ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

FACTORS AFFECTING AGRICULTURAL PROJECTS PERFORMANCE: THE CASE OF CATHOLIC RELIEF SERVICES ETHIOPIA

BY

GADISE WORKU

JANUARY 2025

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THESIS SUBMITTED TO ST. MARY'S UNIVERSITY, SCHOOL OF GRADUATE STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR DEGREE OF MASTER OF ARTS IN PROJECT MANAGEMENT

BY

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ADDIS ABABA, ETHIOPIA

Student's Declaration

I, hereby declare that this study entitled "Factors Affecting Agricultural Projects Performance: The Case of Catholic Relief Services Ethiopia", submitted in partial fulfillment of the requirements for the degree of Master of Arts in Project Management at St. Mary's University, Addis Ababa, is my original work. All Sources of information used for this study have been appropriately cited.

Gadise Worku

Signature_____

Date: January 2025

Place: St. Mary's University Addis Ababa, Ethiopia

Certificate of Approval

I certify that the thesis entitled Factors Affecting Agricultural Projects Performance: The case of Catholic Relief Services Ethiopia has been prepared by Gadise Worku after due consultation with me.

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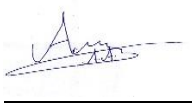
Signature 

Date: January 2025

Place: St. Mary's University Addis Ababa, Ethiopia

APPROVAL OF BOARD OF EXAMINERS

As a member of the Board of Examiners of the Master Thesis open defense examination, we testify that we have read and evaluated the thesis prepared by Gadise Worku under the title of "Factors Affecting Agricultural Projects Performance: The Case of Catholic Relief Services". We recommended that this thesis be accepted as fulfilling the thesis requirement for the Degree of Master of Arts in Project Management.

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ABSTRACT

This study has focused on factors affecting the performance of agricultural projects in case of CRS Ethiopia, considering environmental, socio-economic, technological, and institutional factors. The methodological approach included both quantitative and qualitative data integrated through a mixed-method approach. In total, data from 145 respondents were collected using structured questionnaires and were analyzed with descriptive statistics, correlation, and regression methods. The findings revealed that the environmental factors influencing project performance are unfavorable climatic conditions, represented by 96.6%, followed by declining soil fertility, with 93.8%. Some of the socio-economic barriers identified include a low level of education, which was 97.2%, while membership in cooperatives was minimum, at 12.4%. Though there was a high rate of adoption of improved seeds, standing at 83.4%, the use of improved technologies stood at only 6.2% due to high costs and lack of knowledge. From these, institutional factors explained only about 8.5% in the variation of project performance, with government support being the only significant variable. These findings support the literature on the necessity of climate-smart agricultural practices, improvement in institutional support, and increasing access to education and technology. Although CRS projects have increased the productivity of farming by 96.6% and house incomes by 99.3%, there is a need to address systemic challenges for sustaining and scaling success. Recommendations include climate-smart practices, technology adoption, co-operative strengthening, and improvement in institutional frameworks.

Key Words: *Agricultural project performance, environmental factors, socio-economic barriers, technological adoption, institutional frameworks.*

ACRONYMYS AND ABREVIATIONS

AU	Africa Union
ACI	Agricultural Credit Initiative
CAADP	Comprehensive Africa Agriculture Development Program
CRS	Catholic Relief Services
CSA	Climate Smart Agriculture
FAO	Food and Agriculture Organization
GDP	Growth Domestic Product
IFAD	International Fund for Agricultural Development
IPCC	Intergovernmental Panel on Climate Change
M & E	Monitoring and Evaluation
SPSS	Statistical Package for the Social Science
SWC	Soil and Water Conservation
ToC	Theory of Change
USAID	United State Agency for International Development

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CHAPTER ONE

INTRODUCTION

1.1. Background of the study

Today, agriculture is a science, business, and an art. It is the most spread-out industry in the world; there is a striking contrast in farming practices from developed to developing nations. Subsistence agriculture, of which examples include shifting cultivation and pastoralism, remains common in most parts of the developing world, while the more developed parts feature largescale commercial agriculture (Connor, n.d.).

Agriculture is a very potent tool for economic development and poverty reduction. It accounts for 4% of global GDP and more than 25% of the GDP of some of the world's least developed countries. Growth in the agricultural sector is also effective in increasing incomes among the poorest segments of the population, hence one of the prime movers in combating extreme poverty. The agricultural sector also holds a significant share of employment across the world's population, especially in rural areas, hence a major source of employment (World Bank, 2023).

In the recent decades, however, the agricultural sector worldwide has been engulfed in many challenges: climatic change, land degradation, and spiraling population growth. Climate variability has directly influenced agricultural productivity through extreme events such as drought and flooding, which have furthered crop failures and food insecurity in many vulnerable regions. (Intergovernmental Panel on Climate Change [IPCC], 2022). These have particularly been disastrous in countries or states relying heavily on rainfall for agriculture and, therefore, very vulnerable to climatic changes. Agricultural ventures meant for climate adaptation, for example, the introduction of drought-resistant crop varieties, along with putting in place better methods of water management, are crucial in cushioning the effects (FAO, 2022).

According to Pingali (2012), this is further exacerbated by increasing population growth and urbanization. As an example, the uncontrollable increase in population in developing countries puts added pressures on food production from limited land and resources. This calls for the commissioning of agricultural projects on sustainable intensification to ensure increased yields with minimal environmental impacts. Projects that support the adoption of agroecological practices

and sustainable farming systems are fundamental for long-term achievements in food security in such regions (FAO, 2022).

In recent years, such challenges, there are varieties of programs such as CAADP. That will provide an integrated approach for improvement in productivity and more production. The objective of such a program is to connect various agricultural sub-sectors for agricultural development in the overall African region. This is, however, contingent upon the successful attainment of prerequisite conditions for the actualization of this program. The preconditions include but are not limited to sufficient funding and mobilization of resources, actual and effective implementation strategy, government support, improvement of local infrastructure, and access to markets by smallholder farmers (New Partnership for Africa's Development [NEPAD], 2006).

It is also in line with food security, environmental sustainability, and the well-being of farming communities that agricultural projects form an important component of development programs. Efficient agricultural systems become more significant now than ever before amidst the rise in global populations. It, therefore, calls for embedding farming projects that while increasing yields are also environmentally sustainable and economically viable. To this end, Musembi (2015) notes that the performance of the agricultural projects may be measured by different metrics, namely productivity levels, income levels generated for farmers, and adopting various sustainable practices. All that requires effective project design and execution. Examples of projects that involve modern technologies of precision agriculture or sustainable farming techniques were highly effective in enhancing the productivity level with minimal environmental effects. Moreover, Participation of the local communities in project planning and execution will create ownership, effectiveness of the interventions, and meet the exact needs at the local level (FAO, 2023).

Additionally, the agricultural projects will enhance the level of strengthening value chains through improved market access to small-scale producers. This entails the development of links between the producers and the market, the training on best practices, and facilitation of access to financial means. To that effect, agricultural projects will foster economic development and resilience in rural areas as reflected by USAID, (2011).

According to FAO, (2023) performance in agricultural projects is considered both in immediate outputs and their long-term impacts concerning food security, community wellbeing, and environmental sustainability. In this regard, the evaluation and continuous adaptation of strategies

for each project would be a prerequisite to maintain projects relevant to dynamic challenges of the agricultural sector.

According to Habib-ur-Rahman et al., (2022) certain key drivers of agricultural productivity include climate change and resource availability. For instance, climate variability leads to low crop yields due to heat stress and water deficiency. Success in the project will be determined by community engagement in participation and stakeholder involvement. Indeed, participation can create better project outcomes since the projects would be more correctly fitted to needs and traditional knowledge (Adane, 2018). Farming has been revolutionized with the introduction of various technologies, including precision agriculture, automation, and satellite technologies, thus improving resource efficiency and reducing labor costs. Innovations in precision farming allow farmers to optimize all variables that would affect yield, such as moisture levels and soil conditions, to achieve the best output possible in order to ensure maximum productivity with sustainability (Cropin, 2023). Indeed, institutional factors include government policies and stakeholder engagements, which were pointed out as being very vital to the success of the project. Effective policy frameworks promote easy access to resources; hence, the adoption of technology is much easier. Active stakeholders at the level of decision-making in projects promote better outcomes since activities are usually targeted at the local needs (Ruhumuriza et al., 2022).

Although various reviews have been conducted on the factors influencing the performance of agricultural projects, the interaction between environmental, technological, socio-economic, and institutional factors, especially within the Ethiopian context, is poorly understood. Most studies have centered their focus on these factors in isolation and often do not take a holistic approach to considering all factors together in their aggregated impact. Long-term effects of climate adaptation and modern technologies, as well as influences of the local government, also remain poorly studied regarding project success. Hence, this study tries to fill these gaps by investigating these factors together in the Ethiopian context to enhance project outcomes and sustainability.

1.2. Background of the organization

Catholic Relief Services (CRS) was founded in 1943 by the Catholic Bishops of the United States to serve World War II survivors in Europe. Since then, it has expanded in size to reach more than 130 million people in more than 100 countries on five continents.

For over 80 years, its mission has been to assist impoverished and disadvantaged people overseas, working in the spirit of Catholic social teaching to promote the sacredness of human life and the dignity of the human person. Although its mission is rooted in the Catholic faith, its operations serve people based solely on need, regardless of their race, religion or ethnicity. Within the United States, CRS engages Catholics to live their faith in solidarity with the poor and suffering people of the world.

CRS has also been working in Ethiopia for nearly 60 years. In addressing natural and man-made disasters affecting Ethiopia's most vulnerable populations, CRS has taken the lead. In areas vulnerable to drought and flooding, CRS' disaster mitigation and recovery projects have rebuilt the assets of individuals and communities through non-food aid in the form of support for agriculture, livestock, health, nutrition, water, and sanitation. These projects go beyond emergency response. In addition to helping farmers and business, owners support their livelihoods; CRS's humanitarian work in Ethiopia encourages gender equality, mobilizes for immunization, and lessens the effects of HIV.

1.3. Statement of the problems

Because of many interrelated factors, agricultural production in Ethiopia is still very low. Besides, there exist major challenges that face developing countries like dependence on traditional ways of farming, minimal investment in current agricultural technologies, bad infrastructure, inaccessible modern agricultural technologies, and climate change. And these factors lead to less crop yields and food insecurity (Bekabil, 2014). According to Addisu & Hewan, (2023), environmental issues such as soil erosion and water scarcity, socio-economic factors like limited access to credit, inadequate infrastructure, and lack of education among farmers, institutional challenges like weak governance and inadequate policy support are challenges that impact agricultural projects' performance.

Climate change is another complexity in the success of agricultural projects. It disrupts agricultural calendar, traditional farming practices, and reduces agricultural production which is caused by unpredictable weather, probability of drought, causing soil erosion and loss of soil fertility, changing rainfall patterns. And Ethiopia's agriculture system highly depends on rain-fed, which makes it significantly vulnerable to climate change (FAO, 2022). Keeping all other factors

constant, climatic change could decline yield and reduce the availability of foods which aggravates household food insecurity (Weldearegay& Tedla, 2018).

Especially in rural areas infrastructure development is one of the primary difficulties. Factors leading to post harvest losses and inefficiencies in production are poor irrigation systems and road networks that hinders farmers' access to inputs and market (Dorosh & Rashid, 2012). Additionally, because of high cost, limited access and lack of knowledge among farmers, the adaptation to modern farming technologies like improved seeds, fertilizers and mechanizations is limited (Spielman et al., 2015). This technological gap is the main challenge in increasing productivity, food security and agricultural projects success.

Institutional factors also play an important role in determining the performance of agricultural projects. Limited organizational support, access to resources and low rate for employee salary are the problems in agricultural institutions. And the lack of engaging key stakeholders such as extension workers, farmers, government agencies in agricultural projects lowers the success of the projects (Hailu et al., 2020). Additionally, according to Ocharo D.R., (2020) there is significant influence of M&E frameworks on performance of agricultural projects. Ineffective monitoring and evaluation can lead to difficulty to track the status of the projects, to identify the areas of improvement and to make timely decisions.

Other study implies that the lack of farmer engagement can be a critical issue on the performance of the project. This can be caused by different factors, including insufficient support or training for farmers and low awareness of project benefit. Dependency syndrome among farmers and delays or inconsistent funding can lead to unfinished tasks and lower the project effectiveness. Lack of training of agricultural extension workers and them being relatively young, with many workers being newly recruited may influence the dynamic of project implementation (Tuchitechi& Lee, 2018).

1.4. Objectives of the study

1.4.1. General Objectives

The general objective of the study is to investigate factors affecting agricultural project performance in Catholic Relief Services, Ethiopia program.

1.4.2. Specific Objectives

The specific objects are:

- To analyze the key environmental factors that influence the agricultural project performance.
- To assess the socio-economic factors influencing agricultural project performance.
- To evaluate the effect of technology adoption on the performance of agricultural projects.
- To examine the institutional and policy frameworks that shape agricultural projects performance.

1.5. Research questions

This section covers the questions the researcher asked for the study. These are:

1. What are the major environmental factors influencing agricultural project performance?
2. What socio-economic factors significantly impact the performance of agricultural performance?
3. How does the adoption of technology affect the performance of agricultural projects?
4. How do institutional and policy frameworks influence the performance of agricultural projects?

1.6. Significance of the study

This study is important for many stakeholders associated with agricultural development projects. It provides critical insights into how infrastructure limitations, such as lack of irrigation system, poor road conditions limit the efficiency of agricultural project performance. The finding will help development organizations to plan and decide where to direct infrastructural budgets to elevate project success, in the long run preventing post-harvest losses, improving access to market and to boost agricultural output.

