THE ROLE OF AGRICULTURAL INNOVATIVE PLATFORMS AS A BEST PRACTICE TO SCALE-UP THE ADOPTION AND USE OF IMPROVED SEED TECHNOLOGIES AMONGST SMALL-SCALE FARMERS

The Case of Promotion of Enterprises and Livelihood Development (PELIDO) Innovation Platform in

Kinoni, Kisseka Sub-county Lwengo District, Western Uganda.

A Research Project submitted to Van Hall Larenstein University of Applied Sciences In Partial Fulfillment of the Requirements for the Award of Master of Science in Management of Development, specialisation Rural Development and Food Security

By

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11th September, 2018

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ACKNOWLEDGEMENT

My genesis begun with the confidence of Netherlands Organisation for International Cooperation in Higher Education (NUFFIC) granted to I to undertake a Master of Science in Management Development. I remain beholden to that opportunity granted.

In the same vein my sincere gratitude goes out to the administration and lecturers of Van Hall Larenstein University of Applied Sciences for their guidance, patience and support.

I especially and warmly thank my Supervisor Dr. Heinz Evers for the extraordinary support, advice and guidance offered to me during this research.

My sincere gratitude to my lecturers Dr. Suzanne Nederlof, Dr. Annemarie Westendorp, Leonoor Akkermans and Dr. Pleun Van Arensbergen for patiently and tirelessly supporting me through my academics.

Sincere thanks go to the staff of the Integrated Seed Sector Development Programme and Promotion of Enterprises and Livelihood Development (PELIDO) Innovation Platform in Western Uganda for their added an extra ordinary support during the study.

I am indebted to my family, parents, brothers and sisters for every bit of support and care they have offered plus my friends and colleagues for all the discussions, meetings and moments we shared together.

Further on, I thank myself for boldly going through this study tide striving towards excellence.

In closure, I thank God for He has been good to me seeing me through my beginning till the final my Master studies.

De Heer heeft me gezegend.

DEDICATION

I dedicate this book to my Mum Paskazia Kyamanywoha (RIP) your always with me. To my dear friend Kenneth Kato thank you for the go-forwardness.

To Juliet Ang' my best friend, I remain beholden for the impacts you have had unto my life.

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ACRONYMS

DAO	District Agricultural Officer
DFID	Department of International Development
EADD	East Africa Dairy Development
DTMA	Drought Tolerant Maize for Africa
FAO	Food and Agricultural Organization
FGDs	Focus Group Discussions
GOU	Government of Uganda
GDP	Gross Domestic Product
CGIAR	Consultative Groups on International Agricultural Research
CIMMTY	International Maize and Wheat Improvement Centre
IAR4D	The Integrated Agricultural Research for Development
ILRI	International Livestock Research Institute
IFAD	International Fund for Agricultural Development
IP	Innovation Platform
ISSD	Intergraded Seed Sector Development
LSB	Local Seed Business
MINAGRI	Ministry of Agriculture of Rwanda
MOD	Management of Development
MOU	Memorandum of Understanding
NAADs	National Agricultural Advisory Services
NACCRI	National Agricultural Cereal Crops Research Institute
NAPSF	National Association of Peasant Smallholder Farmers
NCIP	National Crop Intensification Programme
NGO	Non-Governmental Organization
NRM	National Resource Management
PELIDO	Promotion of Enterprises and Livelihood Development
PPP	Public Private Partnerships
RDO	Rwanda Development Organisation
RIU	Research into Use
UAC	Uganda Census of Agriculture
SACCO	Savings and Credit Cooperative Organisation
UBOS	Uganda Bureau of Statistics
SSACP	Sub-Saharan Africa Challenge Program
UNCIEF	United Nations Children's Development Fund
UNHS	Uganda National Housing Survey
UOPSA	Uganda Oilseed Producers and Processors Association
UNZA	University of Zambia
USA	Uganda Statistical Abstract
USD	United States Dollars
USTA	Uganda Seed Trade Association

ABSTRACT

Innovation Platforms (IPs) have been developed as forums that disseminate best practices in agricultural development and research. In Sub-Saharan Africa they are being tested as equitable, dynamic spaces bringing together heterogeneous actors to exchange knowledge and harness opportunities in experimental learning, research, dissemination and diffusion of improved technologies.

However, knowledge and understanding of their implementation remains limited. It is against this background that the study set out to explore and establish the role of agricultural innovative platforms as a best practice to scaling-up the adoption and use of improved seed technologies amongst small-scale farmers.

The study focused on a case study of the Promotion of Enterprises and Livelihood Development (PELIDO) innovation platform in Kinoni, Lwengo District Western Uganda. The study was theorised using a conceptual model of “Structure-Conduct”, which was used to describe the conduct and structure of PELIDO. The structure was assessed using the membership characteristics and the composition of PELIDO while the conduct was assessed using the elements of communication, coordination, participation and trust.

Based on conceptual model of "structure-conduct”, the study’s methodological approach incorporated a mix of methods approach. This approach was applied after systematic sampling was used to select 25 respondents out of the total 86 members of the beans IP. 5 key informants were purposively chosen and 2 focus group discussions of 6 persons each interviewed to operationalise the study. Through applying the mix methods approach, primary data was collected through various participatory rural appraisal tools such as; in-depth interviews with respondents, key informant interviews, focus group discussions, observations, photographic and video graphic evidence.

This was supported with secondary data from literatures from books, articles and reports. Data was analysed using descriptive and thematic approaches involving the use of frequencies for membership characteristics such as age and quoted narratives derived from the themed responses on communication, coordination, participation and trust.

The study revealed that membership and composition harnessed resources, knowledge and networks within the IP which were used to disseminate information, inputs, research and extension to small scale farmers.

Education levels were low and more technical stakeholders were needed to boost the IPs capacity to implement it seed multiplication approach. Communication and coordination eased the flow and exchange of information, facilitated learning, increased trust, collaboration and fostered participation. Through inclusive participation, gender awareness was created, incentives disseminated, and levels of adoptions increased.

However, there were inconsistencies with communication and coordination between the actors and the IP leadership coupled with challenges in the resource base of the IP and distrust among the members. Incentives accelerated participation despite the IPs limited resource base to sustain the incentives.

