainability. The study also concluded that better financial analysis was required for the sustainability of SMASSE project. It was also concluded that SMASSE project does not get enough financial support from donors for its sustainability and that SMASSE project funds availed were not spent strictly on the set budget. The study concluded that school principals' support contributed to the sustainability of SMASSE project to a very great extent and that principals should mobilize the available resources. It was also concluded that school principals were effective in management of curriculum activities and that principals need to hold individual conferences with teachers. Based on the findings the study recommended that to enhance capacity in mathematics and science teachers in terms of teaching methods, knowledge and management of experimental equipments in mathematics and sciences is important. SMASSE programs also need to be strengthen through funding. Mathematics and science Teachers should be provided with SMASSE INSET for thoughtful planning for effective teaching of mathematics using ASEI/PDSI approach.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of the study**

The Strengthening of Mathematics and Science Subjects in Secondary Education (SMASSE) in-service is the new development and which forms the interest of this programme. It was launched in 1998 having been set up as a joint venture between the Kenya government and the Japanese government. The Japanese government was represented by Japan International Co-operation Agency (JICA). Its main purpose was to strengthen Mathematics and science Education at Secondary level through in-service education and training of serving teachers in selected pilot districts (SMASSE Report, 2008). Its main objectives were to enhance capability of mathematics and science teachers in terms of teaching methods, knowledge and management of experimental equipment in mathematics and science, to enhance frequent and regular interaction among mathematics and science teachers and to establish and institutionalize inset in pilot districts (SMASSE Report, 2008).

Nine Districts were initially piloted which included Kisii Central, Gucha, Butere Mumias, Makueni, Lugari, Maragua, Kakamega, Kajiado and Murang'a. The INSETS are organized into four cycles covering four years. Apart from the pilot districts where training kicked off in April 2000, the rest of the districts in the country are at different stages of the cycles (Masijila, 2002). Its imperative to note here that after the fourth cycle JICA's responsibility and in line with the accord was to provide both technical advice and material resources; the fiscal outlays to the SMASSE programme was

substantially to come from consumers of education (learners) and by extension parents through the Heads Association and the management of the funds to be exercised by a County Planning Committee (CPC). The CPC comprises of a chairman who is also the County Director of Education (CDE), a County co-ordinator who's also the County Quality Assurance Officer (CQASO), a treasurer who's a member of the Heads Association and two members one who's the principal of the INSET centre and the other a member from the County Trainer of Trainees (CTOTs) team (Muthemi, 2008)

Sustainability refers to the continuation of a project's goals, principles, and efforts to achieve desired outcomes. Although many grantees think that guaranteeing the sustainability of a project means finding the resources to continue it "as is" beyond the grant period, ensuring sustainability really means making sure that the goals of the project continue to be met through activities that are consistent with the current conditions and workforce development needs of the region, including the needs of both workers and industry. Sustainability is about maintaining and continuing program services after the funding period is over. (Brown and Vessey, 1999)

It is also noteworthy that the programme has now taken everybody on board in all the districts and the financial obligations have scaled up. Muthemi (2004) made a thorough evaluation of the first two SMASSE objectives that is to enhance capability of mathematics and science teachers in terms of teaching methods, knowledge and management of experimental equipment in mathematics and science and to enhance frequent and regular interaction among mathematics and science teachers. He observed that SMASSE had a positive impact in realizing the two objectives. He further opines that assessing the financial challenges to the SMASSE programme will be a milestone in

making crucial recommendations for the realization of the third objective (That is, to establish and institutionalize INSET in pilot districts). SMASSE in-service trainings have been rolled out in the country and they are being implemented in schools. SMASSE (2006) observes that the education system in Kenya has created a gap between theory and practice.

The SMASSE programme in Kenya came into being when the consistently poor performance in Mathematics and Science (Biology, Physics and Chemistry) became a matter of serious concern (SMASSE – WESCA, 2003). Broad curricula, lack of facilities and inadequate staffing were always stated as the major causes of the problem. Although dismal performance in these subjects had almost been accepted as the norm in some schools, the Ministry of Education, Science and Technology (MoEST) and other stakeholders like JICA felt there had to be an intervention hence the birth Strengthening of Mathematics and Science in Secondary Education (SMASSE) programme (Simplicio, 2000).

SMASSE was an initiative by the Ministry of Education with technical assistance of Japan International Cooperation Agency (JICA) which was done in 1998 in 9 out of 72 districts in the country. The programme was to run for 5 years to 2003. In the year 2000, mid-way the pilot phase, it was extended to 6 more districts owing to success in its implementation. The pilot phase of the project benefitted approximately 4000 (20% of the target group of) teachers. Buoyed by successful implementation of the pilot project the two parties agreed to scale up the implementation of SMASSE project activities to national scope for another 5 years (Phase II, 2003 - 2008). The success was mainly due to the strong political support for the programme and its ownership by the Ministry and the

beneficiaries, besides the effective leadership in management of the implementation process of the programme. From January of 2009, the implementation of the project activities had been farther scaled up to cover primary level education as well, up to the year 2013 (Wambui, 2013).

Program sustainability actually means different things depending on the developmental stage of your program. Newer programs may want to concentrate on sustaining their activities or infrastructure once initial funding ends. Experienced programs may want to enlarge their target population, transfer their best practices to other programs, build new relationships with other agencies, or promote broader policy initiatives. However, in either case new or experienced programs should work to better ensure sustainability by creating more efficient mechanisms for funding, such as the repurposing of existing resources through improved alignment, and coordination of complementary activities and resources.

Program sustainability has traditionally been viewed narrowly as the act of decreasing dependence on one source of funding and shifting financial support for program implementation to a new funding stream. In reality, program and organizational sustainability is a much more complex and dynamic process. SMASSE programme was initiated on the platform that it will help improve the standards of Science and Mathematics. New programs and projects such as SMASSE are only part of a changing and evolving community system. The most successful components should become part of the overall process of positive change for effective sustainability (Antill, 1999).

In maintaining sustainability there is need to change the way the project managers think about program development if they are to develop sustainable programs, there is need to look at the longer term possibilities, opportunities and challenges. Effective sustainability requires a shift from implementing a plan of action to programs creating an ongoing transformational process that will address different participant and community interests.

Also teachers are reluctant to perform experiments especially the dangerous ones and the fear that the experiments might fail and therefore most teachers prefer carrying out teacher demonstrations. Again, most parents are not interested in their children performance, especially in sciences and mathematics and some feel that their role is only fees payment. Still in appropriate methods of teaching are employed and most teaching methods are teacher centered. There is inadequate use of assignment to reinforce the mastery of content and infrequent inspection from subject inspectors. There is a missing link between primary and secondary school teaching methods. Other factors include lack of adequate teacher preparation hence poor mastery content, expenses needed for training SMASSE personnel and expenses needed to dispatch them for exchange visits and technical advice to other member countries, expenses necessary for holding regional and international conferences and SMASSE delegates meetings.

Sciences and mathematics teachers are given little opportunities to interact amongst, themselves and exchange ideas since they are most held in school during the term and communities lack information about schools. In addition to strategies such as: providing schools with qualified mathematics and science teachers and improving their remuneration and terms of service; providing schools with science equipment and even constructing laboratories, the government has also institutionalised In-service Education



and Training (INSET) of serving science and mathematics teachers under Strengthening of Mathematics and Science in Secondary Education (SMASSE) project and quite a substantial amount of the Ministry of Education's budget goes towards this course (MoE, 2005). SMASSE is a Technical Cooperation initiative between the Governments of Kenya and Japan signed in 1998 for purposes of implementation of the project.

The government of Kenya recognises the important role science and mathematics should play in the realisation of vision 2030; to become a globally competitive and prosperous country by 2030. This has been reflected in the amount of resources both human and otherwise that are channeled towards enhancing the teaching and learning of science and mathematics at all levels of the education system. At secondary school level, there have been a number of intervention strategies that the government has put in place to ensure effectiveness in the teaching/learning of these subjects.

Since its inception in 1998, the SMASSE project has contributed greatly to the improvement of performance in Science and Mathematics in Kenya. However, the improvement in performance has not been much as expected, despite the change in teaching and learning approaches towards these subjects by the teachers. This could be attributed to the following factors: first Students' attitude is generally negative due to low entry behavior, belief that these subjects are hard, peer pressure, lack of proper learning facilities, teacher absenteeism and theoretical approach to teaching science and mathematics.