By providing farmers with tools and methods that improve crop yields, optimum use of resources and lessen cost of labor, technology can enhance agricultural productivity, improve efficiency, contributing to food security and economic growth. So, this study's investigation of agricultural technologies helps to understand the obstacles of farmers to adopt technology. And these insights will be helpful to create interventions that make technologies less costly, customized to local needs

and easy to access. Furthermore, this study will clarify how climate change impacts agricultural processes and activities and imply measures for adaptation and mitigation.

Specifically, the importance of this study is to understand the elements that affect agricultural projects in CRS. It will suggest a way of removing the challenges and improve the sustainability of the projects. The findings of this study are expected to inform CRS and its stakeholders to consider the factors that affect the agricultural projects while designing and planning new projects for future. Additionally, it can also be used as a base of information for current projects to think about while making decisions, to take corrective measures and for adaptive management. It also serves as the basis for future related research works. For future researchers the ideas presented may be used as reference data in conducting new research or in testing the validity of other related findings.

1.7. Scope of the Study

Methodological scope: The researcher conducted descriptive and explanatory research design using a mixed method approach that combines quantitative and qualitative research approach. Questionnaire, interview and document review were used for this study.

Geographic Scope: Catholic Relief Services, Ethiopia country program was considered for this study. The research focuses on Oromia region, East Hararghe Zone Babile Woreda.

Timeline Scope: This study focuses on agricultural projects that are being implemented Currently.

1.8. Organization of the study

The study is divided into five chapters. The study's introduction, included in the first chapter, covers the following topics: Background of the study, Background of the organization, Statement of the problem, objectives of the study, research questions, significance of the study and Scope of the study. A related survey of literature review to this subject is covered in the second chapter. The third chapter discusses the research method. Under the fourth chapter, the data gathered from the study's subject is thoroughly examined and interpreted. The fifth chapter contains conclusions and recommendation.

CHAPTER TWO

LITERATURE REVIEW

2.1. Theoretical Review

2.1.1. Definitions of Terms

Agricultural Project: It is a planned activity meant for improving the productivity, efficiency, and sustainability of agriculture. The projects aim, in most cases, at increasing crop yield, livestock production, or the use of modern farming techniques (World Bank, 2008).

Environmental Factors: These are natural factors such as climate, soil, water, and weather conditions that take effect on agricultural projects (FAO, 2013)

Technological Factors: Technological factors in agriculture relate to everything from tools, machinery, and digital platforms concerning innovation such as the development of new and improved breeds of seeds, irrigation systems, fertilizers, new methods of farming, among others (Sahin, 2006).

Socio-economic Factors: Include the social and economic attributes of the beneficiary communities of such agricultural projects; for instance, income levels, access to education, market opportunities, land ownership, and community participation (IFAD, 2016).

Institutional Factors: consist of various organizations, policies, and governance structures that influence how agricultural projects perform. This also includes governmental policies and strategies, the involvement of local institutions, regulatory frameworks, mechanisms of funding, and the support accorded through extension services (Sharna et al., 2022).

Project Performance: Means the degree to which an agricultural project effectively achieves its agreed outputs or outcomes in terms of enhanced productivity, efficiency, sustainability, and accrued benefits to the general stakeholders, farmers in particular (Muller-Praefcke et al., 2010).

2.1.2. Project Management Theory

In agriculture projects, planning is an indispensable undertaking in laying down objectives, allocating resources, and defining timelines. One of the findings that research has shown is that

program-target planning using project management principles can greatly enhance the efficiency of state programs in agriculture. In this case, effective estate planning will take place, and accordingly, budgetary allocations will be target-oriented in order to concentrate efforts on the attainment of a target (Kholodova&Podgorskaya, 2020). According to Simiyu (2018) effective planning includes risk assessment and resource allocation, which are critical in the agricultural sector where factors like weather unpredictability and market fluctuations can impact project success. The literature available states that extensive planning has a very high significance with respect to increased project performance, since it sets in concrete the path to be followed in its execution process, in addition to helping estimate any obstacles that may arise.

It is at the implementation phase that the actualization of the plan developed during the execution of the project takes place, which includes organizing resources and managing stakeholder engagements. The same view is shared by Simiyu (2018), who stated that for any successful implementation, there is a need to consider the timeline and budget while being able to adapt to any unforeseen circumstance. He added that projects with high ranks in an implementation strategy tend to realize their objectives more effectively, especially in agriculture, where operational flexibility becomes an important variable due to external variables such as climate and market conditions. In another study conducted by Charagu et al., (2018) the emphasis was made that appropriate communication channels, stakeholder involvement, and planning regarding equipment, staffing, and funds are needed to maintain project activities.

It has been documented in research that a good M&E system-day-to-day monitoring and comprehensive reporting is related to an improvement in project quality, service delivery, and cost efficiency. M&E practices facilitate monitoring performance indicators by project managers that ensure projects are within the framework of the project objectives. The literature reviews indicate that robust M&E frameworks will result in sound decisions and accountability, hence improvement in project outcomes in agriculture (Mukamugegna. A. et al, 2022).

The leadership must have technical knowledge of agriculture to manage the project and handle the attendant challenges of the sector. Their impact on team dynamics is positive since leaders are at the core in motivating team members and enabling good communication (Alime. K.M. et al, 2020). Another vital ingredient is the commitment of top management in motivating the team, delegating

roles, and ensuring transparency and accountability in the handling of finances (Charagu et al, 2018).

2.1.3. Sustainable Agriculture Theory

This theory emphasizes the integration of ecological principles into agricultural practices to create resilient and productive farming systems. It seeks to merge ecological knowledge into farming for productive and resilient farming systems. Applying the concepts and principles of ecology in design and management of sustainable agricultural systems, promote biodiversity, nutrient cycling, and natural pest regulation. The concept of agroecology makes a strong call for ecological principles in farming, thus advancing biodiversity and ecosystem services to drive soil health and crop resilience (Lafontaine & Lesueur-Jannoyer, 2014). It connects traditional knowledge with scientific research in an enabling environment for sustainable practices compatible with the carrying capacity of local ecosystems (Dörner et al., 2018).

Dörner et al. (2018) argue that agricultural production is made efficient while other negative impacts of agriculture are minimized through the efficient use of resources and employment of sustainable practices. This concept, therefore, supports increasing agricultural productivity while cutting down environmental impacts, emphasizing the efficient utilization of resources to minimize or cut greenhouse gas emissions. It aims at achieving food security without expansion in the agricultural land, saving natural habitat.

In a similar vein, another study concludes that "regenerative agriculture focuses on the restitution of soil health and ecosystem functions via specific practices such as cover cropping and reduced tillage (Dörner et al., 2018). In that sense, this methodology would provide a self-sustaining agricultural system that enhances biodiversity and carbon sequestration (Enders & Remig, 2014).

Sustainable Agriculture Theory explains how agricultural project performance can be improved in an integrated ecological, economic, and social dimension. The agricultural projects would have contributed to the development of resilient and sustainable farming systems that help in meeting the needs of present and future generations through the adoption of agroecological practices, sustainable intensification, recognition of multifunctionality, and engaging the concerned stakeholders in decision-making processes.

2.1.4. Institutional Theory

Institutional Theory provides a theoretical framework that explains how institutional structures influence norms and rules in modifying the behaviors of organizations and individuals concerning agricultural projects. In general, these theories provide meaningful insights into how institutional frameworks shape agricultural practices and outputs. According to Dias & Plein, (2024), institutional framework-agricultural policies, in particular, for the 1970s contributed to changing the local productivity of most regions such as Toledo in Paraná by perpetuating a diversified agricultural base. ACIs are crucial institutions that enhance the agility and sustainability of project management in developing markets; they enable community benefits and innovative agricultural practices (Dong et al., 2021).

According to a study done by Da Silva Leonel and Da Cunha (2012), social actors are influential in the agribusiness cooperatives and play an influential role that is significant to influence the adoption of diversification strategies as an institutional form. It goes to prove that human agencies can create institutional variance. While in the rural areas, both institutional pressures and strategic orientations influence the financial performance directly; the social performance plays a mediating role(Basri et al., 2023).

2.1.5. Theory of Change

The ToC provides an overarching conceptual model showing how activities will eventually lead to desired outcomes and gives the route for implementation and project evaluation. The ToC, as applied in agricultural projects, is of importance since it helps stakeholders articulate assumptions and pathways through which the interventions are expected to meet set goals.

It is very important to have an understanding of the socio-economic and environmental context in which the agricultural project operates. In this respect, this analysis helps identify needs and challenges faced by target communities, ensuring relevance and appropriateness of interventions toward the local context. ToC encourages stakeholder engagement in fostering a shared understanding of the problems and success vision, cardinal in complex agricultural settings (Douthwaite et al., 2020).It also includes the early involvement of relevant stakeholders for their various standpoints to be brought into the project, and relevance and efficiency are increased accordingly (Rajala et al., 2021).

Theory of Change logical path showing how the activities must connect to the outcomes. So, this would mean defining specific interventions, say farmer training and improved access to markets. Outcomes will be in short-term, medium, and long-term-most increased crop yield, better income, food security. ToC articulates clear pathways to intervention; thus, the practitioners would know how to treat complexities and adjust strategies throughout in correspondence with received feedback and changing contexts (Vellema et al., 2017). It gives a mechanism through which teams are allowed to iteratively learn how to develop a fine-tuned approach while they gather information from practice (Thornton et al., 2021).

This involves identifying the underlying assumptions and hence the conditions for success. It also deals with the identification of risks that might occur, including underlying biophysical risks, market accessibility, and policy. As such, the framework helps in identifying and articulating assumptions that underlie project strategies, something critical in the management of risks related to uncertainties in outcomes (Vellema et al., 2017). Projects have to prepare for the challenge that may come and adapt accordingly by making assumptions explicit(Thornton et al., 2021).

ToC gives a clear basis on which progress can be measured and the effectiveness of interventions assessed. At each outcome, clear indicators have to be developed, and through this, project managers will be able to show how change happens over time and make changes aimed at improving performance. ToC strengthens M&E through the combination of quantitative and qualitative methods, thereby guaranteeing that processes and outcomes are measured (Thornton et al., 2021).

This will provide flexibility within the M&E frameworks to act in tandem with the dynamic nature of agricultural projects (Vellema et al., 2017).

2.1.6. Resilience Theory

Resilience Theory is increasingly gaining recognition as an enabling framework for understanding how agricultural systems may change and absorb disturbance while maintaining functionality. It emphasizes farming system capabilities concerning their ability to absorb shock, adapt to new conditions, and transform in offering better or improved performance for the whole project.

According to Resilience Theory, adaptive capacity is an essential element in agricultural systems given the shifting ambient conditions created by climate variability, erratic market behavior, and

socio-economic changes. The ability to adapt, in turn, depends on biodiversity, resource availability, and knowledge and skill among farmers (Van der Lee et al, 2022). In this respect, the inclusion of resilience within project design will improve adaptive capacity to enable agricultural systems to resist climate change and other forms of disturbance (Chillrud, 2017).

While much can be gained from resilience theory, it is sometimes no more than a buzzword and not a framework; its translation into agricultural practice is therefore often quite tenuous and needs more stringent substantiation (Chillrud, 2017).

Resilience Theory, on the other hand, has an emphasis on understanding the dynamic interactions within agricultural systems. Feedback loops that enhance resilience promote recovery and adaptation, while in the case of system collapse, negative feedback dominate (Sundstrom et al., 2023).

It also recognizes the multi-scale nature of resilience-from the level of the individual farm to the regional agricultural system. This multi-scalar dimension is important to conceptualize how local practices may or may not impact broader system resilience and performance (Van der Lee et al., 2022). Agricultural systems are considered complex adaptive systems, and equally, their resilience needs to be understood at different local to continental scales in order for effective management to take place (Sundstrom et al., 2023).

2.2. Empirical Review

Agricultural projects are crucial in boosting livelihood and improving food security; they also promote sustainable development. There are, however, many factors that affect performance. The review discloses findings from numerous studies.

2.2.1. Environmental factors

Ali et al. (2023) conducted a study that revealed that CSA practices adequately improve the ability of households to resist climate related challenges. Compared to CSA non-adopter households, those households who adopted CSA package combinations showed lower vulnerability and greater resilience. Additionally, Thomasz et al. (2024) carried out a study on ecosystem services on agricultural productivity. The study revealed that projects that maintain a healthy ecosystem leads to increased agricultural outcomes.

Climate change, quality of soil, availability of water, pest management, biodiversity, degradation of land and community engagement are environmental and ecological factors that play a crucial role in determining the performance of agricultural projects as researched by Hawong, T & Lee, M., (2018). A study conducted by Addisu and Hewan (2023) in Ethiopia indicated that environmental degradation, particularly regarding soil erosion, Soil Alkalinity and Salinity, Waterlogging, Siltation of Irrigation Structures, Landslides, in addition to climate change, have been one of the most predominant factors affecting agricultural outcome in terms of loss of land productivity.

Agricultural projects also relate to environmental issues in the area of weather fluctuations, climatic change, and other natural calamities that might badly affect crop yield and the success of the projects. Rainfall fluctuations, unusual drought cases, and other unexpected events can result in reduced productivity and food insecurity if proper project designs to address them are not well considered (Liliane & Mutengwa, 2020).

2.2.2. Socio-Economic Factors

A study conducted by Subedi et al.(2011), regarding the efficiency of an agro-environment project executed in China, underlined the fact that variables like appropriateness of technologies to the local context and farmers' needs, infrastructural development, the stakeholder's engagement, resource availability, farmers' understanding of the project objectives and goals, and adoption of new technologies by farmers are the ones influencing the project. Likewise, internal factors like location and support of government, and external factors such as the size and quality of facilities, the program quality and excellent utilization of animals/plants was found as the factors affecting the performance of care farms (In-Kyoung Hong et al., 2023).