Though the study affirmed the IP's major role in the adoption of improved seed varieties, the structure and conduct of the IP was incoherent with the goals of the IP hence the proposed recommendations of; decentralising the IP structure to increase membership and stakeholders, setting up of intermediary monitoring and feedback teams and facilitating the formation of community based equitable resource distribution community initiatives within the IP as the best strategies to adopt to improve the performance of IPs.

Key words: Innovation Platforms, Innovation Systems, Innovations Platforms Conduct and Structure, Heterogeneous actors.

CHAPTER ONE

1.0 Introductory Background

This chapter introduces the concept of Innovation Platforms (IP) in Sub-Saharan Africa closely focusing on Uganda's Promotion of Enterprises and Livelihood Development (PELIDO) platform as the case study. It goes ahead to highlight the challenges and the role IPs play the in scaling-up adoption of improved technologies.

1.1 Overview of Innovation Platform in Sub-Saharan Africa

Scholars and development researchers have approximated that the current world population which stands at 7.6 billion people would have risen to 8.6 billion in 2030 and 9.8 billion by 2050 (Population Reference Bureau, 2017). Of this population, Sub-Saharan Africa is estimated to contribute a staggering 2.7 billion people and yet 243 million people in Africa remain in urgent need of sufficient food for energy (FAO, IFAD, UNICEF, 2017).

The resilience to food insecurity and its related challenges of climate change and rapid population growth, have been dangerously undermined due to the scarcity of co-evolution processes and systems that allow innovations and technologies to thrive in agrarian households and communities, extending the impact within the food systems, value chains, production, harvesting, processing, transportation, financing and marketing (FAO, IFAD, UNICEF, 2017).

As a result, experimental learning is being instituted through stimulating innovation platforms as equitable, dynamic spaces bringing together heterogeneous actors to exchange knowledge and take action to solve a common problems and harness opportunities(Agriculture, 2015).

However, innovation platforms though being increasingly relevant to agricultural development and food security, very little understanding and knowledge is known about their implementation particularly their structure and conduct and the role they play in improving food security (Teno, 2013).

Sub-Saharan Africa's agriculture remains uncompetitive, essentially due to the lack of access to quality improved inputs among which are seed technologies which act as an accelerator to improved production, profitability and incomes of the vast majority of farmers who practice subsistence rain fed agriculture on small-scale(Journal and Vol, 2011).

The low adoption and use of these technologies has been attributed to *"limited access to inputs, lack of information flow and knowledge exchange across a spectrum of actors and stakeholders due to the biophysical and socio- economic conditions within which farmers operate"*(Journal and Vol, 2011).

According to Cadilhon(2013), *"Sub-Saharan Africa has experienced considerable human and material resources in strengthening research and extension systems from donors such as the World Bank"*, however this has not been reflected in generating and disseminating technologies for adoption by farmers.

Cadilhon(2013) attributes this to the inexistence of inclusive mechanisms where actors with different backgrounds and interests, farmers, extension officers, researchers, private sector actors, local and national decision-makers come together to diagnose challenges and opportunities and find solutions.

Though Innovations platforms(IP) have taken shape in Sub-Saharan Africa as forums for interaction between different actors and stakeholders, agricultural performance within and out of the IPs remains slow and patchy with extension and research still disseminated in a linear manner coupled with limited understanding on the implementation of IPs(Mulema, 2012). As a result IPs and their members still grapple with difficulties in accessing inputs, exchanging knowledge and flow of information is limited which all hinder adoption and diffusion of improved technologies(Mulema, 2012).

According to Cadilhon, (2013), only 5% to 10% of improved seed technologies in Sub-Saharan Africa is obtained through the formal parastatals and organisations, severely incomparable to the 90% estimated use of own saved seed and seed obtained in farmer communities and peer networks (Cadilhon, 2013).

Cadilhon(2013), asserts that not only do IPs reduce cost and access to imrpoved seed technologies but play a mojor role in clustering farmers according to their needs and interests, resource endowments and risk-tolerance capacities with further support in research, extension, knowledge exchange, information flow and seed systems linkages to breeding, multiplication and marketing.

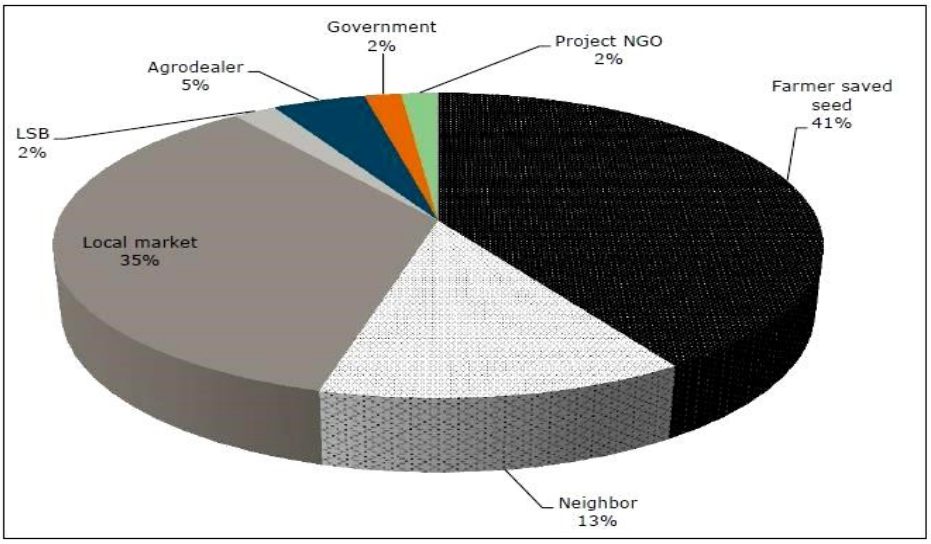
1.2 Overview of Innovation Platforms in Uganda

Located at the heart of East Africa, Uganda has an estimated population of 41.1 million people, agriculture remains the core sector of Uganda's economy employing 70% Uganda's labour force, however subsistence agriculture is predominantly practiced with an estimated total of 7,625,512 million small scale farmers who contribute a whopping 69% of total agricultural production(Mungyereza, 2016).

However, the sector remains weak and uncompetitive mainly due to non-adoption of improved technologies that are essential to increasing productivity and profitability in agriculture (Mazur *et al.*, 2015). The low adoption is characterised by high cost and poor accessibility to improved technologies that are not built on biophysical and socio-economic conditions within which farmers operate which the government asserts can be solved through Innovation platforms(Mungyereza, 2016).