## **1.2 Statement of the Problem**

Some of the challenges facing the SMASSE affect the sustainability of the project. This include transfer of teachers interruption of school programme by issues such as fees collection, stagnation in one job which demoralizes teachers thus lowering their effectiveness in delivery to the learner, understaffing in some areas of curriculum, teachers' poor working conditions and terms of service, overloaded syllabus and inadequate provision of infrastructure, instructional material and equipment to school. Despite the above challenges, there have been cases of schools with sufficient equipment and materials, yet student's achievement in Mathematics and Science subjects had not been very high on the converse there were schools that had poor facilities, teaching and learning materials yet they produced comparatively better results in national examinations due to effective teaching. It is against this background that this study intended to assess the factors influencing the sustainability of donor funded educational projects in Tetu sub- County a case of SMASSE project.

## **1.3 Purpose of the study**

The purpose of this study was to investigate the factors influencing sustainability of donor funded projects; a case of SMASSE project in Tetu sub-county.

## **1.4 Objectives of the Study**

The proposed study had the following objectives;

1. To determine how financial resources influence sustainability of SMASSE project in Tetu sub- County

2. To establish the influence of school principals' support on the sustainability of SMASSE project in Tetu sub- County
3. To assess the influence of teachers' attitude on the sustainability of SMASSE project in Tetu sub- County

### **1.5 Research questions**

The following were the research questions for the study

1. How do financial resources influence sustainability of SMASSE project in Tetu sub- County?
2. What is the influence of principals' support on the sustainability of SMASSE project in Tetu sub- County?
3. How do teachers' attitude influence sustainability of SMASSE project in Tetu sub- County?

### **1.6 Significance of the Study**

The donor community and more particularly in Kenya would benefit from the findings of this study by gaining insights on how donors can partner with local communities in identifying, implementing and managing projects to ensure sustainability. The government policy makers, who include planners, would gain an understanding the determinant influencing sustainability of donor funded project, and will therefore undertake a policy review and formulate policies that address the findings of the research. This would enhance the chances of not only meeting the Millennium Development Goals (MDGs), but also the Vision 2030. The project managers would gain an understanding of

the determinants influencing sustainability of donor funded project and use the research findings to improve on their own performance in managing donor funded projects such as SMASSE. The donor community would understand their role in the donor funds management and projects successes. This study would make a significant contribution to the growing body of research on effective use of donor aid and project sustainability. The findings may also be used as a source of reference by other researchers. In addition, academic researchers may need the study findings to stimulate further research in this area and as such form a basis of good background for further researches.

### **1.7 Delimitations of the Study**

According to Mugenda and Mugenda (2003), delimitations are boundaries of the study. The study addressed itself to the factors influencing the implementation of SMASSE project in Kenya. The study was delimited to Tetu sub- County. The sub- County might be unique from other counties hence the findings of the study will be generalized to other areas with caution. Although there are many factors that affect the sustainability of the project, the researcher delimits himself to financial support, principals support and teachers' attitude.

### **1.8 Limitations of the Study**

According to Best and Kahn (2008), limitations are conditions beyond the control of the researcher that may place restrictions on the conclusions of the study and their application to other situations. The researcher will not be able to control the attitudes of the respondents hence affecting the validity. The respondents may share information in the

process of filling the questionnaires hence affecting the objectivity of the findings. The researcher will however sensitize the respondents on the importance of filling the questionnaires independently. Data will be collected only from head teachers and teachers involved in school based instructional supervision. Respondents may give socially acceptable responses. However, to reduce this, the researcher will assure them of confidentiality of their views and will explain that the questionnaire was for the purpose of research only.

### **1.9 Assumptions of the Study**

The following were the assumptions of the study;

1. The respondents would fill the questionnaires appropriately and provide all the necessary data required from them.
2. That all respondents were conversant with the SMASSE programme objectives.
3. The SMASSE INSET have been conducted effectively and according to the national SMASSE INSET principles

### **1.10 Definition of Significant Terms**

**Attitude** refers to the way teacher's/student's behavior is set towards or against SMASSE INSETS and subjects respectively.

**Experience** refers to the total number of years one has served as a science or mathematics teacher in Kenya.

**In-service education and training** refers to the education and training activities engaged by primary and secondary school teachers and principals following their initial professional certifications.

**Non Trained graduate** is an individual who had received university education but not teacher training.

**Sustainability** refers to the continuation of a project's goals, principles, and efforts to achieve desired outcomes.

**Trained Graduate** refers to an individual who has received training as a teacher from a university.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This section provides a review of literature related to the study. It includes literature on the concept of SMASSE programme, in-service education and training, importance of INSET in Kenya, the teaching of sciences, and mathematics, attitude, the evaluation of INSET courses, theoretical framework and conceptual framework.

#### **2.2 Background to the SMASSE Programme**

For Kenya to be relevant in this increasingly fast growing information and technological world, the role of science and mathematics in technological development cannot be ignored. Strategies of ensuring there is effective teaching and learning of science and mathematics in our schools must be encouraged. This will ensure that the country will be able to achieve its vision 2030 and that education offered is of quality and globally competitive (Ndirangu, 2006). The Kenya Government in Partnership with Japan International Co-operation Agency [JICA] has started programmes for in servicing of mathematics and science teachers through in serve training centre [INSET]. The program is known as “Strengthening of Mathematics and Science in Secondary Education [SMASSE] in Kenyan secondary schools. The SMASSE programme in Kenya which started in 1998 has penetrated Kenyan secondary schools and has given Kenyan schools a wakeup call to strengthen the teaching and learning of mathematics and science.

The main objectives were:-to enhance capacity in mathematics and science teachers in terms of teaching methods, knowledge and management of experimental equipment in mathematics and science, to enhance frequent and regular interaction among mathematics and science teachers and to establish and institutionalize INSETS for mathematics and science teachers in pilot districts. This programme initially located at Kenya Science Teachers College initially covered nine districts, namely; Kisii, Gucha, Kakamega, Butere-Mumias, Lugari, Kajiado, Makueni, Murang'a and Maragua. The SMASSE programme has three main donors namely; JICA, MOEST, and DEBs. JICA is by far the largest donor and gives assistance that includes training Kenyan counterparts in Japan, provision of long-term and short term experts and provision of equipments and materials for National and District level INSETS (Ndirangu, 2006). The MOEST provides salaries, travel and subsistence allowance for National trainers as well as accommodation. It also provides training centres at National and District levels. The DEB's through levies by parents also gives allowance to trainers at district level.

At the district level, those teachers trained at National level (TOTS) conduct various INSET activities at this level. Depending on the number of Mathematics and Science teachers in a District this level of INSET may train all teachers or a few selected ones who form trainers for the next level INSET (SMASSE 2002). This is a residential activity where participants are accommodated in a school selected as the SMASSE district INSET centres.



### **2.3 Financial Resources and project sustainability**

Project sustainability is one of the most critical challenges for all grassroots, national and international development agencies. Globally, billions of shillings have been spent in communities to enhance the living situation of the people. Aid effectiveness is a growing concern for the donor community. In the recent past, development practitioners have been focusing on efficient aid delivery to education. The shift from project mode to Sector Wide Approaches, Structural Adjustment measures to Poverty Reduction Strategy Papers<sup>1</sup>, Programmes-based Approaches, Direct Budget Support, Medium-Term Expenditure Frameworks reflect this concern for reducing the fragmentation of development systems and change the way aid is delivered by shifting the balance of power (Adhiambo, 2012). While donor funding can act as a temporary driver for social change, maintaining the social change is challenging. For instance, unforeseen circumstances may threaten the initial uptake of innovative project design elements. Short funding cycles, conflict with time needed to stimulate social change; and potentially worthwhile healthy interventions may no longer be financially viable once donor funding ends.

According to Masijila (2002) for development projects to be financially sustainable, it requires a sound financial base arising from reliable sources of funding, financial systems to facilitate accountability and cash flow projections and development of marketable products/services to generate excess incomes over the expenditure of the project. Project financial systems refer to accounting procedures, records and financial statements showing performance and cash flow statements, projections that determine financial sustainability of donor funded projects.

Project that do not deliver clear and equitable financial or economic benefits, which are apparent to the stakeholders, it is most unlikely to be sustainable after donor funding is withdrawn (OECD, 2009). For instance, health service users will not pay for government health services (either directly or through taxes) if the services are poor, or their expectations or benefits are extremely limited. Benefits are not sustainable if the net benefit arising is negative or very small when all costs are considered. Better financial analysis is often required particularly in the formulation of economic sector programs and projects.