The economic performance in European agriculture context is related to the age of the farm population, which the younger and trained farmers, the higher economic performance (E. Giannakis et al., 2015). Moreover, in order to get control of resource limitation and reach higher performance outcomes in horticultural production, the size of farming operation and horizontal cooperation between primary producers were important (D. Pearce et al., 2018).

Economic conditions also affect the performance of agricultural projects. Many studies highlighted the importance of access to finance and investment in performance of agricultural projects. Guihua L. et al, (2024) carried out a study on how financial literacy affects farmers' agricultural

investments. The study indicated that financial literacy has a positive effect, and its enhancement is highly relevant to developing better farmer investment behavior and overall project outcomes. The encouragement of farmers to improve their knowledge management of financial resources enables them to make appropriate decisions for investing in the development of sustainable agricultural projects.

According to Shiferaw et al. (2016), market access and access to improved agricultural inputs are the most critical elements in enhancing agricultural productivity and improving the performance of development projects in developing countries. Improved market access enables smallholder farmers to obtain better prices, lower transaction costs, and raise productivity, while access to inputs such as improved seeds and fertilizers is very important for improvement in yield. The benefits that accrue through market access, price improvement, and expansion of sales are usually offset by challenges emanating from poor infrastructure, high costs, and imperfections in these markets. It is indicated how producer organizations can enable their members to surmount such barriers through collective marketing, acquiring inputs at a lower cost, and accessing highvalue markets. Addressing these challenges and assuring the success of agricultural projects, such as the Seed Activity in Ethiopia, will require an institutional support approach, infrastructural development, and empowerment of the producer organizations.

2.2.3. Technological factors

According to DeLay et al. (2021), the outcome of incorporating precision agriculture technologies is a massive increase in productivity and efficiency in the use of resources. The study also showed that successful adoption depends on the acceptance by farmers of new practices and availability of training and education. In China, the positive response by farmers to the suitability of recommended technologies and development of infrastructure led to the new practices being more applied (Subedi et al., 2011). In addition, for international cooperation projects in agricultural development, focusing on the capacity building and training of local manpower may enhance the sustainability of projects in Uganda (Soyoen Kim, Ahn-Seong
Jeong, 2023). Farmers who adopted modern technologies increased yields in farm operations and higher economic returns compared to those that did not in the Bawku West District of Ghana (Akuduguet al., 2012).

According to Barrett et al. (2009), Most smallholder farmers are highly dependent on the traditional farming method, normally inefficient and nonviable. Agriculture projects introduce new technologies such as precision farming, improved seed varieties, and mechanization that raise productivity and incomes substantially (Schut et al., 2018). However, technology adoption is normally constrained by the high cost of these technologies, lack of technical knowledge, and limited extension services. Projects involving such things as training and capacity-building components, along with the introduction of technology, tend to fare well
(Muriithi & Matz, 2014).

2.2.4. Institutional factors

Farmers' decisions and ability to use sustainable practices depend significantly on the possibility and efficiency of institutional support, such as extension services and training programs (Assefa& Workneh, 2023). Institutional factors are very significant in terms of project performance. Amount of extension grant received, education level of extension managers positively influences them to perform better and thus voter turnout had a negative effect on this (Namyenya et al., 2021). Good funding and qualified personnel are two characteristic features that essentially distinguish the agricultural extension services.

In turn, declining agricultural productivity has been blamed on weak institutional frameworks in Mozambique, thus creating a need for stronger institutional support to achieve better performance (Carrilho & Ribeiro, 2020). Agricultural Co-operative Institutions in China, in turn, present cases of how different institutional forms may realize improved project management and sustainability-agile responses against environmental pressures (Dong et al., 2021).

Most of the available literature analyzes only one aspect or factor but does not analyze how these combines to influence agricultural project performance. For example, Addisu and Hewan (2023) look at environmental degradation, while Shiferaw et al. (2016) look at market access. This calls for an integrated analysis of environmental, socio-economic, technological, and institutional factors that is lacking. It therefore fills that gap by considering these dimensions together in order to gain a more holistic understanding of drivers of project performance. Whereas there are studies like that of Carrilho and Ribeiro 2020, which indicated the importance of institutional frameworks on agricultural development, few studies have investigated their direct influence on the performance of agricultural projects in Ethiopia. This study extends existing literature by

measuring the impact of government support, policy efficiency, and institutional frameworks on project success. Muriithi and Matz (2014) as well as Barrett et al. (2009) examined the use of technology as a means of improving agricultural productivity.

However, research on the barriers to technology adoption in Ethiopia has been limited regarding cost constraints and lack of awareness. While studies such as Musembi (2015) and Thomasz et al. (2024) have researched agricultural projects worldwide, there is limited research focusing on specific regions within Ethiopia. This study narrows the focus to CRS agricultural projects in the Oromia region, providing localized insights that can inform region-specific policies and interventions. Most of the literature, for example, is based on cross-sectional data from Hawong and Lee, 2018; hence, it represents a snapshot of agricultural challenges. The present study realizes the need for follow-up research, which would capture over time the change brought about by certain interventions and policy changes. Further research should consider more extended timeframes in order to assess the sustainability of agricultural projects in different climatic and economic conditions.

2.3. Conceptual frameworks

Independent Variables

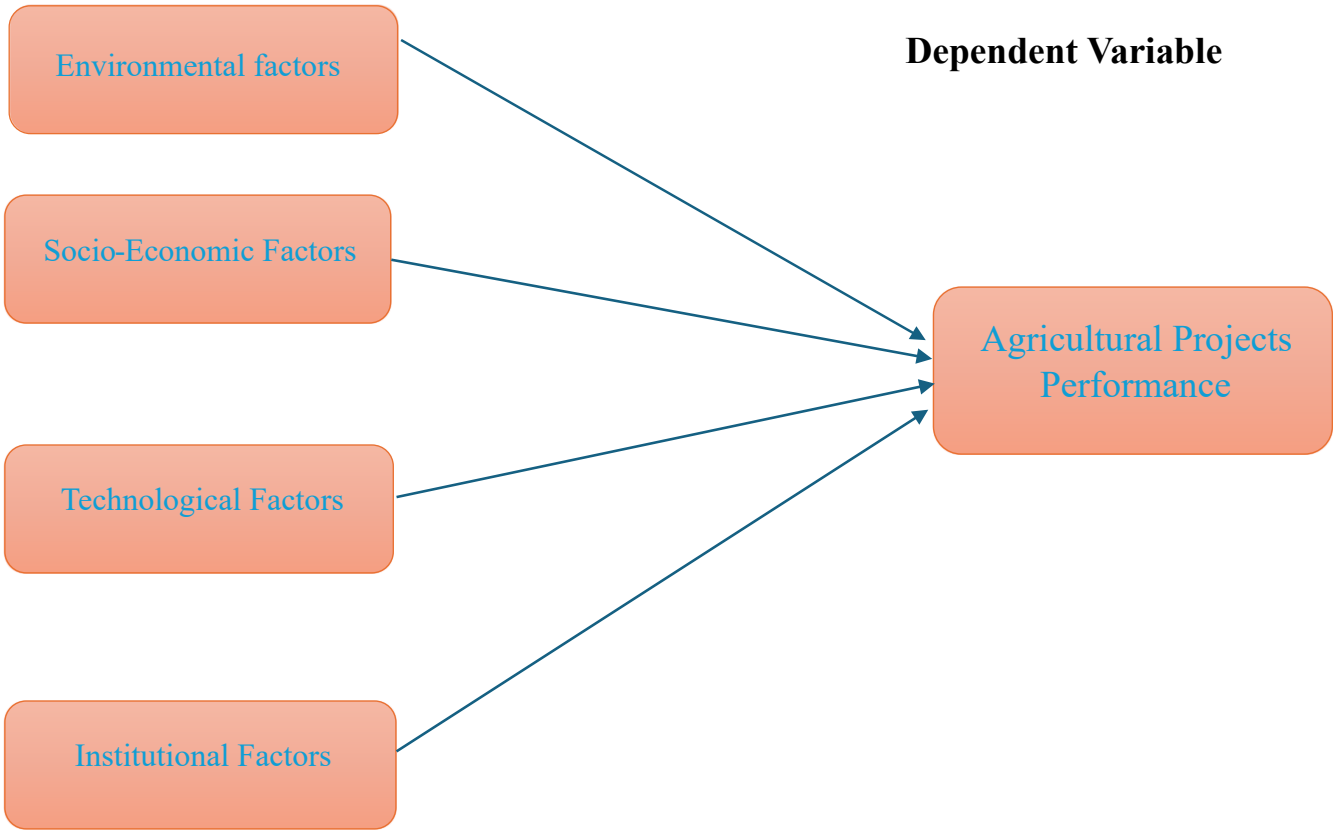


Figure 1. Conceptual Framework

Source: (Developed by the author based on Addisu & Hewan, 2023; Hawong & Lee, 2018; Shiferaw et al., 2016; Subedi et al., 2011; Musembi, 2015; Muriithi & Matz, 2014; Barrett et al., 2009; DeLay et al., 2021; Carrilho & Ribeiro, 2020; Namyenya et al., 2021; Dong et al., 2021.)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Research Design

Explanatory and Descriptive research design was used for this research, because it aims at examining the relationship between agricultural project performance as a dependent variable and environmental, socio-economic, technology and institutional factors as independent variables and to describe and explain the findings of the study.

3.2. Research approach

This study used a mixed method by integrating quantitative and qualitative research methods. Quantitative data was collected to comprehensively address the research objective by capturing numerical data to answer part of the research questions. Qualitative approaches were also collected to generate in-depth insights.

3.3. Population

The population of the study comprises the stakeholders involved in agricultural projects; CRS agricultural project staffs, implementing partner staffs, small holder farmers, government officials and policy makers, and development agents. There are a total of 15 staff in CRS agricultural projects, 7 implementing partner staff, 229 small holder farmers participating in the projects, 4 government officials including DA, which will be a total of 255 population.

3.4. Sample size and Sampling techniques

Stratified sampling was used to ensure that each group is represented in the sampling based on their size within the population. A random sample was drawn from each stratum to capture a diverse range of experiences and conditions. For interviews purposive sampling was used to select participants who have relevant knowledge and experience related to agricultural projects. This technique ensures that the individuals chosen can provide detailed and informed insights into the factors affecting project performance.

Given the total population of 255, using Yemane (1967) formula, n=

$N / [1+ N*e^2]$

Where:

N = total number of populations n = number of sample size e = error

margin / margin of error, a 95% confidence level was taken and e = 0.05

So, for 15CRS staff n = 14, for 7 implementing partner staff n = 6, for 229 smallholder farmers n = 145 and for government staff including DA n = 4, which is a 169 sample size.

3.5. Data Collection Tools / Instruments

The data was collected using both a semi structured questionnaire and an interview guide. The questionnaire was used to collect data from the 145 respondents who are smallholder farmers. The questionnaire included both closed and open-ended questions. Semi-structured interview guides were developed to facilitate in-depth discussions with key informants, including government officials, CRS and implementing partner staff, and development practitioners. The guides include open-ended questions designed to explore experiences, perceptions, and insights related to agricultural project performance. Interviews are considered to be the most suitable method to provide answers to the research questions as well as to ensure the validity of the findings from literature review and to enrich and refine them.

3.6. Measurement of Variables

3.6.1. Measurement of Independent variables

The independent variables in this study are Socio-economic factors, Environmental factors, Technological factors and Institutional factors.

- **Socio-economic factors measurement** includes access to agricultural markets, main source of agricultural information, cooperative or agricultural associations membership, their income, and education role.
- **Environmental Factors Measurement:** includes climate status, water availability, percentage of farmers using irrigation, soil fertility status and percentage of farmers knowledge of availability of environmental conservation practices in their area.

- **Technological Factors Measurement:** access to modern technology, represented by the number or percentage of farmers using improved seeds, fertilizers, or machinery; rate of technology adoption that can be represented by the percentage of farmers adopting new technologies introduced by the project, such as mobile apps or precision farming tools; access to Agricultural Extension Services through the frequency of farmer contact with extension officers, or number of training sessions attended; Use of Digital Platforms by number of farmers using mobile-based or digital platforms for access to market information, weather forecasting, or buying inputs.
- **Institutional Factors Measurement:** includes Government Support in terms of availability and adequacy of subsidies, grants, or loans measured in financial terms or percentage of farmers receiving support; Presence of favorable agricultural policies or regulations measured by policy indices or qualitative analysis; access to Extension Services measured by frequency.

3.6.2. Measurement of Dependent variables

The dependent variable in this study is agricultural project performance, measured in terms of;

- Increase in income as a matter of participating in the agricultural project, effect of the projects on farm productivity in their area.

3.7. Data Analysis

Quantitative data was analyzed by using the Statistical package for social science (SPSS). Descriptive statistics such as frequencies, percentages, was computed to describe the characteristics of the variables of interest in the study. Correlation and regression analysis was used to establish the cause and effect between independent and dependent variables.

Qualitative data collected from the interview was analyzed by compiling and interpreting the data to understand what it represents.

3.8. Reliability and Validity

The study involves a thorough review of existing literature and consultation with experts in agricultural development to design comprehensive and relevant questions for the surveys and interview guides. Pre-testing of instruments will further refine them to ensure they cover all key aspects.

3.9. Ethical Considerations

Considering the importance of ethics in research work, the researcher ensured that a high level of ethics is reflected as much as possible. The participants were approached and requested their willingness to be involved in the study before the actual data gathering date. The researcher exercised oral consent from the respondents to willingly participate. The researcher ensured that participants understood the idea of the study and its purpose beforehand. Furthermore, the researcher maintained the respondents' right to decline to answer a question or to participate in any activity or to refuse to discuss any topic if they have felt uncomfortable. Whatever information in the interviews and discussions were also kept confidential. The researcher ensured that the respondents did not experience such hang-ups by explaining to them the implication of participating in the study. Respondents were free to decide whether to participate in the study or not. The researcher respected the respondents while at the same time ensured that they answer the questions to the expectations of the study.