This is exacerbated by weak linkages, interaction and linear approach of knowledge and information flow between actors and stakeholders such as extension agents (Mazur *et al.*, 2015). Similarly, the access to input and output markets is limited and grappling with counterfeit seed and competition where only 10-15% of certified seed is sourced from an estimated 32 registered seed companies producing a minimal estimate of 18,000 MT of seed annually in Uganda(Mazur *et al.*, 2015)

Figure1: Seed Sources in Uganda.



Source: ISSD Annual Report 2014.

Compelled to this situation, the Sub-Saharan Africa Challenge Program (SSACP) set up the first 4 IPs in western Uganda in 2009 using the Integrated Agricultural Research for Development (IAR4D) approach(Agriculture, 2015). At the point of establishment, the aim was to link small scale farmers to markets, increase production and incomes of small scale farmers(Agriculture, 2015).

Citing Bubaare IP in western Uganda, the IP was formally registered as a cooperative to pursue market opportunities and value addition for sorghum, its structure comprised of a diverse 1,121 members representing key sectors and organizations that pooled resources and opportunities into the IP(Agriculture, 2015). The IP's role was to channel its diverse members to improved access to quality improved seed inputs, exchange knowledge and access market opportunities, however the IP was only dominated by small scale farmers and this lack of technical actors and stakeholders within structure hampered Its access to links, partnerships and input markets (Agriculture, 2015).

The IP coordinated all activities and forms of communication, connecting farmers to trainings and knowledge and bringing them closer to their needs and interests while empowering them in seed multiplication and adoption of improved seed technologies, however though the IP played this major role, it's membership remained low and farmers shunned it due management's conduct in selective recruitment, training and participation(Agriculture, 2015).

According to the ISSD Uganda report, Seed and Development, 2015, it was projected that the production of Quality Declared Seed(QDS) by Innovation Platforms will contribute an additional 25% share of certified seed by 2020, while the share of certified seed will increase to 40% overall, overly depicting IPs as best practices for seed multiplication and adoption of improved varieties (Seed and Development, 2015).

Tenywa *et al.,* 2011, asserts that Innovation Platforms facilitate interaction across a scale of actors and stakeholders based on the conduct and structure of the IP.
Cadilhon (2013) asserts that the structure of an innovation platform is characterized by its internal organization reflecting on elements such as the composition, diversity of membership, sector participants, committees, assets and sources of funding and the availability of staff to run the IP
Citing the Uganda Oilseed Producers and Processors Association (UOSPA), the IPs structure comprised of a diverse membership comprising of *" largeand medium-scale processors, farmers' organisations, financial institutes, government agencies, researchers, development and nongovernmental organisations, knowledge institutes and agricultural input providers",* whose priority was innovation, value addition and technological upgrading (Nederlof, Wongtschowski and Van Der Lee, 2011).

The IP through its members and governing leadership concluded that it's role was to *"coordinate action in addressing complex problems within the sector, address weak market coordination, improved access to quality inputs, technological upgrading and the provision of financial services,"* however the IP experienced challenges with an "*uncoordinated skewed communication and knowledge exchange problems, concentrating on short-term gains and immediate problems which narrowed the collective interests of the members and caused suspicion and mistrust within the IP leading to stagnation"*(Nederlof, Wongtschowski and Van Der Lee, 2011.p 68.).

According Cadilhon, (2013), the conduct and behaviour of the IPs is the foundation of all form of relationship and interaction within the IP. Cadilhon, (2013) asserts that the conduct is characterised by elements of joint information sharing and knowledge exchange, communication, coordination, joint planning and trust among others(Cadilhon, 2013).

Spielman (2006) noted that the conduct of the IP plays a major role in building cohesiveness, ensuring participation, achieving coherence and creating opportunities

for incentives within the IP. Though Innovation Platforms are still being pioneered in Uganda, there is a growing interest associated with the role they play in creating access channels to improved seed varieties, financial support and diverse networks of technical expertise (Mazur *et al.*, 2015).

1.3 Case Study of Promotion of Enterprises and Livelihood Development (PELIDO)

Located in Lwengo district within Kinoni parish, Kisseka sub-county, the Promotion of Enterprises and Livelihood Development Organisation (PELIDO) started as a community association and was cooperated as a community-based organisation in the year 2013.It targeted the improvement of livelihoods among indigenous agrarian communities and small-scale farmers of Lwengo and its neighbouring districts.

PELIDO was classified as a Local Seed Business(LSD) by the Integrated Seed Sector Development program who supported it in growing its capacity to become as seed multiplication and dissemination IP(Seed and Development, 2015).

1.3.1 Mode of Operation for PELIDO Innovation Platform

PELIDO is brought together by diverse actors and stakeholders, totalling to a membership of 304 persons belonging to fourIP clusters i.e. the bean cluster, sweet potatoes cluster, honey cluster and poultry.

The IP manages a pool of resources associated with the characteristics of each individual member such as land, finances, technical capacity and level of educationwhich are all important in determining the livelihood strategies of each farmer.

PELIDO’s assets include a building used as an office, storage facility and training room. The organisation is run and managed by an executive board and secretariat comprising of 5 staff, 2 extension officers, an accountant, programme officer and director of the secretariat. It’s currently engaged in several activities among which is seed multiplication, collective bulking, storage and marketing.

The IP collaborates with several stakeholders including ISSD, NARO, MAAIF, Centenary Rural Development Bank and Pearl seeds limited among others. The IP was started to increase the production of beans and improve farmer incomes. It is

supported with funding and technical capacity from ISSD, Makerere University Extension services department and Wageningen University and Research.

Participation in PELIDO was entirely voluntary, owing to this fact the coordination was done by the secretariat comprising of staff and line managers who conducted all forms of communication, coordination, joint planning and information sharing.
The IP coordinator was the programme officer for PELIDO who did the role of a "broker" bridging and linking all the members of the platform together and creating an atmosphere of equality, inclusion, trust and collaboration. The broker was also imperative in disseminating and facilitating all manner of knowledge and information exchange, soliciting feedback and making recommendations for improvements to the IP(PELIDO, 2016).

1.4 Problem Statement

Although improved seed varieties and technologies are available on the market in Uganda, an approximated 80% of small scale farmers still use home-saved seeds (Epeju and Rukundo, 2018). The Government through its programmes, Ministry of Agriculture, Animal, Industry and Fisheries (MAAIF) and with support from non-governmental organizations such as the World Food Programme (WFP) and Food and Agricultural Organisation (FAO) all under the United Nations have shown support to farmers in production, multiplication and distribution of standard seed through collaborative mechanisms such as Innovation Platforms.