According to Ababa (2013), development aid to Kenya stood at \$770m in 2005 and has been steadily rising since 2002, supporting several projects all geared towards development. Some of the projects have, however, been successful. However, little evidence is available on the true impact of funded programs on the lives of the poor in Kenya. One of the most critical obstacles is the extent to which the projects are able to persist despite the exit of donors, while the beneficiaries reap dividends, and appreciate their participation and ownership role in the project. Apparently, little evidence indicates that, it is sustainability that makes the difference between success and failure of community-based projects. The concept of sustainability can be seen within time and changing social, economic and political contexts. According to Williams, (2003), sustainability is reflected in the capacity of the community to cope with change and adapt to new situations. A project that is seen as worth sustaining today may not be so in future. Notwithstanding, substantial resources have been allocated to developing and maintaining community-based programs for children, youth and families, relatively little is known about how these programs are sustained and what factors lead to their failure.

Quite often, the typical community-based program has a relatively short life once its original funding base expires (Schorr, 1997). Inadequate information and understanding of what sustains community based programs has led to various researches focusing on how community projects can be sustained past their initial funding base and increase their longevity in addressing the needs of the community. The roots of sustainable development concept can be found in the emerging environmental consciousness of the 1960s and in the identification of the link between economic development and environmental degradation and pollution (WECD, 1987). This development was closely related to the replacement of the optimism about the creation of a modern technological utopia with a new understanding of the forces contributing to the world's problems. Sustainable Development (SD) was used for the first time in the 1980 IUCN Report, *World Conservation Strategy: Living Resources for Sustainable Development*. Today, the word sustainability is frequently used in many platforms using different combinations such as sustainable development, sustainable growth, sustainable community, sustainable industry, sustainable economy, and sustainable agriculture. Sustainability is drawn from the root word "sustain" which means to provide conditions in which something can happen (A & C Black Publishers, 2007).

## **2.6 School Principals' support and SMASSE program sustainability**

Provision of resources at their disposal more rationally towards academic activities for the benefit of the learners; mobilize all available resources, both human and physical, for enhancement of teaching and learning activities; conduct regular school-based supervision of teaching and learning activities; and organize regular seminars and

workshops for mathematics and science teachers through science and engineering fairs. Studies conducted reveal that head teachers indeed have a significant role to play in a teacher's teaching practices. In her study, Wambui (2013) found that school principals' support had a significant effect on teachers' teaching practices.

According to Kithi and Kamau (2001), effective management of curriculum implementation depends on the availability, control and monitoring of human, financial and physical resources. Inyega (2002) further emphasizes the importance of adequate financial resources as a crucial implementation indicator in curriculum implementation management. Kithi and Kamau (2001), highlight the importance of management of physical resources, as the nature and availability of these resources directly affect the teachers and the learners' ability to engage in effective teaching and learning.

The role of the school principals in instructional supervision is to hold individual conferences with teachers. These are usually held after classroom visits or at the request of the teacher or supervisor. They can be most valuable in providing for an exchange of ideas, and in identifying possible areas for curriculum study or for the teachers' professional growth (Simplicio, 2000). Modern school supervision can be defined as a positive action aimed at the improvement of classroom instruction through the continual growth of all concerned- the child, the teacher, the supervisor, the administrator, and the parent or other interested lay person (Simplicio, 2000). He adds that the major purpose of instructional supervision can be said to be to oversee the implementation of educational policies and to ascertain whether the implementation is being done effectively.

Evers, Andre & Welko. (2002) also promote classroom observation as a form of performance management. However, these authors strongly believe that this should be done by trained mentors who are able to provide support regarding teaching, learning and classroom management to the observed teachers before, during and after the observation session. In this regard, Evers (2002) stress the importance of regular and constructive feedback to the monitored and evaluated parties.

In relation to implementation of projects, sustainability is the probability that a project shall continue long after the outside support is withdrawn. Consequently, while thinking of project sustainability, three things must be born in mind; the community, project results and external assistance. A project is sustainable if the community/beneficiaries are capable on their own without the assistance of outside development partners, to continue producing results for their benefit for as long as their problem still exists. There have been several projects funded by donors such as the World Bank, DFID, CIDA, and USAID among others, to help alleviate poverty in Kenya. Most of these projects have been designed for various communities living in Kenya.

## **2.7 Attitude of teachers and project sustainability**

Simplicio, (2000) define the term attitude as a tendency to act in some manner toward a person, structure or idea. Attitudes amount to likes or dislikes and interest or disinterest. There are a number of attitude features that are important to this study. First, attitude is learned and enduring in an individual. A science or mathematics teacher attitude toward SMASSE INSETs can be said to be learned from some source. Attitudes are consistent over time, regardless of change in one's environment. Musungu (2008) puts it "attitudes

are learned and enduring in an individual. The teachers attitudes towards SMASSE programme can be said to have been learned from some given source such as other INSETS which they have attended. Attitudes are consistent overtime and across situations. Once it has been acquired, attitude exhibit itself overtime. Attitude is not an observable entity; rather it is an underlying construct whose nature can only be understood through influence. As noted earlier, some researchers have associated attitudes and behavior whereas others have shown no relationship between attitudes and subsequent behavior. This study holds that attitudes influence future behavior although external pressures and extraneous considerations can cause people to exhibit behavior inconsistent with their attitude.

Macharia (2008) conducted a study to explore why some teachers are more adaptive to new teaching techniques than others. They found out that knowledge alone does not lead to the kind of thoughtful teaching everyone strives to maintain. According to the study, teachers with similar professional knowledge and qualifications were found to have differences in their teaching practices. They further suggested the need to move beyond knowledge in teacher education with an aim to explore questions about preparing thoughtful teachers. SMASSE INSET provides a basis for thoughtful planning for effective teaching of mathematics using ASEI/PDSI approach.

Abdulkafi (2004) explored the attitude of high school teachers as a foreign language (EFL) teacher in Syria toward Information and communication Technology (ICT). Further, he investigated the relationship between attitudes toward computer and five independent variables: computer attributes, cultural perceptions, computer competence, computer access, and personal characteristics.

Evers et al. (2002) investigated teachers' belief on the implementation of an innovative educational system in the Netherlands, aimed at establishing the extent to which teachers have a negative attitude towards new instructional practices. They found that implementation of the practices and coping with stress involved in the "study-home" innovation, related negatively to the teachers' burnout levels. A sample of 490 teachers was selected and three types of questionnaires were administered to assess self-efficacy, teachers burnout and teachers attitude concerning the usefulness and effectiveness of the study-home as an educational innovation. The results of the study showed that self-efficacy beliefs were significant and negatively related to depersonalization and emotional exhaustion dimensions.

Inyega (2002) evaluation on the attitude change of teachers revealed that professional development programs for science and mathematics teachers can be beneficial in positively changing teachers' attitudes towards the teaching and learning objective, using various teaching strategies and approaches, work planning, ability to overcome teachers' limitations in teaching, and conducting various types of practical work in sciences.

Attitudes of mainstream teachers towards the inclusion of children with special needs in the ordinary school were surveyed soon after the release of the Green Paper (Abusharbain et al., 2002). The survey was carried out in one local education authority in the south-west of England with a sample of 81 primary and secondary teachers. The analysis revealed that teachers who had been implementing inclusive programs, and had an active experience of inclusion, possessed attitudes that were more positive.

Ndirangu (2013) studied the factors influencing teachers' level of implementation of SMASSE innovation in tetu sub- County. She used questionnaires, lesson observations, and interviews and analysed data by descriptive and inferential means. Ndirangu found that implementation of the ASEI-PDSI approach was mostly partial with only 5% of teacher implementing it fully. Ndirangu further found out that some of the factors which affected implementation include concerns by teachers and headteachers, attitudes of teachers and headteachers but did not indicate how these affected performance in mathematics and science considering that the key objective of SMASSE was to improve performance in mathematics and science.