CHAPTER FOUR

RESULTS AND DISCUSSION

In this chapter, results have been presented and discussed to address the research questions and objectives.

4.1. General Information of the Respondents

This section includes respondents' Gender, Age, level of education, Land ownership and income. This helps to understand that from which age group, sex category, and level of education the data were obtained.

Table 1. General information of the respondents

		Frequency	Percent	Cumulative Percent
Gender	F	59	40.7	40.7
	M	86	59.3	100
	Total	145	100	
Age	18-25	2	1.4	1.4
	26-35	3	2.1	3.5
	36-45	76	52.4	55.9
	46-55	64	44.1	100
	Total	145	100	
Education Level	No formal education	141	97.2	97.2
	Primary education	4	2.8	100
	Total	145	100	
Land ownership	Communal land	2	1.4	1.4
	I own my land	143	98.6	100
	Total	145	100	
Income	Average	2	1.4	1.4
	High (above average)	1	0.7	2.1
	Low (below average)	142	97.9	100
	Total	145	100	

From the above table it shows out of 145 participants, 59.3% are male and 40.7% are female. The majority, 52.4%, fall in the 36–45 age group, followed by 46–55, 44.1%. Younger age groups, 18–35, collectively account for only 3.5%. This sample is generally middle-aged, reflective of the structure of the demographic composition in land-based activities. The largest age group, 36–45 years, represents people in their prime working age, with considerable experience in agricultural or related activities. This group, 46-55 years, hold farmers who have been engaged in farming for many years.

Almost all of the participants had no formal education, 97.2%, and a few had finished primary education, 2.8%. None of the participants reported ever having attended school beyond the primary level.

98.6% of respondents are owners of their lands, while 1.4% use communal land. High land ownership is one of the great factors for agricultural productivity. Ownership means complete autonomy over decisions regarding land use; owners can invest in long-term improvements like irrigation and soil fertility management practices, sustainable practice development. Minimal reliance on communal lands in production implies that participants do not suffer from the complications of communal land ownership, which often relate to dispute and potential restrictions on individual choices regarding use.

97.9% of the respondents reported low-income levels below average. Only 1.4% make average incomes, while 0.7% fall in the high-income category. Low-income dominance implies strained finances, hence limiting respondents' purchasing power to invest in such agricultural inputs as fertilizers and improved seeds or investing in modern technologies and farm equipment. Low income impinges upon resilience to environmental challenges such as drought and floods and inhibits access to training or knowledge-sharing programs that enhance productivity.

4.2. Environmental factors affecting agricultural project performance

The respondents were asked to inform the environmental factors influencing agricultural project performance and the following table shows their responses.

Table 2. Environmental factors

		Frequency	Percent	Cumulative Percent
Climate status	Extremely unfavorable (droughts floods etc)	1	0.7	0.7
	Moderate (some challenges)	4	2.8	3.4
	Unfavorable (many challenges)	140	96.6	100
	Total	145	100	
Water availability problems	Never	109	75.2	75.2
	Occasionally	36	24.8	100
	Total	145	100	
Irrigation use	No	1	0.7	0.7
	Yes	144	99.3	100
	Total	145	100	
Decline in Soil fertility	No	3	2.1	2.1
	Unsure	6	4.1	6.2
	Yes	136	93.8	100
	Total	145	100	
Availability of Environmental conservation Practices	Unsure	4	2.8	2.8
	Yes	141	97.2	100
	Total	145	100	

Climate Status

Out of a total of 145, only one rated the climate as being extremely unfavorable (0.7%). This indicates that the majority of the respondents did not report unfavorable weather conditions to an extent that might disrupt agricultural activities. Only 4 respondents (2.8%) rated the climate as average or moderate. This indicates that a very small proportion of respondents thought the climate was neither a serious issue nor extremely favorable. The greater number of the farmers responded that the climate is unfavorable (140 participants, or 96.6%). These implies that, without being excessively harsh, the environment presented a serious challenge to farming. Stakeholders mentioned that these challenges include persistent or widespread issues such as frequent droughts, indeterminate patterns of rainfall, and soil degradation arising from climate change factors. Most

probably, this has brought severe disruption to agricultural productivity, project outcomes, reducing crop yields and hence threatening food security. This category dominates, and it is thus an indication of an urgent call for climate adaptation strategies.

The stakeholders responded, in conservation, methods involve terracing, afforestation, or increasing the level of drought resistance in different crop varieties. In enhancing sustainability, projects incorporate climate-smart agricultural practices, coupled with community training programs focused on adaptive techniques.

Water Availability

Information from the response of the farmers in their area concerning problems of water availability; 109 participants (75.2%) who respond that they never experienced a shortage in the supply of water; which has further implied that most areas always enjoy better supplies of water for farmers. The fact that 75.2% of farmers do not face water availability problems is a positive indicator for the project. It means that most farming areas have access to sufficient water, through irrigation systems. In fact, such availability of water would support stable agricultural practices, as there would be consistent irrigation and livestock watering without major disruptions. Farmers in this category are less likely to suffer productivity losses due to lack of water. But even in those places where there is access to reliable water, infrastructure, and management practices are so important to help optimize use to prevent overconsumption or waste.

24.8% of the respondents responded occasional water problem. This means some farmers are experiencing periodic shortages of water supply, due to seasonal changes or localized conditions. This farmer who faces water problems occasionally indicated the farmers that have financial problems to use irrigation infrastructure and almost all of the farmers in this category complained about the gasoline cost being high, for the motor to use irrigation.

Irrigation

The irrigation system characterizes the use of almost all 99.3% participants, which means they are highly dependent on irrigation systems for agricultural purposes. Such use of irrigation compensates for the rain's irregularities or insufficiency and thus guarantee that adequate water is available for the crops. Certainly, with a reliable access to water, crops could grow well and give

better yield even in areas with unfavorable climatic conditions. The farmers can grow crops all over the year, even in the dry seasons.

Only one of the respondents reported not using irrigation, and this could be wholly dependent on rain-fed agriculture, and he do not have irrigation infrastructure due to financial problems, being far from any water source, and lack of adequate knowledge or technical support to develop irrigation facilities.

Irrigation is particularly important in regions with unfavorable climatic conditions, as described in the study where 96.6% of respondents faced problems like droughts and floods. In this respect, irrigation stabilizes the availability of water and decreases dependence on rainfall; thus, it reduces the effects of weather extremes. According to the data, irrigation can be a very strong factor in enabling agricultural productivity.

Soil Fertility

93.8% of respondents reported decreased soil fertility. This points out extensive deterioration in soil quality across time, on account of overuse or continuous cropping without replenishment of nutrients, poor farming methods like over-irrigation, monocropping and deforestation.

Soil fertility decline is one of the most serious threats to agricultural productivity and food security. Farmers may experience crop yield reduction, even when irrigation or other inputs are used, as the productive capacity of the soil is reduced. If this trend is left unchecked, land degradation may become permanent, along with economic declines in farming communities.

Only a small proportion of respondents, 4.1%, were uncertain as to the soil fertility status on their farms. This shows a lack of awareness or access to soil testing tools that hinders farmers' proper judgment on soil quality. Farmers who are uncertain may fail to take the appropriate action; either they do nothing, or they overdo the inputs, for instance, application of too many fertilizers.

Only a very small proportion (2.1%) of the respondents reported no decline in soil fertility. This group are living in areas with better conservation of soil, lower pressure on land, or favorable environmental conditions. Factors that may contribute to maintaining soil fertility include crop rotation, agroforestry, or balanced use of organic and chemical fertilizers. This group demonstrates that soil fertility can be maintained under proper practices and interventions even under unfriendly

environments. Their practice might provide a model to other participants experiencing decline in fertility.

The decline in soil fertility is further enhanced by adverse climatic conditions, reported as "unfavorable" by 96.6% of the respondents. Drought and floods cause erosion, nutrient depletion, and salinization. The high prevalence of fertility decline is thus in agreement with the challenges reported due to an unfavorable climate.

Conservative practices

Almost all respondents reported that there are environmental conservation practices in their area that support agricultural projects. The high response rate of 97.2% indicates full awareness of the need for the protection of natural resources, probably challenged by unfavorable environmental conditions and declining soil fertility.

This would help reduce environmental degradation, sustain agricultural productivity, and counteract the effects of climate change. The adoption of conservation practices would be a positive step toward the preservation of biodiversity and the usability of land and water resources into the long run.

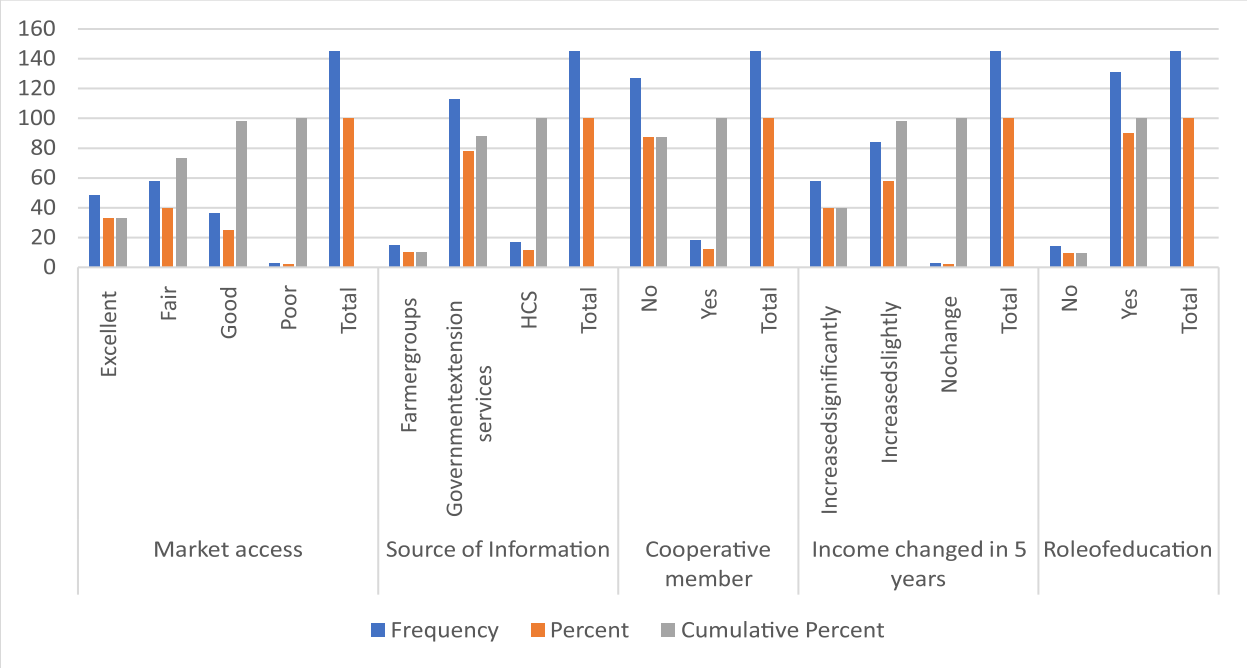
A few respondents 4 were not sure whether there are environmental conservation practices in their area. This is due to a lack of knowledge on what constitutes conservation practices. Farmers who are not sure about their conservation activities may not be able to fully exploit the benefits these practices can provide. The fact that no respondent reported not having conservation practices is a positive indication. It indicates that all the respondents are aware of the significance of maintaining environmental resources.

With 96.6% of the respondents reporting unfavorable climatic conditions, conservation practices become paramount in such areas to help reduce these challenges. Practices such as afforestation and soil conservation reduce the effects of extreme weather conditions like drought and floods that contribute to environmental degradation. With 93.8% of respondents reporting a decline in soil fertility, conservation strategies will be very important in slowing or halting this trend.

4.3. Socio-Economic Factors Influencing Agricultural Project Performance

The results of this part of study describe what socio-economic factors significantly impact the performance of agricultural performance based on the farmers and stakeholder's responses. The participants were asked about the market access, their source of information, if they are a cooperative member, their income change in the last five years, role of education in improving the project performance, and what socio-economic challenge they face in their area. And the result is described as follows:

Figure 2. Socio-economic factors



Market access

A large number of respondents (33.1%) rated their market access condition as excellent, which indicates that one-third of the sample probably faces favorable conditions and market opportunities are moderately available. 40% respondents consider their market access as acceptable but not remarkable. It reflects a medium degree of satisfaction or average standards of living, while farmers have access to markets, this access might be limited by high costs of transportation, few buyers, or price volatility. 24.8% of the respondents feel their market access is good, indicating positive outcomes for some individuals. Only a small percentage of the respondents (2.1%) reported their market access as poor. It is in the fair to good category that holds the majority of the

respondents to show that most get through, but still have room for improvement to elevate their conditions to excellent.

Source of Information

Farmers were asked their main source of agricultural information. The majority (77.9%) of the farmers responded that Government extension services is the main source of information. This points out that the government plays a central role in the educating and informing of farmers about agriculture. 11.7% of the respondents rely on HCS for agricultural information. The rest of the farmers (10.3%) main source of information is farmer groups; this reflects little farmer-tofarmer sharing or few established farmer networks. This dependence on the services of government extension implies reliance upon formal institutions to obtain information, while a relatively low dependence on farmer groups could imply weaknesses in local levels of knowledge and information distribution.

Cooperative Membership:

87.6% of the respondents are not members of any kind of cooperative, meaning there is limited collective farming or sharing of resources. From the respondents only 12.4% of the farmers are a cooperative member, which shows a little membership in cooperatives that indicates lack of awareness, trust issues, or the benefit perceived. Low membership in cooperatives limit farmers' access to collective marketing, credit facilities, to access benefits accruable from bulk purchasing of inputs, shared resources, collective bargaining power, and knowledge sharing. Strengthening cooperative systems could enhance socio-economic outcomes.