However, the receptiveness to these mechanisms by small scale farmers remains low, dominated by challenges of inaccessibility to improved seed inputs, inadequate flow and exchange of knowledge, poor agronomical practices and contesting landscapes on improved seed varieties linked to cultures, low level of education and low asset base.

The impact has been felt through low yields, poor quality farm outputs, less production and incomes amongst many rural small-scale farming households (Seed and Development, 2015).

The Ministry of Agriculture MAAIF recognises the existence of formal and informal innovation platforms in Uganda as drivers for engagements with different actors and

stakeholders across all levels to seek solutions to problems and harness opportunities such as linking farmers to research, information, extension services, markets and quality control mechanisms (ISSD, 2015).

However, despite the existence and participation of farmers in these platforms, adoption of new improved seed technologies through the IPs remains low, knowledge on improved seed varieties remains inadequate, information flow and exchange between actors and stakeholders is limited coupled with limited access to seed inputs. This has been attributed to the incoherent structure and conduct of this IPs linked to the limited understanding of the implementation of IPs and more especially the role they play in improving food security (Mastenbroek, 2015 and GOU, 2011).

It is upon this background that this study seeks to explore and describe the structure and conduct of PELIDO and its role in scaling-up the adoption of improved seed technologies among small scale farmers.

1.5 Objective

This study seeks to explore the role of PELIDO in scaling-up the adoption of improved seed technologies among small scale farmers. Thereafter context specific recommendations shall be derived and presented to improve the performance of innovation platforms in meeting the needs and interests of small scale farmers.

1.6 Main Research Question

What role does PELIDO's IP play towards scaling-up the adoption of improved seed technologies among small scale farmers in Kinoni, Lwengo District, Western Uganda

1.7 Research Questions

1) What role does PELIDO's IP structure play in scaling-up the adoption of improved seed varieties among small scale farmers?
2) What is the conduct of PELIDO Innovation platform in scaling the adoption of improved technologies by small scale farmers?

Based on the above objective, the next chapter uses literature to highlight the theoretical and conceptual frameworks derived and using relevant examples of IPs it to operationalises the study to determine the role IPs play in scaling-up the adoption of improved seed varieties among small scale farmers.

1.8 Map of Study

Map 1: Map of Lwengo District

Source:www.lcmt.org/uganda/lwengo [Accessed: 15/08/2018]

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents reviewed literature on the role of Innovation Platforms in scaling-up adoption and diffusion of technologies. The literature led to the derivation of the conceptual framework which was operationalised in the study. The chapter is clustered into five sections namely; *(i)* the history and concept of Innovation Platforms, *(ii)*characteristics of innovation platforms, *(iii)*structure and conduct IPs *(iv)* role of the innovation platforms in adoption and diffusion of improved technologies and *(v)* Innovation Platforms in Africa.

2.1 The Historical approaches to Innovation Platforms

Institutional and structural hindrances have hampered the delivery of services and products to African farmers; profoundly this has been attributed to social, historical, natural, human and financial stressors (Mpandeli and Maponya, 2014). This has further been driven by the limited capacity to undertake agricultural and scientific research and gross failure to adequately articulate the needs of resource poor farmers by creating pathways for inclusive problem solving (Stoop, 2002; Bie, 2001 cited in Nederlof *et al.,* 2011 and Verschuren and Doorewaard, 2010).

Having realised this gap, researchers, scholars and development practitioners pioneered studies linked to agricultural innovation platforms and systems(Kilelu, Klerkx and Leeuwis, 2013). The studies unravelled a multi-dimensional approach towards innovation platforms highlighting the different roles they exercise while contributing to agricultural development as detailed below.

- **The Holistic Approach**

Scholars Hall *et al*., (2006) and Tenywa *et al.* (2011) asserted that innovation systems or platforms are entities made up of various stakeholders brought together by one goal. Roling (2009) cited in Nederlof *et al.,* (2011) noted that several actors play an active role in the innovation process thus making it a *"dynamic"* complex chain of operations (Nederlof *et al.,* 2011.p.13).

These types of interactions are a recipe to a unified cluster of self-believing individuals who articulate their needs, harness opportunities and solve problems in a unified manner hence the ''*holistic approach'*(Schut *et al.*, 2016)*'*.

This approach took into account the importance of focusing on the end users and beneficiaries of IPs as co-owners and co-evolutionists whose role is not only important in the generation of knowledge and information but also actively adopting new ideologies, products and services (Kilelu, Klerkx and Leeuwis, 2013).

It further created a paradigm shift where the end beneficiaries [farmers] stopped being passive recipients of knowledge, products and services but rather participated in dissemination, sharing of solutions and articulated the needs and problems with fellow farmers through peer networks(Schut *et al.*, 2016).

This approach sprouted the aspect of participatory rural development as more farmers became aware of their own needs, goals and were driven by shared challenges and opportunities as opposed to the linear approach to research, adoption and access to markets in which they were passive recipients (Benoit-Cattin, Dixon *et al.*, 2001; Collinson, 2000, Nederlof, 2006 cited in Nederlof *et al.,* 2011.p.13).

Furthermore, this approach highlighted the fact that it wasn't the lack of improved technologies alone that hindered the adoption of improved seed varieties and but rather the lack of enough knowledge, information flow and interaction amongst farmers, actors and stakeholders who are key in fostering the workings of innovation platforms and systems towards improving the livelihoods of the intended beneficiaries (Nederlof *et al.,* 2011).

- **The Innovation System Approach**

As new discoveries had been made during the green revolution, several innovations and technologies flourished, such as new farming materials, seeds, hoes, ploughs, pesticides and irrigation systems (KIT and CFC, 2011; Leeuwis and Van den Ban, 2004 cited in Nederlof *et al.,* 2011.p.13-14).

The systems approach emphasized the collective nature of innovation platforms, embedding innovation as a co-evolutionary process brought about by the alignment of technical, social, institutional and organizational goals(Aerni *et al.*, 2015). The interaction of these processes set pace for interventions that created pathways for setting up multi- stakeholder initiatives, such as innovation platforms and networks with supporting mechanisms to harness their success (Kilelu, Klerkx and Leeuwis, 2013).