## **2.8 Theoretical framework**

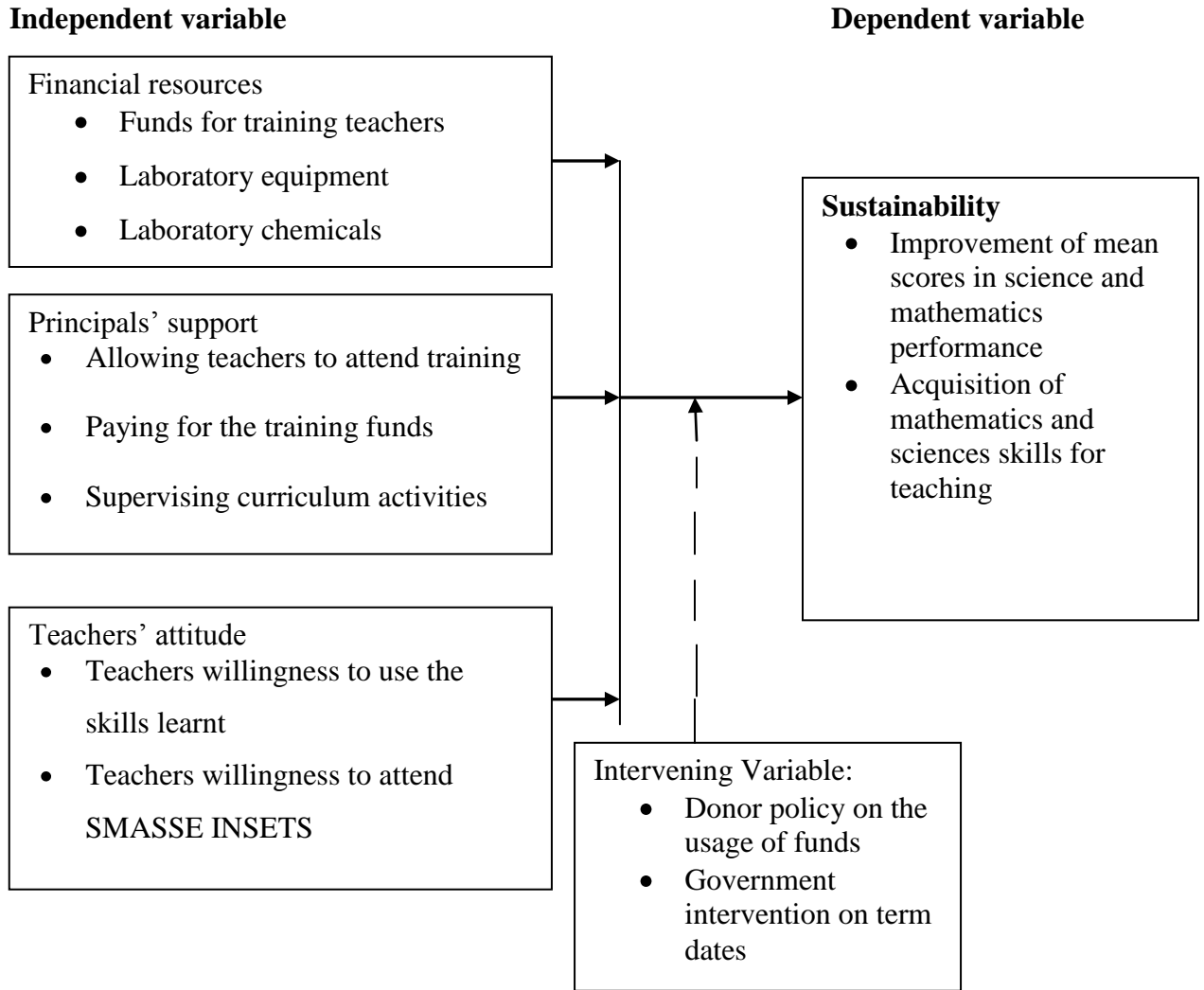
The theoretical backbone of this study stems from one scholars' theory and one model to explain the dynamics that influence the implementation of innovations. Rogers (2003) "Innovation Decision Process Theory" says a number of factors interact to influence the diffusion of an innovation and these factors might have a bearing on the implementation phase of the innovation later. The Concerns Based Adoption Model (CBAM) of Hall, Wallace and Dosset's (1973) is designed to provide measurement concepts and tools for researchers to evaluate the effects or progress of implementation of innovations. CBAM was designed to help school leaders, staff developers and change facilitators identify the special needs of individuals involved in the change process and address those needs appropriately based on the information gathered through the model's diagnostic dimensions. According to Hall, Hord, Stiegelbauer and George (2006) the model has three diagnostic dimensions. The Stage of Concern addresses the individual's



perceptions, feelings and attitudes relative to the innovation. The Level of Use describes how individuals are actually implementing the innovation. The Innovation Configuration dimension clarifies what the innovation actually looks like along a continuum from high quality implementation to least desirable practices. Current uses of the CBAM are as diverse as the innovations to which its parts can be used. Dass (2001) used the Concerns frame work in instruction innovations in science in the Chantauqua Program as a way of assessing teacher's readiness and barriers to implementation. Teachers' implementing the ASEI/PDSI innovation in Kenya might need to have their self concerns and needs addressed before they are ready to implement the innovation. Acknowledging these concerns and addressing them is critical for effective implementation of this innovation. This theory is selected for the study since it will explain how SMASSE has influenced performance in science and mathematics.

## **2.9 Conceptual framework**

The conceptual framework of this study as presented in figure 1 shows the interrelatedness between variable in the influence of the sustainability of donor funded educational projects. The conceptual framework of the study is developed from reviewed literature and the objectives. The framework shows that a relationship exists between the independent variable (financial resources, principals' support and teachers' attitude) and dependent variable (project sustainability) which can be measured using improvement of science and mathematics performance as the sustainability indicator



**Figure 1: Conceptual framework**

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter discusses the research methodology and the rationale for choice of the method of study. Included was the research design, the target population, sample size and sampling procedure, the research instruments, validity and reliability of the instruments, data collection procedures and data analysis techniques.

#### **3.2 Research Design**

The study adopted descriptive research survey design. According to William (2006), descriptive studies are more formalized and typically structured with clearly stated investigative questions. According to Mugenda and Mugenda (2003) descriptive research determines and reports the way things are. It is restricted to fact finding and may result in the formulation of important principles. A survey design was suitable for this study since the researcher intended to get information that describes the current status of a phenomenon in the factors influencing sustainability of donor funded projects: a case of SMASSE project in Tetu sub- County.

#### **3.3 Target Population**

Cooper and Schindler (2003) define target population as the list of the element from which sample size is actually drawn. The target population for the study was all sciences and mathematics teachers in the sub-county. According to the Sub- County Director of Education Tetu (2016) there are 240 science and mathematics teachers who have attended

the SMASSE project in Tetu sub-county. The target population was therefore to be 240 teachers.

### **3.4 Sample Size and Sampling Procedure**

Best and Kahn (2004) define a sample as a small proportion of the population that is selected for observation and analysis. Simple random sampling technique was used in the study. To select the science and mathematics teachers the researcher used Robert Krejcie and Dayle Morgan formula;

$$S = \frac{X^2 NP (1 - P)}{d^2 (N-1) + X^2 P (1-P)}$$

Where S is the required sample size. The sample for the study was 148 teachers.

### **3.5 Research Instruments**

Data for this study was collected using questionnaires. According to Mugenda & Mugenda (2003), a questionnaire is a written set of questions to which subjects respond in writing. Questionnaires ensure anonymity of the respondents, thus is expected to enhance their honesty (Orodho 2005). Questionnaires allow the respondents to freely express themselves (Mugenda and Mugenda 2003). Items in the questionnaires were designed based on the objectives of the study, and on the literature review. The questionnaires consisted of two sections: A and B. Section A sought for respondents' background information while section B consisted of items addressing the objectives of the study.

### **3.5.1 Piloting of the research instruments**

The pilot study was conducted by selecting 10% of the sample size respondents in the half of the schools in tetu sub-county. This helped in testing the credibility, clarity, and duration of completing the questionnaires so as to enable the researcher make amendments before the actual collection of the data.

### **3.5.2 Validity of the Instruments**

Validity is the degree to which results obtained from the analysis of the data actually represent the phenomena under study (Mugenda & Mugenda, 2003). The researcher tested for content validity. Kothari (2003) defines content validity as the extent to which a measuring instrument provides adequate coverage of the topic under study. Expert opinion from the supervisor was sought to check on the content and construct validity of the instruments. The supervisor read through the draft instruments and the recommendations were incorporated in coming up with the final instrument` that was used for data collection.