Income changes in the last five years

Farmers were asked about their income change from farming in the last five years. 57.9% of the farmers responded that their income slightly increased, while 40% of them responded their change of income in the last five years significantly increased. Only a small fraction (2.1%) of the farmers mentioned that they did not see change in income in the last five years. Improvement in the income trend is a positive indication for economic development in the region; however, most increases being slight would indicate that there is more room for greater economic interventions to boost growth.

Role of Education:

A majority (90.3%) agree that education plays a role in improving the performance of agricultural project performance, underpinning the importance of education in livelihood improvement. This may suggest that most respondents look on education as a critical factor in socio-economic improvement. Such may imply the need for greater investment in educational opportunities, which have at present little perceived value among this population. A small portion (9.7%) of the respondents does not see importance of education in improving the performance of the project, because of lack of access or experience with its benefits.

4.4. Technological factors influencing Agricultural project performance

The following table shows the responses from the farmers about the impact of technological factors on the performance of agricultural projects.

Table 3. Technological factors

		Frequency	Percent	Cumulative Percent
Use of improved seeds	No	4	2.8	2.8
	Sometimes	20	13.8	16.6
	Yes	121	83.4	100
	Total	145	100	
Agricultural Extension Services	Monthly	130	89.7	89.7
	Once in six months	4	2.8	92.4
	Weekly	11	7.6	100
	Total	145	100	
Adopted technology	No	136	93.8	93.8
	Yes	9	6.2	100
	Total	145	100	
Barriers in Adopting new technology	High cost of technology	92	63.4	63.4
	Lack of infrastructure (e.g. electricity internet)	4	2.8	66.2
	Lack of knowledge	48	33.1	99.3
	lack of knowledge and high cost of technology	1	0.7	100
	Total	145	100	

Use of Improved Seeds

The majority (83.4%) of the respondents use improved seeds, a sign of very high input modernization as far as improved seeds goes. This infers that, among these farmers, information on the advantages of the improved seeds, such as higher yields and resistance to pests or better adaptability to climate conditions, is well-established. The quite high percentage indeed suggests that access is relatively widespread in this domain, stimulated by agriculture extension services or cooperatives or local government programs.

From the respondent's improved seeds were also sometimes used by a minority of 13.8%, because of their availability, costs involved, and/or knowledge. This indicates a periodic lack of access to improved seeds and financial constraints. Farmers in this category are trying out improved seeds alongside traditional ones, influenced by risk aversion or cultural farming practices. 2.8% of the respondents do not use improved seeds at all. This category includes farmers in very remote areas where access to agricultural inputs is so poor, or those who have not been convinced about the advantages of improved seeds, because they have never received sufficient information or have experienced adverse situations in the past.

Agricultural Extension Services

The farmers were asked how frequently they receive agricultural extension service, and most respondents (89.7%) responded they receive agricultural extension services on a monthly basis, indicating regular contact with agricultural extension workers. This is an indication of the high institutional presence that is regularly offering technical support and advice to farmers. 7.6 % of the total farmer responded they receive the services once a week. Services could be given on a weekly basis as part of more active, timely problem solving in certain agricultural areas. The remaining farmers responded they receive the service once in six months. This suggests that these farmers live in remote or underserved areas where access to agricultural advisors is limited. The infrequent contact might be insufficient to address dynamic farming challenges, especially in regions prone to weather variability or pest outbreaks.

Adoption of Technology

The farmers were asked whether they adopted any digital or mobile technologies for agriculture. The majority of the respondents (93.8%) have not adopted new agricultural technologies. It would thus show a severe lag in the diffusion of new practices or tools that might improve productivity and efficiency. Some of the plausible reasons for such low adoption of the technology is high cost of technology, which 63.4% of the farmers responded. This is the main barrier, which means the affordability is very poor. That means most farmers cannot afford the initial investment in modern tools, equipment, or methods. 33.1% of the respondents point out the reason for low adoption is lack of information regarding technology use. This points toward deficiencies in the awareness and dissemination of training and information regarding new technologies. Several farmers might not understand either how to use or to maintain modern equipment or be aware of what benefits accrue to the farmer for technology adoption. This could again be due to lack of education the farmers have. A significant lack of formal education among the participants influences their adoption of modern agricultural practices or policies. This high, overwhelming lack of formal education among participants binds their ability to; understand and adopt modern agricultural practices or technologies, access and interpret information such as market trends, weather forecasts, or technical guidance, and participate in programs that require basic literacy or numeracy skills, including training workshops. Low levels of education also result in inefficiency in farming and resource use.

A tiny fraction (0.7%) of the respondents deals with a mix of barriers, lack of knowledge and high cost. This category represents farmers who face more than one constraint at a time, further exacerbating their inability to adopt technology. 2.8% of the respondents reported that a lack of infrastructure, such as electricity, internet, and transportation networks, is limiting them from adopting technology. The general trend is that most farming activities are concentrated in rural areas, where poor infrastructure is generally an obstacle to acquiring, implementing, or maintaining modern farming tools.

6.2 percent of the respondents reported that they have adopted the technology. This involves progressive farmers who would never mind experimenting or investing in innovations. Farmers who fall into this category are those with better financial endowments, institutional support, such as subsidies or training, or located in areas where extension services are strong.

4.4.1. Correlation analysis

In order to know how adoption of technology affect the performance of agricultural projects correlation analysis was done.

Table 4. Correlation table

Correlations						
		Agricultural project performance	Use of Improved seeds	Agricultural Extension services	Adopted new technology	Barriers of adopting new technology
Agricultural project performance	Pearson Correlation	1	.719	.100	.496	-.568
	Sig. (2tailed)		0.001	.300	.050	0.002
	N	145	145	145	145	145
Use of Improved seeds	Pearson Correlation	.719	1	-.137	-.016	.061
	Sig. (2tailed)	0.001		.101	.846	.464
	N	145	145	145	145	145
Agricultural Extension services	Pearson Correlation	.100	-.137	1	.282**	.020
	Sig. (2tailed)	.300	.101		.001	.809
	N	145	145	145	145	145
Adopted new technology	Pearson Correlation	.496	-.016	.282**	1	-.350
	Sig. (2tailed)	.050	.846	.001		.001
	N	145	145	145	145	145
Barriers of adopting new technology	Pearson Correlation	-.568	.061	.020	-.350	1
	Sig. (2tailed)	0.002	.464	.809	.001	
	N	145	145	145	145	145

**. Correlation is significant at the 0.01 level (2-tailed).

For interpreting correlation coefficient intervals: 0 to 0.20 corresponds to a very weak relationship; 0.21 to 0.40 corresponds to a weak relationship, 0.41 to 0.60 corresponds to a moderate

relationship, 0.61 to 0.80 corresponds to a strong relationship, and 0.81 to 1.00 corresponds to a very strong relationship, Cohen (2003).

Therefore, from the above correlation result illustrated in table 4, it is possible to see that, there is significant, positive and strong relation between Use of improved seeds and agricultural project performance ($r = 0.719$, $p = 0.001$). There is also significant, positive and moderate relation between Adopted new technology and agricultural project performance ($r = 0.496$, $p = 0.050$). There is also significant, negative and moderate relation between barriers to adopting new technology as a factor and agricultural project performance ($r = -0.568$, $p = 0.002$). There is also significant, positive and weak relation between Agricultural extension services and agricultural project performance ($r = 0.100$, $p = 0.300$). From the above correlation analysis, it is possible to infer that all of the above identified technological factors are correlated with performance of agricultural projects.

4.5. Institutional and Policy Frameworks

For this objective, regression analysis was done in order to examine the influence of institutional and policy frameworks have on performance of agricultural projects.

It is always important, before running any regression analysis, to check whether the data satisfies the underlying assumptions for linear regression. These are normality of residuals, linearity, and homoscedasticity. The following diagnostic tests were carried out in order to check these assumptions: the histogram of residuals, the normal probability plot-or P-P plot, and the scatterplot of residuals.

Normality Test

Normality of residuals was investigated by the histogram of the standardized residuals and the normal P-P plot. The histogram figure 3 showed that residuals were approximately symmetrically distributed around the mean, suggesting that the residuals follow normal distribution. The P-P plot had data points sticking closely to the diagonal line, it implies the model captures the linear relationship between predictors and the dependent variables. From this, it can be obtained that the residuals are approximately normally distributed, hence the normality assumption is satisfied.

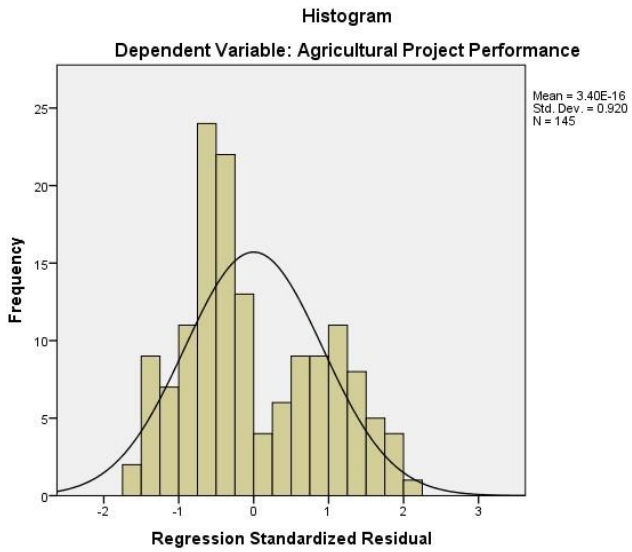


Figure 3. Histogram

Linearity Test

Moreover, to check linearity, a graph is plotted using SPSS regression graph. The below graph shows the assumption of linearity is met.

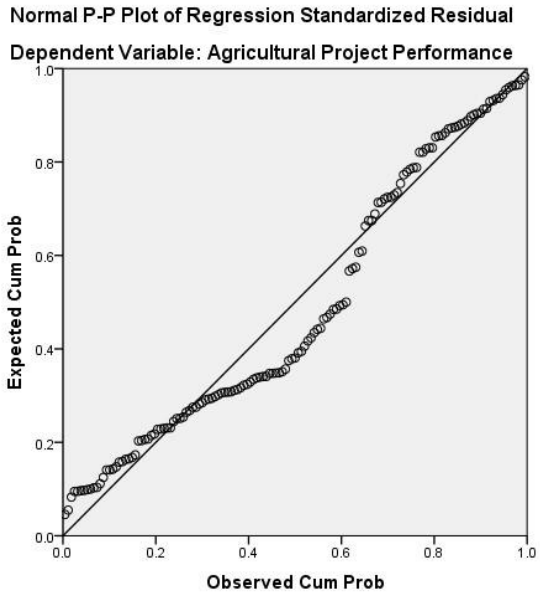


Figure 4. Normal P-P Plot of dependent variable

Homoscedasticity

The residual scatterplot also showed consistent scatter in residuals for the predicted values, hence constant variance. Again, the observation met the assumption of homoscedasticity.

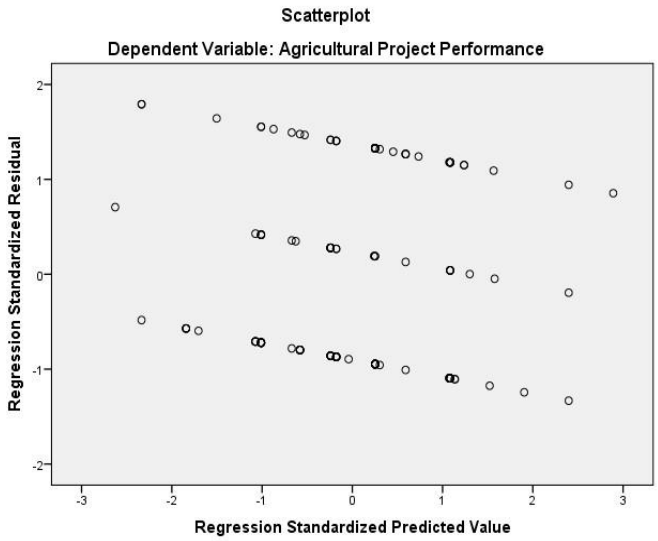


Figure 5. Scatterplot

The regression assumptions were checked, we proceed to produce regression results.

Table 5. Model summary of regression analysis

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.291[a]	.085	.059	.855	.085	3.240	5	140	.014

a. Predictors: (Constant), Monitoring of agricultural project, Government policy support in the area, financial support from government, effectiveness of institutions in supporting the projects b. Dependent Variable: Agricultural Project Performance

From the table, R square value is 0.085, this means that 8.5% of the variation in agricultural project performance is explained by government policy support, government financial support, effectiveness of institutions, and monitoring.

Table 6. ANOVA table

ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	9.472	5	2.368	3.240	.014[b]
Residual	102.321	140	.731		
Total	111.793	145			

a. Dependent Variable: Agricultural Project Performance

b. Predictors: (Constant), Monitoring of agricultural project, Government policy support in the area, financial support from government, effectiveness of institutions in supporting the projects

As ANOVA table shown, regression (Sum of Squares = 9.472, F = 3.240, Sig. = 0.014). The model explains some variance in the dependent variable, as identified by the significance value of 0.014. Therefore, independent variables collectively result in explaining changes in the performance of agricultural projects. Residual (Sum of Squares = 102.321) reflects unexplained variance in agricultural project performance. The model is statistically significant, but the variance explained by predictors is limited.