The scholars however stressed that, despite innovation platforms having the aspect of technological development, their organisational and institutional operations should be taken into consideration too. This is because the ogranisational aspect considers the governance of the system whereas the institutional takes up the establishment of legal policies and partnerships for the smooth growth and flexibility of the innovation process (Nederlof*et al.,* 2011).

- **The Linear Approach**

During the early 1960s when the green revolution cycle and agricultural development was being multiplied, the linear approach was on the scale-out. This was because it took the bottom-down approach and transfer of knowledge and technologies was direct from an expert or organisation to a recipient (Fitzgerald -Moore and Paraj, 2003). It considered that knowledge development, dissemination, and operational activities were roles carried out by respective players such as researchers and policy makers while the beneficiaries such as small-scale farmers were simply passive recipients.

The limitation of this approach was that it created little-to-less interaction between the different value chain actors and stakeholders(Fitzgerald -Moore and Paraj, 2003). Researchers only concentrated on relaying new knowledge, extension agents focused on disseminating the knowledge and farmers were then expected to adopt whatever trickled down to them as a best practice for change (Pan and Hambly-Odame, 2010 cited in Nederlof *et al.,* 2011).

Although it's a good approach that is still being applied by most traditional institutions, it does not take into account the needs and interests of the beneficiaries and it has severely failed in most emerging economies such as those in Sub-Saharan Africa (Kilelu, Klerkx and Leeuwis, 2013).

This approach is being phased out by the emergency of IPs because of the diversity in membership and facilitation of interaction and knowledge exchange between multiple stakeholders and actors(Mulema, 2012).

2.2 The Concept of Innovation Platforms [IPs]

Spielman *et al*., (2009) foremost defines the term innovation, *''as a process of affirmatively introducing a new aspect into an economic or social process''*. They further explain that an innovation is a process of venturing into something new and successfully indulging it into operation in an environment (Nederlof *et al.,* 2011.p.12). Similarly, various scholars have come up to define innovation platforms in an interdisciplinary way;

Tenywa *et al.* (2011) defined innovation platforms as being, *''a forum that brings together multi-stakeholders geared towards visioning, planning and implementing or applying new ideas, practices or services aimed at improving the existing situation or conditions of the common persons targeted for a desired change''* (Tenywa*et al.,* 2011and Teno, 2013. p.10).

Similarly, Hall *et al*., (2006) defined IPs as, *"a system or network of organisations, enterprises, and individuals focused on bringing new products, new processes, and new forms of organization into economic use, together with the institutions and policies that affect their behavior and performance. They further state that the innovation systems concept embraces not only the science of suppliers and initiators, but the totality and interaction of actors involved in innovation and its processes".* They note that IPs extend beyond the creation of knowledge to encompass the factors affecting demand for and use of knowledge in a noble and useful way *(*Hall *et al*., 2006.p.16).

However Long and Long (1992), defined IPs as a "*battlefield arena of knowledge*" because various persons are in position to exchange multiple ideologies about their understanding of the word innovation (Dusengemungu, 2011.p.26).

Scholars from the International Livestock Research Institute (ILRI) have gone ahead to define innovation platforms as *"equitable, dynamic spaces designed to bring heterogeneous actors together to exchange knowledge and take action to solve a common problem"* (Teno, 2013.p.10).

According to the ILRI definition, the scholars concurred with Tenywaet al., (2011) and took into consideration the aspect of unification of multi-stakeholders coming together towards planning and implementing or applying new ideologies meant to improve and increase productive and sustainable livelihood avenues for agrarian vulnerable communities.

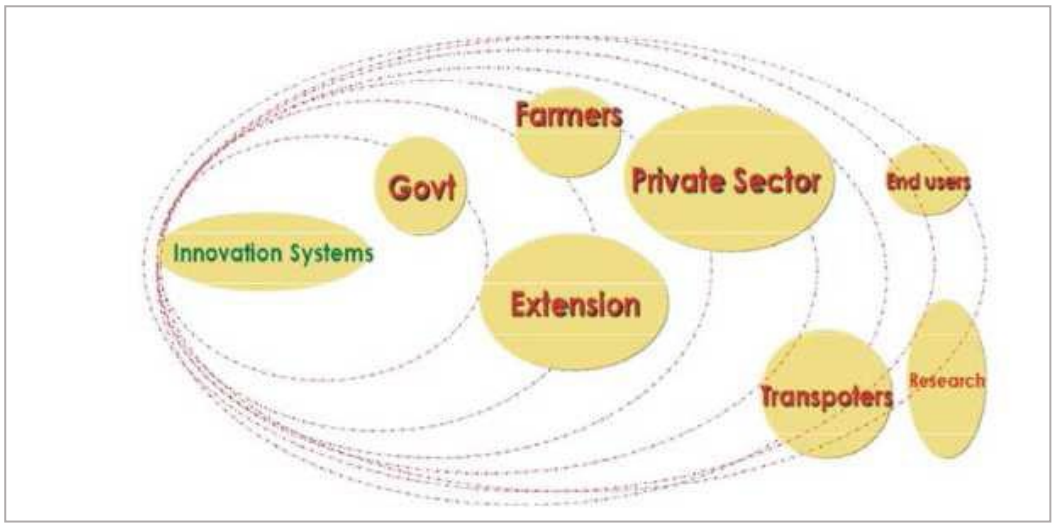
Citing Teno (2013.p.10), ILRI's definition takes a strong stand as it incorporates, *''the notions of space, dynamics and equitability''*, mirroring the complex processes and

diversity of organizational and individual perspectives. The ILRI's definition portrays IPs as organs and organisational metaphors that play a key part in the platform dynamics and governance(Teno, 2013).

This definition asserts that the IPs role is to facilitate middle management of interconnected clusters and units of both internal and external actors and stakeholders who either support or benefit from the IP and how directly or indirectly their functions are connected to achieve the goals and objectives of the IP (Rollinson, 2008).

In agreement with ILRI's IPs definition, scholars Adekunle and Fatunbi (2012) table their notion that a suitable IP is one that has a diversity of stakeholders from both the public and private sectors often comprising of farmers, farmer associations, extension officers, researchers, scientists, government/non-government entities, policy makers, community and cultural leaders.

Figure 2: Multi- stakeholders within the Innovation Platform



Source: (Adekunle and Fatunbi, 2012 cited in Teno, 2013.p.12)

The justification of this notion asserts that all the various stakeholders are often motivated by a common goal towards attaining objectives associated with improving their livelihoods, increasing agricultural productivity, increasing incomes, changing of policy and upgrading the welfare of all members (Eicher, 2006 and Teno, 2013.p.12).