### **3.5.3 Reliability of the instruments**

Best (1998) defines reliability as the ‘degree of consistency that the instruments or procedure demonstrates whatever it is measuring, it does so consistently. Gall (1989) defines reliability as the level of internal consistency or stability over time of the measuring research instruments. Roscoe (1969), states that the split-half method can be used to establish internal consistency. This involves splitting the instruments into two; one half of even-numbered items and the other of odd-numbered items. The correlated

results value provides the internal consistency of one half that is the degree to which the two halves of the test are equivalent or consistent in terms of items. The co-efficient is obtained through Pearson product moment formula. The reliability for the instrument was a coefficient of 0.783 and hence the questionnaire was deemed reliable.

### **3.6 Data Collection Techniques**

Administration of the research instruments for data collection was done by the researcher both at the pre-testing and during the main study. The researcher first obtained a research permit from the National Commission for Science, Technology and Innovation (NACOSTI); a copy was presented to the Deputy County Commissioner and the Deputy County Director of Education and thereafter to the head teachers of the selected schools to request for data collection. The researcher administered the research instruments to the selected schools in person. In liaison with various teachers, the researcher collected the questionnaires on an agreed date.

### **3.7 Data Analysis Techniques**

Analysis of data started with editing in order to identify errors made by the respondents such as spelling mistakes and any other wrongly answered or un- responded to items. Quantitative data derived from the demographic sections of the questionnaires and other closed questions were analyzed using descriptive and inferential statistics. The descriptive statistics were carried out by use of percentages and frequencies while inferential statistics were carried out by use of regression analysis. Qualitative data generated from the open-ended questions in the research instruments were organized into

themes and patterns, categorized through content analysis and be tabulated. The data was computed using the Statistical Package for Social Sciences (SPSS).

### **3.8 Ethical considerations**

In research, ethics may be defined as the norm for the conduct that distinguish between acceptable and unacceptable behaviour in a scientific investigation (Wambugu et al 2015). The considerations for ethics are very important within the course of the research process. The researcher should not embarrass, perpetrate pain, or impose other disastrous effects on the respondents. In an attempt to protect the respondents in this research, the researcher observed four ethical principles. The subjects of this study will not be required to use their names or provide any form of identification. Full consent of all respondents will be sought before the questionnaire is administered. All subjects will be assured of total confidentiality and the data obtained will be used for research purpose only. The study will not cause any form of risk to participants or cause any form of anxiety.

### **3.9 Operational Definitions of Variables**

The Operational Definitions of Variables is presented in Table 3.1

**Table 3.1 Operational definition of variables**

<b>Research objectives</b>	<b>Variables independent</b>	<b>Indicator</b>	<b>Measurement scale</b>	<b>Tools of analysis</b>	<b>Type of analysis</b>
To determine the extent to which financial resources influence the sustainability of SMASSE project in Tetu sub- County	Financial resources	<ul style="list-style-type: none"> <li>• Funds for training teachers</li> <li>• Laboratory equipment</li> <li>• Laboratory chemicals</li> </ul>	Nominal and Ratio scales	Frequencies and Percentages	Descriptive analysis
To establish how principals support influence the sustainability of SMASSE project in Tetu sub- County	Principals support	<ul style="list-style-type: none"> <li>• Paying for the training funds</li> <li>• Allowing teachers to attend seminars</li> <li>• Supervising curriculum activities</li> </ul>	Nominal and Ratio scales	Frequencies and Percentages	Descriptive analysis
To assess how teachers' attitude influence the sustainability of SMASSE project in Tetu sub- County	Teachers' attitude	<ul style="list-style-type: none"> <li>• Willingness to use the learned skills</li> <li>• Willingness to attend SMASSE INSETS</li> </ul>	Nominal and Ratio scales	Frequencies and Percentages	Descriptive analysis



## **CHAPTER FOUR**

### **DATA ANALYSIS, PRESENTATION AND INTERPRETATION OF FINDINGS**

#### **4.1 Introduction**

This chapter presents the analysis of data, presentation and interpretation of findings that was gathered from the field. The chapter is divided into several sections. These include the response rate of the respondents, demographic data of the respondents and the analysis of data based on the research objectives. The items in the questionnaires were grouped into themes on the research objectives.

#### **4.2 Response rate**

This section of the chapter presents the response rate of the targeted population namely the science and mathematics teachers. Out of the 148 questionnaires administered to the science and mathematics teachers, 145 were filled and returned. The return rate was above 80.0% considering that 145 respondents out of 148 returned their questionnaire, and hence was deemed adequate for data analysis. (Baruch 1999)

#### **4.3 Demographic data of the teachers**

This section presented the demographic information of teachers. It was based on their gender, age, years they had served as teachers, academic qualifications and the type of school which they were teaching. Asked to indicate their gender, they responded as Table 4.1

**Table 4.1 Distribution of teachers according to gender**

<b>Gender</b>	<b>Frequency</b>	<b>Percentage</b>
Male	105	72.4
Female	40	27.6
<b>Total</b>	<b>145</b>	<b>100.0</b>

Data from Table 4.1 shows that majority 105(72.4%) of teachers are male while 40(27.6%) of teachers were female. This shows that there are more male Science and mathematics teachers than female in the schools. The data shows that teaching of sciences is dominated by male teachers hence the findings could be influenced by the gender of the teachers.

The researcher sought to establish the age of the teachers. When teachers were asked to indicate their age, they responded as Table 4.2

**Table 4.2 Distribution of teachers according to age**

<b>Age</b>	<b>Frequency</b>	<b>Percentage</b>
20 -30 years	19	13.1
31 – 40 years	83	57.2
41 and above	43	29.7
<b>Total</b>	<b>145</b>	<b>100.0</b>

Table 4.2 shows that majority 83(57.2%) of teachers are aged between 31 and 40 years, 19(13.1%) of teachers are aged between 20 and 30 years while 43(29.7%) of teachers were above 41 years. The data shows that a significant number of teachers were relatively older where they could have taught for a longer time and hence could give valid information on the SMASSE project.

The researcher further sought to establish the duration the teachers had served as teachers. Table 4.3 presents the findings

**Table 4.3 Distribution of teachers according to duration served as teacher**

<b>Duration as teachers</b>	<b>Frequency</b>	<b>Percentage</b>
Less than 5 years	41	28.3
6 – 10 years	62	42.8
11 years and above	42	29.0
<b>Total</b>	<b>145</b>	<b>100.0</b>

Findings in Table 4.3 shows that 41(28.3%) of teachers had served as teachers for less than 5 years, 62(42.8%) of teachers for between 6 and 10 years while 42(29.0%) of teachers had served as teachers for over 11 years. The data implies that more teachers have served as teachers for a longer time and hence could give reliable information on the project, how it had faired and also how the project could be sustained.

Table 4.4 presents academic qualifications of teachers

**Table 4.4 Distribution of teachers according to academic qualifications**

<b>Academic qualifications</b>	<b>Frequency</b>	<b>Percentage</b>
Master's degree	18	12.4
Bachelor's degree	100	69.0
Diploma	27	18.6
<b>Total</b>	<b>145</b>	<b>100.0</b>

Table 4.4 shows that majority 100(69.0%) of teachers have degree qualification, 27(18.6%) of teachers have diploma qualification while 18(12.4%) of teachers have masters in education qualification. The data shows that all the teachers are qualified and hence are aware of the SMASSE project and how it could be affected by sustainability.

To establish the type of schools the teachers teach, they were asked to indicate the same.

Data is presented in Table 4.5

**Table 4.5 Distribution of teachers according to type of school**

<b>Type of school</b>	<b>Frequency</b>	<b>Percentage</b>
Day schools	90	62.1
Boarding school	28	19.3
Day and boarding	27	18.6
<b>Total</b>	<b>145</b>	<b>100.0</b>

Table 4.5 shows that majority 90(62.1%) of teachers are in day schools, 28(19.3%) of teachers are in boarding school while 27(18.6%) of teachers are in day and boarding schools. The data shows that all the categories of schools are represented in the study and hence balanced results could be obtained.

#### 4.4 Financial resources and the sustainability of SMASSE project

To establish the influence of financial resources to the sustainability of SMASSE project, the study posed the item to teachers to establish the same. Data is presented in the following section.

Table 4.6 tabulates teacher's rate on the influence of financial resources to the sustainability of SMASSE project

**Table 4.6 Teachers' rate on the influence of financial resources to the sustainability of SMASSE project**

<b>Rate</b>	<b>Frequency</b>	<b>Percentage</b>
Contributes to a great extent	91	62.8
Contributes to a less extent	45	31.0
Contributes to a very great extent	9	6.2
<b>Total</b>	<b>145</b>	<b>100.0</b>

Majority 91(62.8%) of teachers indicated that financial resources contributes to the sustainability of SMASSE project to a great extent, 45(31.0%) of teachers indicated to a less extent while 9(6.2%) of teachers indicated that financial resources contributes the sustainability of SMASSE project to a very great extent. This agrees with Masijila (2002) who indicated that for development projects to be financially sustainable, it requires a sound financial base arising from reliable sources of funding.