Table 7. Coefficient table

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.221	.469		4.733	.000		
	Government policy support in the area	.267	.079	.299	3.389	.001	.840	1.190
	Financial support from government	.009	.303	.002	.028	.977	.855	1.169
	Effectiveness of institutions in supporting the projects	.023	.073	.030	.314	.754	.700	1.428
	Monitoring of agricultural project	.019	.141	.012	.131	.896	.829	1.207

As shown from the above coefficient table, this section gives information on the respective contribution of each independent variable alone. Assuming other predictive variables are held constant, a unit change in government support is expected to improve 0.267 units in agricultural project performance; a unit change in financial support when holding the other factor constant would lead to a 0.009 improvement in agricultural project performance; a unit change in the effectiveness of institutions corresponds to increase of 0.023 units in performance of the project; for every unit increase in monitoring activities, project performance increases by 0.019 units. These concludes, the only significant variable that has a positive impact on agricultural project performance is government support, while financial support, institutional effectiveness, and monitoring are not statistically significant. The model, although statistically significant at p = 0.014, explains only a meager proportion or 8.5% of variation in agricultural project performance

4.6. Overall Agricultural project performance

The following table shows the responses from the participants.

Table 8. Agricultural project performance

		Frequency	Percent	Cumulative Percent
Overall performance of agricultural	Excellent	74	51.1	51.1
	Fair	27	18.6	69.7
	Good	44	30.3	100
	Total	145	100	
Agricultural project effect on farm	No	3	2.1	2.1
	Not sure	2	1.4	3.4
	Yes	140	96.6	100
	Total	145	100	
Income change	No	1	0.7	0.7
	Yes	144	99.3	100
	Total	145	100	
Key factor	Economic factors and socio-economic factors	4	2.8	2.8
	Environmental factors	101	69.7	72.4
	Institutional factors	1	0.7	73.1
	Socio-economic factors	31	21.4	94.5
	Technologic factors	8	5.5	100
	Total	145	100	

The farmers were asked to rate the overall performance of agricultural projects in their area. From the total the project received an "Excellent" rating from 74 respondents, 51%, which means that more than half of the participants were very satisfied with its results. 44 respondents, or 30.3%, rated the project as "Good," which means they are moderately satisfied. Only 27 respondents, or 18.6%, rated it as "Fair," meaning they believe there is room for improvement but still do not classify it as poor. This indicates that most stakeholders felt the project had been very effective in accomplishing its objectives. The fact that 81.3% would rate it either Excellent or Good demonstrates the appreciation and significance that these projects are already attaining in trying to solve its objectives. At the same time, however, this does indicate that there were still quite a number 18.6% of fair ratings, indicating some probable shortcomings or gaps in expectation among the smaller number of participants.

Impact of Agricultural project on farm productivity

From the respondents 96.6% responded the project has improved farm productivity in their area. Only three respondents (2.1%) disagreed, and two (1.4%) were unsure about the impact. Farmers have profited directly, from better inputs, training, or farming techniques. The modest percentage of disagreement or ambiguity suggests near-universal project advantages, while there may be occasional examples where projected gains were not achieved. Such cases may result from special regional restrictions, such as resource constraints or a lack of access to project resources.

Income Change

The results also indicated that 99.3% respondents claimed their incomes increased due to the project and only 0.7% reported no change in income. The projects achieved one of the key objectives in improving the livelihoods of farmers. Almost all 144 respondents out of 145 showed increased income, thus the project proved to be very effective economically. This result is due to the higher yields, better market access, or value addition. The only one case of no change in income might be a very unique anomaly, which could be specific to poor market access, resource allocation, or exogenous factors such as economic shocks.

Key Factors

The most critical factors that affect the performance of agricultural projects, identified by 69.7% of the respondents were Environmental factors. Socio-economic Factors ranked second, with 31

responses constituting 21.4%. Technological Factors were noted by 8 respondents or 5.5%. Economic and Socio-economic factors combined accounted for 4 responses (2.8%). The least important ones were the institutional ones, with only 1 response (0.7%).

This result shows heavy dependence on environmental factors: climate, soil fertility, and availability of water. The dominance of environmental considerations underlines the vulnerability of agriculture to variability in climate and natural conditions, hence the need for climate-smart practices. Socio-economic factors, at 21.4%, indicate that community structures, education, and financial inclusion are also crucial. The low emphasis on technological factors (5.5%) underlines the underutilization of modern technologies in agriculture. The institutional factors were almost negligible, 0.7%, and this means the influence of government or organizational support structures has not been strong and may be needed to be strengthened for better outcomes.

4.7. Discussion

This study revealed that poor climatic conditions and deteriorating soil fertility were major factors in project performance, at 96.6% and 93.8%, respectively. This is supported by findings by Addisu and Hewan, 2023, who established that environmental degradation, especially soil erosion and water shortage, was one of the major issues facing Ethiopia. Similarly, Hawong and Lee (2018) highlighted how climate variability can play a vital role in shaping the performance of the agricultural sector. In spite of this, the very high irrigation uses by respondents of 99.3% points to an abatement factor that is aiding farmers to overcome adverse climatic changes. This finding agrees with that of Thomasz et al. (2024), which posits the use of sustainable water management in improving agriculture. Soil conservation and water resource management are key environmental concerns that future interventions should look into for long-term impacts.

Some of the identified critical socio-economic barriers include low formal education levels, at 97.2%, and low cooperative membership, at 12.4%. The findings correspond with the argument by Subedi et al. (2011), who indicated that limited education and weak institutional networks make farmers less capable of accepting innovative agricultural practices. In addition, the study corresponds with Shiferaw et al. (2016) in recognizing market access and cooperative systems as very instrumental in influencing improved agricultural output. Despite these barriers, 99.3% of the respondents' reported improvements in income relatively, an indication of the success of the projects in enhancing livelihoods. This finding agrees with the work of Musembi (2015), who

reported that agricultural projects with focused interventions significantly enhance farmers' incomes. These gains in income are sustained when membership of cooperatives is strengthened, and the educational opportunities open to farmers improve.

Although adoption to improved seeds was 83.4%, this was not the case in improved agricultural technologies like using digital or mobile technology, which only 6.2% of respondents utilized; such significant reasons were high costs, by 63.4%, and unawareness, by 33.1%. These findings confirm a study by Muriithi and Matz, 2014, who indicate that the cost of technology and limited extension services contributes to low technology adoption by smallholder farmers. Barret et al. (2009), further emphasized how traditional means characterize small-scale farming; thus, the need to provide focus in areas of intervention, particularly with the promotion of modern technologies. The strong positive correlation between improved seeds uses and project performance ($r = 0.719$, $p = 0.001$) is supported by the work of DeLay et al. (2021), who estimated productivity gains from the adoption of high-quality inputs. These barriers can be eliminated through increased access to affordable technologies and specific training programs.

In fact, multiple regression of data from respondents indicated that a mere 8.5% of the variation in performance of the agricultural projects was explained by institutional factors, with only the variable for government support being significant at $p = 0.001$. It consolidates observations by Carrilho and Ribeiro, 2020, that good institutional frameworks further agricultural initiatives. But all these results suggest that the institutional factors are of relatively limited influence in this study and hence require further investment in capacity building and governance reforms. The minor role of financial support and monitoring possibly reflects some inefficiencies in resource allocation and implementation strategies. In fact, as Namyenya et al. (2021), assert, high-quality extension services and a clear monitoring framework are crucial success factors for agricultural projects. Strengthened institutional support and stakeholder collaboration could result in a much better project outcome.

The majority rated the overall performance of the projects as excellent 51.1% and good 30.3%, which is an indication of high achievements in productivity, 96.6%, and income generation, 99.3%. These results agree with Musembi (2015), who noted that well-implemented agricultural projects have the potential to transform the lives of rural people. However, the persistent challenges identified in this study call for systemic interventions if these successes are to be sustained and scaled up.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1. Summary

The study investigated influencing factors of agricultural project performance, in case of Catholic Relief Services. The factors considered are the environment, socio-economic, technological, and institutional. The results found that although the project performed pretty well in improving farm-level productivity and farmer incomes, problems prevail that need attention.

Most of the respondents were middle-aged, between 36 and 55 years, and owned their land, 98.6%, which enables them to have autonomy in agricultural decision-making. However, 97.2% had no formal education and hence could not adopt modern farming practices.

Environmental factors were mentioned as critical barriers to agricultural productivity, represented by unfavorable climatic conditions, 96.6%, and declining soil fertility, 93.8%. In spite of these, wide utilization of irrigation, 99.3%, provided a response of 75.2% with no shortage of water. Also, there is a wide usage of conservation practices at 97.2%, though much more would be attained with support and training.

Socio-economic challenges, including low levels of formal education (97.2%), limited cooperative membership (12.4%), and constrained financial resources, limit farmers' ability to adopt improved practices or technologies. Although most respondents recognize the importance of education (90.3%), access to training and capacity-building opportunities remains inadequate.

Other critical areas for improvement are the adoption of advanced technologies, which stands at 6.2% of the farmers using modern tools to improve their farming. High cost, lack of knowledge, and poor infrastructure were among the major barriers to adopt new technologies.

Institutional support, though existing through the government extension services to 77.9%, has had a minimal overall effect on project outcomes. Regression analysis shows that only 8.5% of variation in agricultural project performance is explained by institutional frameworks, thus requiring the need for stronger policies and more robust mechanisms for monitoring.

In a nutshell, the agricultural project has realized tremendous progress in productivity and income improvement, as shown by 96.6% of respondents who reported increased farm productivity and 99.3% who reported income growth. However, addressing systemic challenges, especially environmental, socio-economic, and technological barriers, will be important for longterm success and sustainability. This calls for an integrated approach to maximize impacts through climate-smart practices, financial inclusion, technological advancement, and institutional strengthening for resilience.

5.2. Limitations of the study

The study was limited to agricultural projects only implemented by CRS in the Oromia region, East Hararghe Zone, Babile Woreda. The result may not be generalized to other parts of Ethiopia with different socio-economic, environmental, or institutional conditions. The very limited time for data collection and analysis may not have captured seasonal changes or longer-term trends in performance.

While the sample size of 145 respondents is representative, the relatively small sample size may limit the extent to which results reflect the experiences of all stakeholders involved in CRS agricultural projects. Some respondents, especially those living in remote or less accessible areas, could not be reached; this might have led to some level of underrepresentation in the experiences and perspectives of such people.

This study was largely based on data from structured questionnaires and interviews, which may be affected by response bias or inaccuracies due to recall limitations or social desirability. Other variables were also restricted because of problems of data availability and measuring the impact of both institutional frameworks and technology adoption.

While these have considered environmental, socio-economic, technological, and institutional factors, not all variables at the macro level, such as national policies or influences of global markets, were considered in the performance analysis of agricultural projects.

5.3. Contributions of the study

This research contributes significantly to understanding and improving agricultural project performance, especially in the study area, in several respects: it provides empirical evidence on the major challenges and opportunities that affect agricultural project performance through the

interplay of environmental, socio-economic, technological, and institutional factors; this will help guide targeted interventions so as to address specific constraints.

It represents key recommendations that arise from the findings and are addressed to policy and development practitioners, for example, promoting climate-smart agricultural practices, access to finance and technologies, and improving institutional arrangements at all levels for sustainability of project outcomes.

The study identifies low adoption of agricultural technologies, low cooperative membership, and unfavorable climatic conditions as some of the major barriers. Addressing these issues can help implementers like CRS refine their project designs and execution strategies for greater impact. This research contributes to the academic literature on agricultural project performance.

The study provided a basis for further research in the determination of the role of policies at the macro level, long-term project impacts, and regional performance drivers. The study deepens the understanding of important stakeholders such as farmers, project staff, and policymakers on issues that touch on project success. Such awareness encourages cooperation and makes informed decisions in agricultural project planning and implementation. Thus, it offers the study very important insights and some practical solutions on how to enhance the performance of agricultural projects, hence contributing to attaining broader food security, poverty reduction, and sustainable development.

5.4. Direction for future research

Further studies may involve more than one region in Ethiopia or other developing countries. Comparison could highlight factors specific to the region and wider patterns that affect agricultural project outcomes.

Longitudinal studies should be done to track agricultural projects over several years to explain long-term impacts of interventions, besides the emergence of problems and successes over time. Future studies should investigate how performance at the level of a project interacts with higher order factors at the level of national policy on agriculture, world market conditions, and global mechanisms of funding.

This may involve further research on the constraints and drivers of the adoption of improved agricultural technologies, such as precision farming tools, digital platforms, and climate-resilient practices in resource-poor environments.

Research into the role of institutional frameworks, governance structures, and stakeholder engagement in the implementation of agricultural projects would have given more actionable insights to improve supporting institutional mechanisms. The studies on the socio-economic ripples of agricultural projects-for instance, livelihood improvements, gender equity, and resilience at the community level-offer a wider understanding of their impacts.
It will particularly be important for further research to be done on documenting the effectiveness of specific climate-smart agriculture practices and technologies in combating climate variability for improved project outcomes.

Advanced mixed-methods approaches, such as participatory research and spatial analysis, might yield diverse perspectives and richer data that are more context-specific. The following suggestions will try to fill some of the gaps identified during this study and, therefore, will contribute to a stronger base of knowledge in the pursuit of increasing agricultural project performance and sustainability in Ethiopia and elsewhere.

5.5. Conclusion

It draws into focus the critical role that environmental, socio-economic, technological, and institutional factors play concerning the performance of agricultural projects in Ethiopia. While the results reveal that the CRS projects have indeed been able to increase farm productivity and raise household incomes, there are many challenges:

Some of the most critical challenges include unconducive climatic conditions, declining soil fertility that calls for appropriate interventions in climate-smart agricultural practices, improved water management, and conservation techniques for soil and water. The low education levels and/or restricted membership to cooperatives form the binding constraints in the ability of farmers both to adopt modern practices and reach out for collective resources. Improving the situation may come from strengthening the system of cooperatives and adult education/vocational training. Their low rate of adoption due to their high cost and lack of knowledge calls for affordable technologies, training programs,

and improved rural infrastructure in terms of electricity and internet access. The limited influence of the institutional factors suggests that stronger policy frameworks, better governance, and more effective systems for monitoring and evaluation are needed to promote agricultural projects.