For the purposes of this study, the researcher assumed ILRI's IPs definition that states that IPs are "*equitable, dynamic spaces designed to bring heterogeneous actors*

together to exchange knowledge and take action to solve a common problem" (Teno, 2013.p.10).

2.3 Characteristics of Innovation Platforms [IPs]

There haven't been concrete studies done on the characteristics of IPs however different scholars have projected debates that agree or disagree to different thoughts about the characteristics of IPs, this has been so because of the different definitions IPs assume as networks, coalitions, platforms and systems bringing to light several contested landscapes by scholars on the notion of innovation platforms (Nederlof *et al.,* 2011).

Adekunle *et al*., (2012) in a study titled, *"Agricultural Innovation in Sub-Saharan Africa: Experiences from Multiple-Stakeholder Approaches"* highlights various vital characteristics of IPs that are important towards achieving development among most African nations. Below are highlighted characteristics of innovation platforms:

- Organs of In-cooperation and Support towards Partnerships.

They form and join ideologies through engagement and collaboration between stakeholders and actors at various public agencies (ministries, universities, research bodies, local governments, and development agencies) and private agencies (seed companies, farmer groups, associations and saving circles).

They play an important role in increasing awareness, openness, communication, interaction coordination and developed trust amongst members which creates willingness to work together for a shared vision and goal (Adekunle *et al.,* (2012).

- Reinforcers and Breeders of Alliances.

IPs comprise of individuals or institutions geared towards unraveling the challenges faced within various agricultural value chains and further forge partnerships with institutions and regulatory structures to derive policy and support for the IPs and their members (Adekunle *et al.,* (2012).

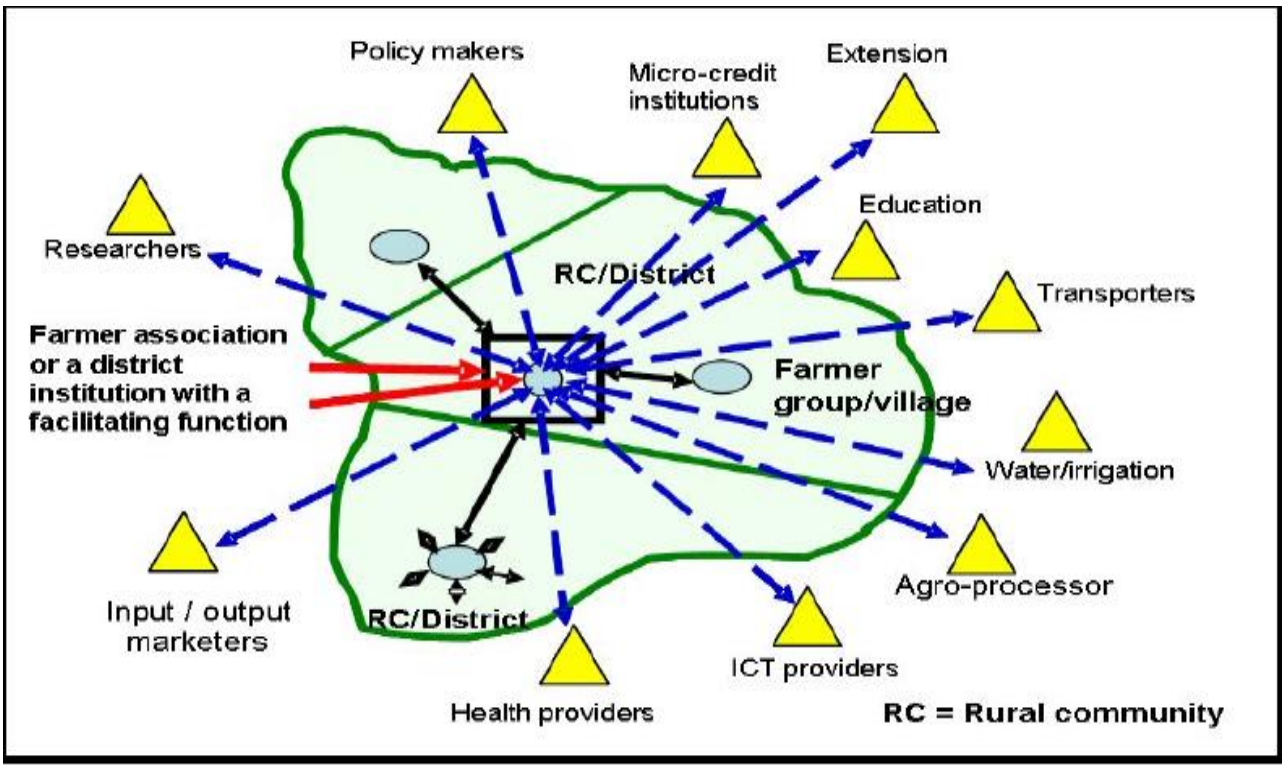
- Brokers of knowledge, knowledge development and information sharing.

Agricultural production being the livelihood lifeline of most individual households in sub-Saharan Africa, it remains vital for many to have access to information and knowledge about production farming mechanisms, strategies and practices.

Tenywa *et al.,* (2011) urges that agricultural innovation platforms are the best places for various stakeholders to learn from each other.

They further suggest that such platforms offer a window into exchange between formal and indigenous knowledge which in turn gives greater openings to sustainable solutions for present day and future solutions for agricultural generations (Tenywa *et al.,* 2011, Teno, 2013 and Adekunle *et al.,* 2012).

Figure 3: Stakeholder Pool involved in the Composition of an Innovation Platform



Source: (Monty, 2007 cited in Dusengemungu, 2011.p.31).

Monty (2007) looks at IPs as a value chain with multiple actors and stakeholders playing different roles to improve and upgrade the chain and its processes, products and services. Monty (2007) further stresses that for such a chain to thrive, its players must be willing to apply a holistic approach to debates and ideas such that each group of persons or individuals fronts their queries or ideologies in a manner that benefits all stakeholders (Nederlof *et al.,* 2011 and Dusengemungu, 2011).