Asked whether funding affects the project sustainability, the teachers responded as Table 4.7

**Table 4.7 Teachers responses on whether funding affects the project sustainability**

<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
Strongly Agree	42	29.0
Agree	51	35.2
Undecided	18	12.4
Disagree	34	23.4
<b>Total</b>	<b>145</b>	<b>100.0</b>

Data shows that 42(29.0%) of teachers strongly agree that funding affects the project sustainability, 51(35.2%) of teachers agree, 18(12.4%) of teachers are undecided on the statement while 34(23.4%) of teachers disagree that funding affects the project sustainability.

The teachers were asked to indicate whether better financial analysis was required for the sustainability of SMASSE project. Their results are presented in Table 4.8.

**Table 4.8 Teachers responses on whether better financial analysis was required for the sustainability of SMASSE project**

<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
Strongly Agree	49	33.8
Agree	60	41.4
Undecided	1	0.7
Disagree	35	24.1
<b>Total</b>	<b>145</b>	<b>100.0</b>

Table 4.8 shows that 49(33.8%) of teachers strongly agree that better financial analysis is required for the sustainability of SMASSE project, 60(41.4%) of teachers agree while 35(24.1%) of teachers disagree that better financial analysis is required for the sustainability of SMASSE project. This implies that better financial analysis is required particularly in the formulation of projects.

To establish whether SMASSE project got enough financial support from donors for its sustainability, teachers were asked to indicate the same. Table 4.9 tabulates the findings

**Table 4.9 Teachers responses on whether SMASSE project got enough financial support from donors for its sustainability**

<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
Strongly Agree	7	4.8
Agree	48	33.1
Undecided	14	9.7
Disagree	76	52.4
<b>Total</b>	<b>145</b>	<b>100.0</b>

Majority 76(52.4%) of teachers disagree that SMASSE project get enough financial support from donors for its sustainability, 7(4.8%) of teachers strongly agree that SMASSE project get enough financial support from donors for its sustainability while 48(33.1%) of teachers agree with the statement. This shows that donor funding is a temporary driver for SMASSE project.

The researcher also sought from the teachers, whether SMASSE project funds availed were spent strictly on the set budget. The responses of the teachers are indicated in table 4.10.



**Table 4.10 Teachers responses on whether SMASSE project funds availed were spent strictly on the set budget**

<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
Agree	35	24.1
Disagree	46	31.7
Strongly Disagree	64	44.1
<b>Total</b>	<b>145</b>	<b>100.0</b>

Table 4.10 shows that 64(44.1%) of teachers strongly disagree that SMASSE project funds availed are spent strictly on the set budget, 46(31.7%) of teachers disagree with the statement while 35(24.1%) of teachers agree that SMASSE project funds availed are spent strictly on the set budget.

The study also sought to establish whether SMASSE project funding is reliably and timely disbursed from the donor. The responses are presented in table 4.11.

**Table 4.11 Teachers responses on whether SMASSE project funding is reliably and timely disbursed from the donor**

<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
Strongly Agree	14	9.7
Agree	18	12.4
Undecided	6	4.1
Disagree	37	25.5
Strongly Disagree	70	48.3
<b>Total</b>	<b>145</b>	<b>100.0</b>

Data shows that 70(48.3%) of teachers strongly disagree that SMASSE project funding is reliably and timely disbursed from the donor, 37(25.5%) of teachers disagree with the

statement. Data further shows that 18(12.4%) of teachers agree that SMASSE project funding is reliably and timely disbursed from the donor while 14(9.7%) of teachers strongly agree with the statement.

The researcher also investigated the influence of financial resources to the sustainability of SMASSE project. The responses of the teachers are presented in table 4.12.

**Table 4.12 Teachers responses on the influence of financial resources to the sustainability of SMASSE project**

Statement	Strongly Agree		Agree		Disagree	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
SMASSE project funding is limited to the scope of the project undertaken	66	45.5	28	19.3	51	35.2
My school carry out effective accounting procedures for SMASSE funds	62	42.8	65	44.8	18	12.4
SMASSE project has a sound financial base	18	12.4	58	40.0	69	47.6
My school facilitate accountability and cash flow projections of SMASSE project	109	75.2	18	12.4	18	12.4
I have adequate information and understanding on SMASSE project funding	9	6.2	27	18.6	109	75.2
SMASSE project in my school is sustainable	9	6.2	18	12.4	118	81.4

Table 4.6 shows that 66(45.5%) of teachers strongly agree that SMASSE project funding is limited to the scope of the project undertaken, 65(44.8%) of teachers agree that their school carry out effective accounting procedures for SMASSE project. Data further shows that 69(47.6%) of teachers disagree that SMASSE project has a sound financial base. Majority 109(75.2%) of teachers strongly agree that their school facilitate accountability and cash flow projections of SMASSE project, the same number of teachers disagreed that they had adequate information and understanding on SMASSE project funding while majority 118(81.4%) of teachers disagreed that SMASSE project in their school was sustainable. This shows that SMASSE project had a relatively short life once its original funding base expires.

#### **4.5 School Principals support and the sustainability of SMASSE project**

To establish the influence of principals' support and the sustainability of SMASSE project, the researcher asked teachers to respond to items that sought the same. Data is presented in table 4.13.

**Table 4.13 Teachers rate on the influence of principals' support to the sustainability of SMASSE project**

<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
Contributes to a great extent	45	31.0
Contributes to a less extent	18	12.4
Contributes to a very great extent	82	56.6
<b>Total</b>	<b>145</b>	<b>100.0</b>

Majority 82(56.6%) of teachers indicated that principals’ support contributed to the sustainability of SMASSE project to a very great extent, 45(31.0%) of teachers indicated to a great extent while 18(12.4%) of teachers indicated that principals’ support contributed to the sustainability of SMASSE project to a less extent.

Table 4.14 presents teachers responses on whether their principal mobilize the available resources.

**Table 4.14 Teachers responses on whether their School Principal mobilize the available resources**

<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
Strongly Agree	62	42.8
Agree	60	41.4
Disagree	22	15.2
Strongly Disagree	1	0.7
<b>Total</b>	<b>145</b>	<b>100.0</b>

Data shows that 62(42.8%) of teachers strongly agreed that their principal mobilize the available resources, 60(41.4%) of teachers agreed to the statement, 22(15.2%) of teachers disagreed that the principal mobilize the available resources while 0.7% of teachers strongly disagreed that the principal mobilize the available resources. This shows that provision of resources and mobilizing all available resources towards academic activities for the benefit of the learners was the responsibility of the principals in the schools

Teachers were also asked to indicate the influence of School Principals’ support to the sustainability of SMASSE project. The responses are presented in table 4.15.

**Table 4.15 Teachers responses on the influence of School Principals’ support to the sustainability of SMASSE project**

Statement	Strongly Agree		Agree		Disagree	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
The principal play a significant role on teacher’s teaching practices	66	45.5	70	48.3	9	6.2
The principal support to the sustainability of SMASSE project	130	89.7	7	4.8	8	5.5
The principal is effective in management of curriculum activities	73	50.3	9	6.2	63	43.4
The principal hold individual conferences with teachers	127	87.6	9	6.2	9	6.2
The principal provide for an exchange of ideas	79	54.5	57	39.3	9	6.2
The principal promote classroom observation as a form of performance management	45	31.0	55	37.9	45	31.0

Findings shows that 66(45.5%) of teachers strongly agree that their principal play a significant role on teacher’s teaching practice, majority 130(89.7%) of teachers strongly agree that their principal support to the sustainability of SMASSE project. Data further shows that majority 73(50.3%) of teachers strongly agree that their principal was effective in management of curriculum activities, majority 127(87.6%) of teachers strongly agree that their principal held individual conferences with teachers while majority 79(54.5%) of teachers strongly agree that their principal provided for an exchange of ideas. This agrees with Kithi and Kamau (2001), who highlighted that the

importance of management of physical resources affect the teachers and the learners ability to engage in effective teaching and learning. The study also shows that the role of the school principals in instructional supervision is to hold individual conferences with teachers.