5.6. Recommendation

- Enhance soil fertility management and promote crop rotation, organic fertilization, and limited use of fertilizers to rejuvenate the soil and prevent its degradation.
- Enhancing conservation through an increase in farmer training in terracing, afforestation, and erosion management in order to reduce vulnerability of natural resources to climate change.
- Enhancing the benefits of membership in cooperatives including pooling of resources and negotiation strength to attract other farmers.
- Provide Adult Education/ Vocational training programs appropriate to their requirement.
- Enhancement of transport infrastructure with direct links to markets for reducing costs and increasing profits.
- Facilitate microloans to be provided to farmers for purchasing improved seeds and fertilizers; and for the advancement of purchasing new hand tools and machines
- Promote digital agriculture tools like mobile apps or platforms for weather forecasts, market prices, and farming advice.
- Invest in rural electricity and internet access to better adapt technology in farming.
- Improve the capacity of government agencies for timely and effective support to agriculture.
- Regular improvement in monitoring and evaluation of the performance of the agricultural projects for accountability and adaptability.

REFERENCES

Akudugu, M. A., 1, Guo, E., 1, & Dadzie, S. K., 2. (2012). Adoption of Modern Agricultural Production Technologies by Farm Households in Ghana: What Factors Influence their Decisions? In Centre for Continuing Education and Interdisciplinary Research (CCEIR), University for Development Studies (UDS), P. O. Box TL 1350, Tamale, Ghana & Department of Agricultural Economics and Extension, University of Cape Coast, Cape Coast, Ghana, *Journal of Biology, Agriculture and Healthcare: Vol. Vol 2* (Issue No.3).

Ali, H., Menza, M., Hagos, F., & Haileslassie, A. (2023). Impact of climate smart agriculture on households' resilience and vulnerability: An example from Central Rift Valley, Ethiopia. *Climate Resilience and Sustainability*, *2*(2). https://doi.org/10.1002/cli2.54

Asefa, A., Tadesse, H., & Jimma Agricultural Research Center. (2023). Review of Factors Affecting Small Scale Irrigation Schemes in Ethiopia. In *Journal of Natural Sciences Research: Vol. Vol.14* (Issue No.12, pp. 7–8) [Journal-article]. https://doi.org/10.7176/JNSR/14-12-02

Assefa, A.-M., & Workneh, T. (2023). Factors influencing the adoption of soil and water conservation measures for sustainable land management practices in Bati District, Ethiopia. *Abyssinia Journal of Business and Social Sciences*, 8(2), 1-12.

Barrett, C. B., Carter, M., Timmer, C. P., Cornell University, University of California, Davis, & Harvard University. (2009). A Century-Long Perspective on Agricultural Development. In *American Journal of Agricultural Economics* [Journal-article]. https://doi.org/10.1093/ajae/aaq005

Basri, Y. M., Taufik, T., Yasni, H., Putri, R. I., Indra, N. Z., Rahmadani, N., Aslin, M., & Amri, T. (2023). IMPROVING COMPANY PERFORMANCE IN RURAL AREAS: INSTITUTIONAL THEORY APPROACH. *KnE Social Sciences*. https://doi.org/10.18502/kss.v8i13.13750

Bekabil, U. T. & Oromia Agricultural Research Institute, Haro Sabu Agricultural Research Center, Kellem Wollega, Dale Sadi. (2014). Review of Challenges and Prospects of Agricultural Production and Productivity in Ethiopia. In *Journal of Natural Sciences Research: Vol. Vol.4* (Issue No.18, pp. 70–71).

Cropin. (2023). New Technologies in Agriculture | 2023 &Beyond. Retrieved from Cropin website.

Carrilho, J. Z., & Ribeiro, R. N. (2020). Influence of institutional factors on the performance of the agricultural sector in Mozambique. In *Working Paper Series*. https://doi.org/10.35188/unu-wider/2020/885-6

Change, N. I. P. O. C. (2023). *Climate Change 2022 – Impacts, Adaptation and Vulnerability*. https://doi.org/10.1017/9781009325844

Charagu, L. W., & Moronge, M. (2018). DRIVERS OF PROJECT MANAGEMENT EFFICIENCY IN AGRICULTURAL PROJECTS IN KENYA: A CASE OF INTERNATIONAL FERTILIZER DEVELOPMENT CENTRE (IFDC). *Strategic Journal of Business & Change Management*, *5*(4). https://doi.org/10.61426/sjbcm.v5i4.912

Chillrud, R. A. (n.d.). *Resilience Theory in Climate-Based Agriculture Development Projects: Useful Framework or Popular Buzzword?* Bard Digital Commons. https://digitalcommons.bard.edu/bcep/11

Connor, G. (n.d.). *An Overview of Agriculture and Food Globally*. Pressbooks. https://psu.pb.unizin.org/internatag/chapter/an-overview-of-agriculture-and-foodglobally/

Da Silva Leonel, R., Junior, & Da Cunha, C. R. (2012). Atores, trabalho institucional e a institucionalização da estratégia de diversificação em uma cooperativa agroindustrial. *BASE - Revista De Administração E Contabilidade Da Unisinos*, *10*(1). https://doi.org/10.4013/base.2013.101.07

DeLay, N. D., Thompson, N. M., Mintert, J. R., & The Authors. (2022). Precision agriculture technology adoption and technical efficiency. *Journal of Agricultural Economics*, 195–219. https://doi.org/10.1111/1477-9552.12440

Dias, L. C., & Plein, N. C. (2024). ELEMENTOS INSTITUCIONAIS QUE DETERMINARAM A PERFORMANCE ECONÔMICA DA AGROPECUÁRIA DA MICRORREGIÃO DE TOLEDO NO OESTE DO PARANÁ/institutional elements that determine the economic performance of farming in the toledo micro-region in Western Paraná. *Informe GEPEC*, *28*(2), 497–515. https://doi.org/10.48075/igepec.v28i2.33674

Dong, H., Dacre, N., & Bailey, A. (2021). Sustainable Agile Project Management in Complex Agriculture Projects: An Institutional Theory Perspective. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3829912

Dörner, J., Zúñiga Ugalde, F., & González-Chang, M. (2018). Agroecology and Sustainable

Agricultural Systems. *Agro Sur*, *46–46*, 1–2. https://doi.org/10.4206/agrosur.2018.v46n201

Dorosh, P., & Rashid, S. (Eds.). (2012). *Food and Agriculture in Ethiopia: Progress and Policy Challenges*.

Douthwaite, B., Ahmad, F., & Shah, G. (2020). Putting Theory of Change into Use in Complex Settings. *Canadian Journal of Program Evaluation*, *35*(1), 35–52. https://doi.org/10.3138/cjpe.43168

Enders, J. C., & Remig, M. (2014). Theories of Sustainable Development. In *Routledge eBooks*. https://doi.org/10.4324/9781315757926

FAO, Di Marco Conte, V., Niyazi, N., Pollastri, G., Buffel, E., Cossée, O., & Cosentino, C. (2023). *Programme Evaluation Report 2023*. FAO.

Food and Agriculture Organization of the United Nations. (2013). *CLIMATE-SMART AGRICULTURE Sourcebook*. https://www.fao.org/3/i3325e/i3325e.pdf

Food and Agriculture Organization of the United Nations. (2022). *The State of Food and Agriculture 2022. Leveraging automation in agriculture for transforming agrifood systems*. FAO. https://doi.org/10.4060/cb9479en

Habib-ur-Rahman, M., Ahmad, A., Raza, A., Hasnain, M. U., Alharby, H. F., Alzahrani, Y. M., Bamagoos, A. A., Hakeem, K. R., Ahmad, S., Nasim, W., Ali, S., Mansour, F., & EL Sabagh, A. (2022). Impact of climate change on agricultural production; Issues, challenges, and opportunities in Asia. *Frontiers in Plant Science*, *13*, 925548. https://doi.org/10.3389/fpls.2022.925548

International Fund for Agricultural Development (IFAD). (2016). *Rural Development Report 2016: Fostering inclusive rural transformation*.

Kholodova, M., & Podgorskaya, S. (2020). Project management methods in agriculture. *E3S Web of Conferences*, *210*, 11007. https://doi.org/10.1051/e3sconf/202021011007

Lafontaine, H. O., & Lesueur-Jannoyer, M. (2014). Sustainable Agriculture Reviews 14. In *Sustainable agriculture reviews*. https://doi.org/10.1007/978-3-319-06016-3

Liliane, T. N., & Charles, M. S. (2020). Factors Affecting Yield of Crops. In *IntechOpen eBooks*. https://doi.org/10.5772/intechopen.90672

Meuwissen, M. P., Feindt, P. H., Spiegel, A., Termeer, C. J., Mathijs, E., De Mey, Y., Finger, R.,

Balmann, A., Wauters, E., Urquhart, J., Vigani, M., Zawalińska, K., Herrera, H., Nicholas-Davies, P., Hansson, H., Paas, W., Slijper, T., Coopmans, I., Vroege, W., . . . Reidsma, P. (2019). A framework to assess the resilience of farming systems. *Agricultural Systems*, *176*, 102656. https://doi.org/10.1016/j.agsy.2019.102656

Muller-Praefcke, D., Lai, K. C., Sorrenson, W., Food and Agriculture Organization of the United Nations, & European Bank for Reconstruction and Development. (2010). The use of monitoring and evaluation in agriculture and rural development projects. In *BEST PRACTICES IN INVESTMENT DESIGN*.

Muriithi, B. W., & Matz, J. A. (2014). Welfare effects of vegetable commercialization: Evidence from smallholder producers in Kenya. *Food Policy*, *50*, 80–91. https://doi.org/10.1016/j.foodpol.2014.11.001

MUSEMBI, F. P. (2015). FACTORS INFLUENCING THE PERFORMANCE OF AGRICULTURAL PROJECTS FUNDED BY EASTERN COMMUNITY DEVELOPMENT PROGRAMME (ECDP) IN MACHAKOS COUNTY, KENYA. In *ECDP*.

Namyenya, A., Zeller, M., Rwamigisa, P. B., & Birner, R. (2021). Analysing the performance of agricultural extension managers: a case study from Uganda. *The Journal of Agricultural Education and Extension*, *28*(3), 363–389. https://doi.org/10.1080/1389224x.2021.1932539

NEW PARTNERSHIP FOR AFRICA'S DEVELOPMENT (NEPAD). (2006). *Comprehensive Africa Agriculture Development Programme Integrating livestock, forestry and fisheries subsectors into the CAADP*.

Overview. (n.d.). World Bank. https://www.worldbank.org/en/topic/agriculture/overview

Pingali, P. L. (2012). Green Revolution: Impacts, limits, and the path ahead. *Proceedings of the National Academy of Sciences*, *109*(31), 12302–12308. https://doi.org/10.1073/pnas.0912953109

Rajala, E., Vogel, I., Sundin, A., Kongmanila, D., Nassuna-Musoke, M. G., Musundire, R., Mulangala, M. N., Chiwona-Karltun, L., Magnusson, U., & Boqvist, S. (2020). How can agricultural research translation projects targeting smallholder production systems be strengthened by using Theory of Change? *Global Food Security*, *28*, 100475. https://doi.org/10.1016/j.gfs.2020.100475

Ruhumuriza, J. D. D., Osiemo, K., School of Business and Economics, Mount Kenya University, Kigali, Rwanda, & School of Business and Economics, Mount Kenya University, Kigali, Rwanda. (2022). *Critical factors responsible for project performance in modern agriculture in Rwanda. The Case of Potato Project in Bramin Ltd* (pp. 1395–1396) [Journal-article]. https://www.globalscientificjournal.com

SAHIN, I. & Iowa State University. (2006). DETAILED REVIEW OF ROGERS' DIFFUSION OF INNOVATIONS THEORY AND EDUCATIONAL TECHNOLOGY-RELATED STUDIES BASED ON ROGERS' THEORY [Research article]. *The Turkish Online Journal of Educational Technology*, *5*(2), Article 3. https://files.eric.ed.gov/fulltext/ED501453.pdf

Schut, M., Kamanda, J., Gramzow, A., Dubois, T., Stoian, D., Andersson, J. A., Dror, I., Sartas, M., Mur, R., Kassam, S., Brouwer, H., Devaux, A., Velasco, C., Flor, R. J., Gummert, M., Buizer, D., McDOUGALL, C., Davis, K., Tui, S. H., & Lundy, M. (2018). INNOVATION PLATFORMS IN AGRICULTURAL RESEARCH FOR DEVELOPMENT. *Experimental Agriculture*, *55*(04), 575–596. https://doi.org/10.1017/s0014479718000200

Semere, A. (2018). Determinants of Agricultural Projects Implementation Delays: The Case of Agricultural Projects Financed by Development Bank of Ethiopia. In *MA Program in Project Management* [Thesis]. St. Mary University.

Sharna, S. C., Anik, A. R., Rahman, S., & Salam, M. A. (2022). Impact of Social, Institutional and Environmental Factors on the Adoption of Sustainable Soil Management Practices: An Empirical Analysis from Bangladesh. *Land*, *11*(12), 2206. https://doi.org/10.3390/land11122206

Shiferaw, B., Hellin, J., & Muricho, G. (2016). Markets access and agricultural productivity growth in developing countries: challenges and opportunities for producer organizations. In *Edward Elgar Publishing eBooks*. https://doi.org/10.4337/9781784719388.00013

Simiyu, N. R. (2018). *PROJECT MANAGEMENT PRACTICES AND PERFORMANCE OF AGRICULTURAL PROJECTS BY COMMUNITY-BASED ORGANIZATIONS IN BUNGOMA COUNTY, KENYA* (By Kenyatta University; L. Ngugi & D. Minja, Eds.).