In agreement with Monty (2007) and Adekunle *et al.,* (2012), Waters-Bayer *et al*., (2009) and Hall *etal.,* (2006) coined IPs as productive pathways with major characteristics aimed at aiding the understanding of new ideologies, technologies and developments which set path for interventions along a scale of multiple stakeholders such as researchers, advisory service-providers, non-governmental organisations, farmers' groups, agribusiness clusters, community associations and private-sector actors (Waters-Bayer *et al*., 2009; Hall *etal.,*2006; cited in Nederlof*et al.,* 2011.p.14).

Figure 4: Characteristic Principles of Agricultural Innovation Platforms.

1 *Focus on innovation rather than production*. Innovation is understood to be the application of knowledge (of all types) to achieve desired social or economic outcomes.

2 *Interaction and learning*. Innovation is an interactive process through which knowledge acquisition (from different sources) and learning take place. Patterns of interaction between different knowledge sources form a central component of an organisation's or sector's capacity to innovate.

3 *Linkages for accessing knowledge and learning*. The relationships that sustain the acquisition of knowledge and permit interactive learning are critical and can take many forms. They can be partnerships, commercial transactions (a contract or licence), networks or platforms.

4 *There are new actors and new roles in the innovation process*. The concept recognises that: (1) there is an important role for a broad spectrum of actors outside government; (2) the actors' relative importance changes during the innovation process; (3) as circumstances change and actors learn, roles can evolve; and (4) actors can play multiple roles.

5 *Attitudes, practices and interaction of behavioural patterns determine the propensity to innovate*. The common attitudes, routines, practices, rules or laws that regulate the interactions between individuals and groups largely determine the propensity of actors and organisations to innovate.

6 *Policies are important in innovation*. Policy support for innovation is the outcome of a set of policies that work together. In evaluating the effectiveness of policies on enabling innovation one must be sensitive to a wide range of policies and seek ways to coordinate them.

7 *The demand side must be included in the innovation process*. The innovation systems concept recognises the importance of including stakeholders and developing behavioural patterns that make organisations and policies sensitive to stakeholder agenda or demands.

8 *Changing to cope with change*. The classic response of more successful innovation systems, when faced with external shocks, is to reconfigure linkages or networks of partners.

9 *Building on "sticky" information*. Innovation can be based on different kinds of knowledge possessed by different actors: local, context-specific (farmers or local entrepreneurs) and generic knowledge (researcher, etc). Information is sticky when it is local and specific to the owner and not easily available to others.

Source: Adopted from Hall *et al.,* 2006, Otim-Nape, 2010 and cited in Nederlof *et al.,* 2011.p.15

2.4 The Structure and Conduct of Innovation Platforms

Mulema, 2012 defines the structure of an IP in the purest terms as "*the arrangement of individuals in groups or networks with emphasis on patterns, interaction and information exchange in a centralised or decentralized system of governance in which community members are fully involved in decision-making".*

Nederlof, Wongtschowski and Van Der Lee, (2011), agree that the structure is associated with the representation and composition of the IP focusing on the different actors, stakeholders, major professional groups and various categories of the members of the IP. Cadilhon, (2013), characterizes the structure of the IPs as the internal organisation and composition with focus on the diversity of membership, the share and influence of the stakeholders versus the actors and public sector participants, funding and resources and the availability of staff to run and manage the IP(Cadilhon, 2013).

"The external environment to the platform can also be part of structure where characteristics of individual members of the platform are assigned to elements within the structure fostering interactions between stakeholders across a scale of differences, namely, the type of stakeholder within the value chain and some indicator of their position in society such as gender, age, ethnicity and locally-relevant proxy for wealth such as assets"(Cadilhon, 2013.p.8)*.*

Mulema(2012) noted that the structure of the IP creates patterns of organisation which foster information flow, decision making and interaction to take place. The structure of an innovation influences innovation capabilities and processes by enhancing the diversity of the IP which comes along with skills, technical capacity, knowledge and a network through which strategies like adoption thrive(A A. Mulema, 2012). The composition and membership of the IP is useful where new topics arise, priorities changeor unexpected problems emerge(Nederlof and Pyburn, 2012).

According to Cadilhon, (2013), the key elements of the structure of an IP focus of demographics such as number of players, share of stakeholders and benchmark type which all have a direct impact on the performance of the IP.

The structure of the IP uses its members to promote the subscription of members to specific opportunities of interest while empowering them to pursue the managing of their resources and decision making processes(Dror, Cadilhon and Schut, 2015). Adoption Is one of the key opportunities that exist in IPs and Cadilhon, (2013), states that the willingness and support from the IP members to other farmers links them to one another in a peer to peer network of adoption where the IP using its structure facilitates this exchange.

According to Macharia(2015), the conduct of an IP is the manner in which the IP is organised and managed through a range of activities and processes. It is a behavioural means of addressing complex biophysical, technological, socio-cultural and economic challenges that contribute to development through short and long- term engagement among different actors and stakeholders(Macharia, 2015).

The conduct among the platform members is characterized by the elements of relationships affirmed through Information sharing, communication, coordination, joint planning and trust (Cadilhon, 2013).

Augustine *et al.*, (2016) argues that IP performance is determined by the consistency in participation across a spectrum of engagements within the IP ranging from meetings, activities, conflicts, policies, actions and decisions within the IP. Furthermore, the lifespan of the IP is affirmed by the perceived valuable benefits of its members and it's enhancement of agricultural development(Augustine *et al.*, 2016).

In concurrence Ayantunde *et al.*, (2013), affirms that the link to solutions, benefits and opportunities within the IP is not only determined by the facilitation of research and learning to generate new knowledge, products, services and technologies, but also the participatory use and conduct of the members which in essence make up the role of the IP.

2.5 Role of Innovation Platforms in Adoption and Diffusion of Improved Technologies [IPs]

The rise of IPs especially in the global south nations has gathered attention within the last decade, the concept has aroused major interest from both public [research institutions, government bodies, universities and development partners] and private entities [farmer groups, associations, businesses, companies and cultural groups](Schut*et al.*, 2016).

Researchers and research bodies have been drawn to building their knowledge and innovations through collaboration with intended beneficiaries, effective inventing of products and services that are ideal to the needs and interests of the final consumer or adopter(Schut*et al.*, 2016). However, most of the other participating actors and stakeholders including chain actors haven't concretely understood the roles of innovation platforms (Hekkert and Negro, 2009 cited in Teno, 2013).