#### **4.6 Teachers’ attitude and the sustainability of SMASSE project**

The study further sought to examine the influence of teachers’ attitude to the sustainability of SMASSE project. The following section presents the findings

**Table 4.16 Teachers rate on the influence of teachers’ attitude to the sustainability of SMASSE project**

<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
Contributes to a great extent	56	38.6
Contributes to a less extent	27	18.6
Contributes to a very great extent	62	42.8
<b>Total</b>	<b>145</b>	<b>100.0</b>

Table 4.16 shows that 56(38.6%) of teachers indicated that teachers’ attitude contributes to the sustainability of SMASSE project to a great extent 27(18.6%) of teachers indicated to a less extent while 62(42.8%) of teachers indicated that teachers’ attitude contributes to a very great extent to the sustainability of SMASSE project.

Asked whether Science and mathematics teachers’ attitude toward SMASSE influence the sustainability of the project, teachers responded as Table 4.17.

**Table 4.17 Teachers responses on whether science and mathematics teachers' attitude toward SMASSE influence the sustainability of the project**

<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
Strongly Agree	42	29.0
Agree	76	52.4
Undecided	9	6.2
Disagree	10	6.9
Strongly Disagree	8	5.5
<b>Total</b>	<b>145</b>	<b>100.0</b>

Majority 76(52.4%) of teachers agree that science and mathematics teachers' attitude toward SMASSE influence the sustainability of the project, 42(29.0%) of teachers strongly agree to the statement, Data further shows that 10(6.9%) of teachers disagree that science and mathematics teachers' attitude toward SMASSE influence the sustainability of the project while 8(5.5%) of teachers strongly disagree with the statement

**Table 4.18 Teachers responses on whether teacher’s attitudes towards SMASSE project is acquired from INSETS attended**

<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
Strongly Agree	56	38.6
Agree	48	33.1
Undecided	1	.7
Disagree	26	17.9
Strongly Disagree	14	9.7
<b>Total</b>	<b>145</b>	<b>100.0</b>

Table 4.18 shows that 56(38.6%) of teachers strongly agree that teacher’s attitudes towards SMASSE project is acquired from INSETS attended, 48(33.1%) of teachers agree with the statement, 26(17.9%) of teachers disagree that teacher’s attitudes towards SMASSE project is acquired from INSETS attended while 14(9.7%) of teachers strongly disagree with the statement. This implies that teachers attitudes towards SMASSE programme was learned from INSETS which they have attended.

When the teachers were asked to indicate whether teachers’ attitude influenced the sustainability of SMASSE project, they responded as indicated in table 4.19.



**Table 4.19 Teachers response on the influence of teachers' attitude to the sustainability of SMASSE project**

Statement	Strongly Agree		Agree		Disagree	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Teachers attitudes influence future behavior of SMASSE project	121	83.4	14	9.7	10	6.9
All science staff are trained with skills related with what they are doing	8	5.5	10	6.9	127	87.6
Teachers has negative attitude towards new instructional practices	21	14.5	30	20.7	94	64.8
Professional development programs for science teachers are beneficial in changing teachers' attitudes	127	87.6	18	12.4	0	0.0
Teachers who have implemented inclusive SMASSE programs possess positive attitudes	76	52.4	51	35.2	18	12.4
I am interested with SMASSE programs	74	51.0	70	48.2	1	0.7
I am more adaptive to new teaching techniques	73	50.3	9	6.2	63	43.4
SMASSE INSET provides a basis for thoughtful planning for effective teaching	127	87.6	18	12.4	0	0.0

Data shows that majority 121(83.4%) of teachers strongly agree that teachers attitudes influence future behavior of SMASSE project, 127(87.6%) of teachers disagree that all science staff are trained with skills related with what they were doing, the same number of teachers strongly agree that Professional development programs for science teachers are beneficial in changing teachers' attitudes and that SMASSE INSET provides a basis

for thoughtful planning for effective teaching. The study further shows that majority 94(64.8%) of teachers disagree that teachers have negative attitude towards new instructional practices, majority 76(52.4%) of teachers strongly agree that teachers who had implemented inclusive SMASSE programs possess positive attitudes.

Majority 74(51.0%) of teachers strongly agree that they were interested with SMASSE programs while 73(50.3%) of teachers strongly agree that they were more adaptive to new teaching techniques. This agrees with Macharia (2008) study that indicated that some teachers are more adaptive to new teaching techniques than others. This shows that attitudes influence SMASSE programs as knowledge alone does not lead to the kind of thoughtful teaching everyone strives to maintain. Teachers suggested that an evaluation on the attitude change of teachers to be conducted and professional development programs for science and mathematics teachers to be done for positive change of teachers' attitudes towards the teaching and learning objective.

## CHAPTER FIVE

### SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS OF THE STUDY

#### 5.1 Introduction

This chapter summarizes the findings of the study and presents conclusions and recommendations according to the stated objectives.

#### 5.2 Summary of findings

Relying on the responses given by the respondents, I came up with findings which were used to make conclusions and give recommendations as shown in table 5.1.

**Table 5.1 Summary of findings**

<b>Objective</b>	<b>Findings</b>
Assess how financial resources influence sustainability of SMASSE project	<ol style="list-style-type: none"><li>1. Financial resources contribute to a great extent to sustainability of SMASSE (62.8%)</li><li>2. Most schools are not well equipped with necessary infrastructure</li><li>3. Much of the SMASSE funds are mis-used</li><li>4. SMASSE project does not have a sound financial base</li><li>5. Most teachers do not have a clear understanding of how SMASSE is funded</li><li>6. SMASSE project does not get enough funding from the government</li></ol>

<p>Assess how school Principal's support affect sustainability of SMASSE</p>	<ol style="list-style-type: none"> <li>1. Most Principals do not supervise their teachers' teaching practices</li> <li>2. Most Principals do not hold individual conferences with their teachers</li> <li>3. Most Principals' do not promote classroom observation as a form of performance management.</li> <li>4. Most Principals support their teachers financially to attend SMASSE INSETS</li> </ol>
<p>Assess how teachers attitude affect sustainability of SMASSE</p>	<ol style="list-style-type: none"> <li>1. The attitude of teachers affect the sustainability of SMASSE (83.4%)</li> <li>2. Most teachers do not embrace new instructional practices</li> <li>3. Most teachers get the negative attitude towards SMASSE during INSETS (52.4%)</li> <li>4. Teachers who implement inclusive SMASSE programs have a positive attitude towards it.</li> <li>5. Most science and Mathematics teachers are not trained in skills related to what they do.</li> </ol>

### 5.3 Discussion of findings

This is based on the three objectives of the study as per the findings.

#### 5.3.1 Financial resources

The study found out that financial resources play a great role in the sustainability of SMASSE project as indicated by majority 91(62.8%) of teachers. Most teachers agreed

that better financial analysis was required for the sustainability of SMASSE project. There is need also to use SMASSE project funds availed strictly on the set budget. There is need as well to ensure that SMASSE funds are reliably and timely disbursed from the donor.

### **5.3.2 Principals support**

Findings further shows that most teachers agree that their principal mobilize the available resources and support them to attend SMASSE INSETS. There is great need for the Principals to have effective management of curriculum activities, and hold individual conferences with teachers. Principals should also provide avenues for exchange of ideas.

### **5.3.3 Teachers' attitude**

Findings on the influence of teachers' attitude and the sustainability of SMASSE project revealed that Science and mathematics teachers' attitude toward SMASSE influence the sustainability of the project. Since the study also found out that teacher's attitudes towards SMASSE project is acquired from INSETS attended as indicated by 56(38.6%) of teachers, there is need to re-brand and innovatively plan the INSETS since attitude influence future behavior of SMASSE project. There is need also to come up with activities which after training, the with skills learnt would be directly applied in teaching.. this would increase the number of teachers who have a positive attitude towards SMASSE.