Spielman, D. J., Kelemwork, D., Alemu, D., International Food Policy Research Institute, & SWR Ethiopia Wageningen University & Research. (2015). Seed, Fertilizer, and Agricultural

Extension in Ethiopia. *International Food Policy Research Institute*. https://www.researchgate.net/publication/268372918

Subedi, M., Hocking, T., Fullen, M., McCrea, A., & Milne, E. (2011). Factors Influencing the Effectiveness of an Agro-Environmental Project in China. *Outlook on Agriculture*, *40*(2), 157–163. https://doi.org/10.5367/oa.2011.0036

Sundstrom, S. M., Angeler, D. G., & Allen, C. R. (2023). Resilience theory and coerced resilience in agriculture. *Agricultural Systems*, *206*, 103612. https://doi.org/10.1016/j.agsy.2023.103612

Thomasz, E. O., Kasanzew, A., Massot, J. M., García-García, A., & Faculty of Economic and Business Sciences, University of Extremadura. (2024). Valuing ecosystem services in agricultural production in southwest Spain. In *Ecosystem Services* (Vol. 68, p. 101636). https://doi.org/10.1016/j.ecoser.2024.101636

Thornton, P., Cramer, L., Kristjanson, P., Schuetz, T., & Szilagyi, L. (2023). Theories of Change for Transformation. In *Cambridge University Press eBooks* (pp. 171–184). https://doi.org/10.1017/9781009227216.015

Tuchitechi, H., & Lee, M. (2018). Factors Affecting the Performance of Agricultural Project from the Perspectives of Agriculture Extension Workers - A Case Study of Malawi -. *The Journal of Agricultural Extension*, *25*(2), 111–120. https://doi.org/10.12653/jecd.2018.25.2.0111

USAID. (2011). Agricultural Research Project II (ARP-II). USAID.

Van Der Lee, J., Kangogo, D., Gülzari, Ş. Ö., Dentoni, D., Oosting, S., Bijman, J., & Klerkx, L. (2022). Theoretical positions and approaches to resilience assessment in farming systems. A review. *Agronomy for Sustainable Development*, *42*(2). https://doi.org/10.1007/s13593-022-00755-x

Vellema, S., Maru, Y. T., Ekong, J., McNamara, E., Waters-Bayer, A., German Institute for Tropical & Subtropical Agriculture (DITSL), University of Illinois, Urbana-Champaign, The Commonwealth Scientific and Industrial Research Organisation, & DeroArts Kisumu. (2017). *Do theories of change enable innovation platforms and partnerships to navigate towards impact?* (No. 2017–13). kit working papers. https://doi.org/10.13140/RG.2.2.15714.56007

Weldearegay, S. K., & Tedla, D. G. (2018). Impact of climate variability on household food availability in Tigray, Ethiopia. *Agriculture & Food Security*, *7*(1). https://doi.org/10.1186/s40066-017-0154-0

World Bank. (2008). Agriculture for Development.World Development Report 2008. Washington, DC: World Bank.

World Bank. (2023). Agriculture and food: Overview. World Bank. https://www.worldbank.org/en/topic/agriculture/overview

Yemane (1967) Sample size determination: Yaro Yamane Sample Size Formula.pdf Retrieved from: http://edis.ifas.ufl.edu/pdffiles/PD/PD00600.pdf

ANNEX

Questionnaire: Factors Affecting Agricultural Project Performance

Dear Respondent,

Thank you for agreeing to take part in this survey. The purpose of this study is to identify and analyze the key factors that influence the performance of agricultural projects. Your responses will provide valuable insights and contribute to the successful implementation of future projects. Please answer all questions honestly. The information you provide will be treated as confidential and used solely for academic purposes.

Section 1: General Information

Date:_____

1. **Gender**:

   - [ ] Male

   - [ ] Female

2. **Age** (years):
   - [ ] 18-25
   - [ ] 26-35
   - [ ] 36-45
   - [ ] 46-55 - [ ] 56 and above
3. **Education Level**:
   - [ ] No formal education
   - [ ] Primary education
   - [ ] Secondary education
   - [ ] College diploma - [ ] University degree

4. **Land Ownership**:

   - [ ] I own my land

   - [ ] I lease the land

   - [ ] Communal land

- [ ] Other (specify) ____

5. **Household Income** (per year in local currency):

   - [ ] Low (below average)

   - [ ] Average

   - [ ] High (above average)

Section 2: Environmental Factors

1. How would you describe the climate in your area?
   - [ ] Very favorable for agriculture
   - [ ] Moderate (some challenges)
   - [ ] Unfavorable (many challenges)
   - [ ] Extremely unfavorable (droughts, floods, etc.)
2. How often do you face issues with water availability for your farm?
   - [ ] Never
   - [ ] Occasionally
   - [ ] Frequently
   - [ ] Always
3. Do you use irrigation on your farm?
   - [ ] Yes
   - [ ] No
4. Have you noticed a decline in soil fertility over the past few years?
   - [ ] Yes
   - [ ] No
   - [ ] Unsure
5. Are there environmental conservation practices in place to support agricultural projects in your area?
   - [ ] Yes
   - [ ] No
   - [ ] Not sure

6. What environmental challenges do you believe most affect agricultural project performance? (Select all that apply)
    - [ ] Drought
    - [ ] Floods
    - [ ] Pests and diseases
    - [ ] Soil erosion
    - [ ] Other (specify) ____

Section 3: Socio-Economic Factors

1. How would you rate your access to agricultural markets?
    - [ ] Excellent
    - [ ] Good
    - [ ] Fair
    - [ ] Poor
2. What is your main source of agricultural information?
    - [ ] Government extension services
    - [ ] Farmer groups
    - [ ] Radio/Television
    - [ ] Mobile/Internet platforms
    - [ ] Other (specify) ____
3. Are you a member of a farmers' cooperative or association?
    - [ ] Yes
    - [ ] No
4. How has your income from farming changed in the last five years?
    - [ ] Increased significantly
    - [ ] Increased slightly
    - [ ] No change
    - [ ] Decreased
5. Do you believe that education plays a role in improving the performance of agricultural projects? - [ ] Yes
    - [ ] No

- [ ] Not sure

6. What are the main socio-economic challenges you face in participating in agricultural projects? (Select all that apply)
   - [ ] Low income
   - [ ] Lack of access to finance/loans
   - [ ] Lack of education/training
   - [ ] Poor market access
   - [ ] Other (specify) ____

Section 4: Technological Factors

1. Do you use improved seeds or modern fertilizers on your farm?
   - [ ] Yes
   - [ ] No
   - [ ] Sometimes
2. How frequently do you receive agricultural extension services?
   - [ ] Weekly
   - [ ] Monthly
   - [ ] Once in six months
   - [ ] Never
3. Have you adopted any digital or mobile technologies for agriculture (e.g., mobile apps, weather forecasts, market prices)?
   - [ ] Yes
   - [ ] No
4. What are the barriers to adopting new agricultural technologies in your area? (Select all that apply)
   - [ ] Lack of knowledge
   - [ ] High cost of technology
   - [ ] Lack of infrastructure (e.g., electricity, internet)
   - [ ] Cultural resistance
   - [ ] Other (specify) ____
5. How has the adoption of new technologies affected your farm's productivity?

- [ ] Increased significantly
- [ ] Increased slightly
- [ ] No change
- [ ] Decreased

Section 5: Institutional and Policy Frameworks

1. Do you believe that government policies adequately support agricultural projects in your area?
   - [ ] Strongly agree
   - [ ] Agree
   - [ ] Neutral
   - [ ] Disagree
   - [ ] Strongly disagree
2. Have you received financial support (e.g., subsidies, loans) from the government or other institutions? - [ ] Yes
   - [ ] No
3. How would you rate the effectiveness of local institutions (e.g., cooperatives, extension services) in supporting agricultural projects?
   - [ ] Very effective
   - [ ] Effective
   - [ ] Fair
   - [ ] Ineffective
4. How often is your agricultural project monitored by government or other institutions?
   - [ ] Frequently
   - [ ] Occasionally
   - [ ] Rarely
   - [ ] Never
5. What are the main institutional challenges you face in your agricultural project? (Select all that apply)
   - [ ] Poor government support
   - [ ] Lack of access to credit

- [ ] Weak agricultural policies
- [ ] Corruption or bureaucracy
- [ ] Other (specify) ____

Section 6: Agricultural Project Performance

1. How would you rate the overall performance of agricultural projects in your area?
   - [ ] Excellent
   - [ ] Good
   - [ ] Fair
   - [ ] Poor
2. Has the agricultural project improved farm productivity in your area?
   - [ ] Yes
   - [ ] No
   - [ ] Not sure
3. Have you experienced an increase in income due to your involvement in agricultural projects? - [ ] Yes
   - [ ] No
4. What do you think are the key factors that influence the success or failure of agricultural projects in your area? (Select all that apply)
   - [ ] Environmental factors
   - [ ] Socio-economic factors
   - [ ] Technological factors
   - [ ] Institutional factors
   - [ ] Other (specify) ____

5. In your opinion, what improvements should be made to enhance agricultural project performance in your area?
   - _____

Conclusion:

Thank you for taking part of your time to answer this questionnaire. Your responses will prove very useful in learning which factors influence agricultural project performance and, in that way, to offer better future agriculture-based initiatives.

Interview Questions

Factors Affecting Agricultural Project Performance

Introduction:
We appreciate you taking the time to participate in this interview. The purpose of this study is to understand the key factors that influence agricultural project performance. Your input will be most useful in identifying the challenges and opportunities to better the projects dealing with agriculture within the region. Please, as much as possible, provide your answers with detail.

i) Interview Questions for Project Staff

1. How do climatic, soil, and water conditions relate to the yield performances of agricultural projects in the project area?
2. What strategies/interventions are being done in attempts to make less disastrous certain adverse environmental factors such as droughts, floods, or loss of topsoil?
3. Have you found that the changes in the environment have affected the sustainability of the project outcomes? If so, how are you addressing it?
4. To what extent do the socio-economic factors of income level, educational attainment, and land ownership affect farmers' participation and performance in the project?
5. What are the different initiatives taken up to develop the socio-economic status of the participating farmers for the project?
6. In your opinion, what are the major socio-economic challenges that farmers are facing in this project?
7. What types of technologies has the project introduced - for instance, improved seeds, irrigation systems, mobile platforms?

8. To what extent have farmers adopted the new agricultural technologies introduced by the project? What factors encourage or discourage the adoption?
9. What challenges have you faced concerning access of farmers to the up-to-date agricultural technologies?
10. How do institutional frameworks and policies influence the process of implementation and the effectiveness of agricultural projects?
11. Do you think there is sufficient government or institutional support regarding funding, infrastructure, and extension services with regards to the project? If not, at what level?
12. How do you ensure the involvement of local governance structures, at the level of cooperatives and community organizations, in the process of planning and implementation?
13. In your opinion, how is the performance of agricultural projects usually considered in terms of delivery of success?
14. What problems have you been encountering which relate to achieving the goals and objectives of the project?
15. What recommendations do you have for the improvements of future project performance?

ii) Government Officials and Policymakers Interview Questions

1. From a policy standpoint to what extent do environmental controls or plans impact agricultural project performances in your area?
2. What programs has the government initiated that help farmers to respond to environmental issues such as climate change?
3. In what ways does the government engage with the agricultural projects to reduce environmental risks?
4. What socio-economic policies are being offered, such as land tenure, rural development, access to the market, in support of agriculture?

5. How does the government help in enhancing the livelihood of smallholders involved in agricultural projects?
6. What role does the government play to ensure all socio-economic groups have accruing benefits deriving from agricultural projects?
7. What policies or programmes are in place to influence modern agricultural technologies adoption at rural areas?
8. To what extent does the government facilitate the integration of digital or mobile technologies into agricultural projects with a view to developing more efficient and productive agricultural projects?
9. Major obstacles to wider diffusion from a policy perspective?
10. How does the government ensure that agricultural policies are well implemented at the local level?
11. What are the major institutional barriers that influence agricultural project performance, and how is the government addressing them?
12. Are there recent policy reforms targeted at enhancing agricultural project performance? If yes, what are they?
13. From the policy standpoint, how is agricultural project performance monitored and evaluated?
14. What do you perceive to be the main problems the government is facing in its quest to ensure success within the agricultural projects?
15. Which would you want to be policy recommendations towards making the agriculture projects more effective and sustainable?

iii) Interview Questions for Development Agents

1. In your working experience, how are the different environmental variables such as climate variability and water scarcity impacting on day-to-day implementation of activities in the agriculture projects?
2. What activities do the development agents initiate that would help farmers overcome their environmental problems, such as drought or degradation of soil?
3. What environmental practices is the project promoting to ensure that the activities are longterm?
4. In your judgment, what is the socio-economic background of the farmers-participants in terms of education, income, land ownership?
5. What is the role of development agents to help farmers improve their economic status through agricultural projects?
6. How do you address the problem of market access, financing, and rural poverty in contacts with farmers?
7. In the promotion of adoption of new agricultural technologies for farmers, what is your role?
8. What immediate impression do the farmers show when new technologies are introduced to them? What do they commonly face in trying to adapt to these technologies?
9. What training or assistance is provided to farmers with a view to utilizing improved implements and techniques?
10. How are institutional policies at the level of local or national governments affecting your work as a development agent in agricultural projects?
11. What are the institutional constraints that have the opposite impact of a project's successful implementation, such as extension services, funding?
12. How do the development agents cooperate with institutions at the local level, for example, farmer cooperatives, with an eye on the improvement of project performance?

13. What, according to your judgment and experience, is the general trend in the performance of the agricultural projects in which you participate?
14. What performance parameters are checked against the success of such projects?
15. What would you feel needed to be improved in the management and implementation of the agricultural projects?

Closing:

Thank you very much for sharing your valuable insights. Your comments are truly appreciated and will go a long way in building an understanding of the various elements that surround the performance of agricultural projects, with a view to configuring the strategies for agricultural development.