## **5.4 Conclusions of the study**

The following are the conclusions of the study

1. From the findings on the influence financial resources influence sustainability of SMASSE project in Tetu sub- County. The study concluded that financial resources contributes the sustainability of SMASSE project to a great extent. The study also concluded that funding affects the project sustainability. The study also concluded that better financial analysis was required for the sustainability of SMASSE project. It was also concluded that SMASSE project does not get enough financial support from donors for its sustainability and that SMASSE project funds availed were not spent strictly on the set budget. The researcher also concluded that SMASSE project funding was not reliably and timely disbursed from the donor and that schools carried out effective accounting procedures for SMASSE project. The researcher concluded that SMASSE project lacked a sound financial base although schools facilitate accountability and cash flow projections of SMASSE project. The study concluded that SMASSE project in the school were not sustainable.
2. From the findings on the influence of principals support influence sustainability of SMASSE project in Tetu sub- County, it concluded that principals' support contributed to the sustainability of SMASSE project to a very great extent and that principal mobilize the available resources. The study concluded that principal support to the sustainability of SMASSE project. It was also concluded that principal was effective in management of curriculum activities and that principal held individual conferences with teachers. The researcher concluded that science

and mathematics teachers' attitude toward SMASSE influence the sustainability of the project and that teacher's attitudes towards SMASSE project is acquired from INSETS attended.

3. From the findings on the influence teachers' attitude influence sustainability of SMASSE project in Tetu sub- County, the study concluded that teachers' attitudes influence future behaviour of SMASSE project and that all science staff were not trained with skills related with what they were doing. The study further concluded that teachers had positive attitude towards new instructional practices and that teachers who had implemented inclusive SMASSE programs possess positive attitudes. The study lastly concluded that teachers they were interested with SMASSE programs.

### **5.5 Recommendations of the study**

Based on the findings, the following recommendations are made:

1. To enhance capacity in mathematics and science teachers in terms of teaching methods, knowledge and management of experimental equipment in mathematics and science the SMASSE programs to be strengthen through funding
2. Principals should provide effective management of curriculum implementation of SMASSE programs

3. Mathematics and science Teachers to be provided with SMASSE INSET for thoughtful planning for effective teaching of mathematics using ASEI/PDSI approach.
4. There should be prudent management of SMASSE funds
5. The Government should factor in the budget the cost of SMASSE INSETS

### **5.6 Suggestions for further research**

Taking the limitations and delimitations of the study the following are the suggestions for further study

- 1 Since the study was carried out in one sub-county, there is a need to carry out a similar study in another sub-county and establish whether the same factors would affect the sustainability of donor funded projects since different counties conduct SMASSE INSETS differently
- 2 Since this study was carried out on SMASSE project, the researcher suggests that a study on another donor funded project be carried out so as to assess whether there are other factors that may influence the sustainability of donor funded project
- 3 This study focussed on the financial factors, teachers' attitudes and Principals support. Since there may be other variables that may influence the sustainability of projects, there is need to carry out a study on other variables that may influence sustainability of projects.



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## APPENDICES

### APPENDIX I

#### INTRODUCTORY LETTER TO RESPONDENTS

Mucheru Peter Mbuthia  
P.O. BOX 1860 -10100  
NYERI.

Dear Sir / Madam,

#### **RE: REQUEST TO CARRY OUT RESEARCH IN YOUR SCHOOL**

I am a student at the University of Nairobi, pursuing a degree of Master of Arts in Project Planning and Management. I am conducting a research to determine “**Factors influencing the sustainability of donor funded SMASSE project in Tetu sub-county.**” I therefore kindly request you to allow me conduct research in your school. The information obtained will be purely for the purpose of this research and the identity of the respondents will be treated as strictly confidential.

Thank you for your cooperation and assistance.

Yours Sincerely,

Mucheru Peter Mbuthia

REG NO: L50/60188/2013

## APPENDIX II

### QUESTIONNAIRE FOR SCIENCE TEACHERS

This questionnaire is designed to gather information on the Factors influencing the sustainability of donor funded SMASSE project in Tetu sub-county. You are kindly requested to tick (√) the appropriate response or respond as indicated. Do not put your name or any other form of identification. The information you give will be used for the purpose of this study. Please respond to all items.

#### Section A: Demographic data

1. What is your gender?

Male [  ]

Female [  ]

2. What is your age?

20 - 30 years [  ]

Above 41 years [  ]

31 - 40 years [  ]

3. How many years have you served as a teacher?

Below five (5) years [  ] Over 11 years [  ]

5 - 10 years [  ]

4. What is your highest academic qualifications?

Diploma [  ]

M.Ed [  ]

Degree [  ]

Others [ specify ] \_\_\_\_\_

5. Type of school? Day [  ] Boarding [  ] Day And Boarding [  ]

#### Section B: Financial resources and the sustainability of SMASSE project

6. How do you rate the influence of financial resources to the sustainability of SMASSE project?

Contributes to a great extent [        ]        Contributes to a less extent [        ]

Contributes to a very great extent [        ]

7. Indicate the extent to which you agree or disagree with the following statements using the following key:

SA = Strongly Agree        A = Agree        U = Undecided        D = Disagree

SD = Strongly Disagree

Statement	SA	A	U	D	SD
Funding affects the project sustainability					
Better financial analysis is required for the sustainability of SMASSE project					
SMASSE project gets adequate financial support from donors					
SMASSE project funds are spent strictly on the set budget					
SMASSE project funding is reliably disbursed from the donor					
SMASSE project funding is strictly used to the scope of the project					
Schools carry out effective accounting procedures for SMASSE funds					
SMASSE project has a sound financial base					
My school facilitate accountability and cash flow projections of SMASSE project					
I have adequate information and understanding on SMASSE project funding					
SMASSE project in my school is sustainable					

8. How do financial resources contribute to sustainability of SMASSE project?

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**Section C: School Principals' support and the sustainability of SMASSE project**

9. How do you rate the influence of principals' support to the sustainability of SMASSE project?

Contributes to a great extent [        ]        Contributes to a less extent [        ]

Contributes to a very great extent [        ]

10. Indicate the extent to which you agree or disagree with the following statements using the following key:

SA = Strongly Agree        A = Agree        U = Undecided        D = Disagree

SD = Strongly Disagree

<b>Statement</b>	<b>SA</b>	<b>A</b>	<b>U</b>	<b>D</b>	<b>SD</b>
The principal mobilizes the available resources					
The principal plays a significant role in teacher's teaching practices					
The principal supports the sustainability of SMASSE project					
The principal is effective in management of curriculum activities					
The principal hold individual conferences with teachers					
The principal provide for an exchange of ideas					
The principal promote classroom observation as a form of performance management					

**Section D: Teachers' attitude and the sustainability of SMASSE project**

11. How do you rate the influence of teachers' attitude to the sustainability of SMASSE project?

Contributes to a great extent [        ]        Contributes to a less extent [        ]

Contributes to a very great extent [        ]

12. Indicate the extent to which you agree or disagree with the following statements using the following key:

SA = Strongly Agree        A = Agree        U = Undecided        D = Disagree

SD = Strongly Disagree

<b>Statement</b>	<b>SA</b>	<b>A</b>	<b>U</b>	<b>D</b>	<b>SD</b>
Science and mathematics teachers' attitude toward SMASSE influence the sustainability of the project					
Teachers attitudes towards SMASSE project is acquired from INSETS attended					
Teachers attitudes influence future behavior of SMASSE project					
All science staff are trained with skills related with what they are doing					
Teachers have negative attitude towards new instructional practices					
Professional development programs for science teachers are beneficial in changing teachers' attitudes					
Teachers who have implemented inclusive SMASSE programs possess positive attitudes.					
I am interested with SMASSE programs					
I am more adaptive to new teaching techniques					
SMASSE INSET provides a basis for thoughtful planning					



for effective teaching					
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13. What suggestions do you suggest in sustainability of SMASSE project?

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### APPENDIX III

#### ROBERT KREJCIE AND DAYRLE MORGAN TABLE FOR DETERMINING SAMPLE SIZE FROM A GIVEN POPULATION

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384


Note.—*N* is population size. *S* is sample size.

**APPENDIX IV**  
**RESEARCH PERMIT**

 **KCB** Date: 16/05/2016

CREDIT ADVICE  
CASH DEPOSIT


KCB NYERI  
Account AT KCB KIPANDE HOUSE



ACCOUNT DETAILS  
A/C NO: 1104162547  
A/C REF: 005241970364  
NAT COMM FOR SCI ,TECH AND INNOV  
Current Account-Corp Inst. Bankin

We have credited your above account with 1,000.00 KES

Kenya Shillings ONE THOUSAND ONLY

CASH PAID IN BY: PETER MUCHERU Signature : 

Transaction Number: TT161379KG77 at 15:18:42 On 16/05/2016

Thank you for banking with us. You were served by: ANGELLA WANJIKU MWANGI

\*\*\* Advice not valid unless Transaction Number is shown \*\*\*

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