Innovation platforms play the role of advocating and lobbying for members' interests and needs before public policy makers and as such they possess a key link in kick starting local, national and multi-national dialogues in which various actors table their interests before policy makers. For example; in Nigeria, the cowpea and soybean innovation platform that was initiated and supported under, *"The Research into Use Programme in Nigeria"* (Nederlof *et al.,* 2011.p.22) was partly mandated to advocate for institutional solutions for its members regarding the supply and demand processes of cowpea to improve efficiency within the commodity value chain.

Similarly, in Tanzania, *'Tanzanian Dairy Development Forum"* an IP that was established in 2013 by various dairy farmers played a major role in advocating for the changes in the hindrances associated with price fluctuations faced by the dairy farmers and other chain players in the dairy breeding industry (ILRI, 2013 cited in Teno, 2013.p.6).

Innovation platforms create links to inputs and seed markets, add value and market its members' products both nationally, regionally and internationally(Nederlof and Pyburn, 2012). Through the IP, members' competitively access quality inputs with the idea that there product outputs are collectively collected and marketed, thus increasing sales and opening various avenues to form markets and promote entrepreneurship among the members(Nederlof and Pyburn, 2012).

Innovation Platforms act as conduit to facilitate decision making and gender equality, citing the *''East Africa Dairy Development (EADD) Project''*, the IP moved towards transforming members' perceptions and attitudes towards adopting hybrid cattle and gender inclusion which raised awareness on gender and built the capacity of women and women headed households to pursue improved livestock farming while the IP created access to markets for them (Teno, 2013.p.6).

Furthermore IPs offer access to the implementation and conduction of research for development with a focus on improving farm inputs, outputs, productivity and value addition to harness market value for products in a sustainable manner (Nederlof and Pyburn, 2012). Citing, *''the Zambia Conversation Agriculture Platform''*, which was established, *''to promote conservation agricultural practices among smallholder farmers''*. The IP aimed at enforcing the application of conversation farming as a technique meant to increase the *''sustainable use and management of natural resources''* (Nederlof *et al.,* 2011.p.22).

Tenywa*et al., (*2011) alongside Nyikahadzoi *et al.*, (2012) cites IPs as providing a proper arena to exchange knowledge and information and tap into both indigenous and modern knowledge. They noted that IPs share tasks amongst members where members are instituted with the responsibilities of further disseminating knowledge, products and services both internally [within the IP] and externally [outside the IP], which in turn benefits the wider communities (Teno ,2013).

Scholars Hekkert and Negro (2009) cited in Teno (2013) urge that the innovation platforms in the process of adoption and diffusion of technologies are defined by the roles summarized below;

- **Knowledge development, Generation and Documentation**

Knowledge development, generation and dissemination are niche roles of IPs. Tenywa *et al.,* (2011) is cited noting that IPs are embedded in, *''learning by searching'' and ''learning by doing''* (Teno, 2013.p.7).

They further stressed that IPs are rooms in which stakeholders occasionally learn from and with one another, sourcing from various ideologies and exchanges of both indigenous and modern knowledge bases to either dispute or improve that which has been discovered.

The same notion exists when different players across all levels within a chain such as farmers, researchers, policy makers and community leaders come together for the purposes of learning and generating knowledge collectively (Teno, 2013).

Teno (2013), further argues that IPs are forums for innovation and research implementation to improve production and efficiency at farm and community levels, IPs *"rely heavily on active participation of platform members to suggest new research topics that will address real-life issues faced by the value chains"* (Teno, 2013.p.29). Through research, IP members participate in the field-testing of new technologies and processes, and actively disseminate the successful innovations across a diverse scale of peopleTeno (2013).

- **Network facilitation, Product and Service Adoption and Diffusion**

Hartwich*et al.,* (2007) cited in Teno (2013) that IPs have a role in sharing and building networks. The diversity in membership creates a network actively involved in adopting , disseminating and diffusing technologies developed through the IP for purposes of collective and collaborative development(Teno,2013). They assert that the strength of IPs is in building and creating relationships and partnerships with other value chain partners to create a conduit through which products, services, and knowledge and information flow.

It should be noted that through IPs members are entitled, *''to managing and generating knowledge by focusing on dynamics and diversity of the IP and using it to participate, collaborate and jointly cross learn between farmers to equally adopt, diffuse and exchange knowledge beyond traditionally known approaches"* (Teno, 2013.p.7).

IPs are avenues for setting quality and standards for farmers and breeders doing seed multiplication hence combating counterfeits and allowing collective sourcing for seed inputs and output markets for them (Agriculture, 2015). Furthermore, IPs engage in transforming attitudes, perceptions and beliefs associated with gender so as to increase participation and decision making at household level, increase the access and control of resources by their members and use the forum for feedback to researchers and policy makers(Cadilhon, 2013).

- **Entrepreneurial Development and Resource Mobilisation**

IPs are known for bringing together members with the aim of promoting entrepreneurship and creating new market opportunities and links by developing new ideas and increasing business opportunities for the members (Foray *et al.,* (2012) and Teno (2013). The scholars note that livelihood capitals such as *"financial and human capitals"*, are necessary assets in an IP, and can go a long way to facilitate new strategies such as adoption of improved technologies, value addition, packaging and processing for individual members or groups of farmers (Foray *et al.,* (2012).

This is because such capitals capacitated the IP's strength in mobilising resources, harnessing technical capacity and making decisions while confronting operational difficulties (World Bank, 2012). For example; the *"Uganda Oilseed Producers and Processors Association platform"*, was initiated to mobilise various oilseed farmers' into groups, build their technical capacity to process and mobilise resources to expound their oil seed production, *"of open pollinated varieties and hybrid seeds"*, increasing their market base, incomes, market and production levels (Nederlof *et al.,* 2011.p.24). IPs are dynamic and complex in exercising their roles, however with unified goals, proper structure and conduct they pause a higher opportunity to transforming agriculture in Sub-Saharan Africa as exemplified below by some IP in Africa.

2.6 Agricultural Innovation Platforms in Africa

Globally over the last decade, numerous countries in Asia, Africa and Latin America came together with the objective of, *"promoting local innovations platforms in agriculture and Natural Resource Management (NRM)"* (Dusengemungu, 2011.p.24). In Africa the initiation of the *"Research into Use*" (RIU) project in 2006 by the Department for International Development (DFID), United Kingdom (UK) was a vital move towards agricultural innovation platforms and the interventions they brought along. The objective of the RIU project was to use agricultural innovation platforms as avenues towards dissemination and up scaling of the adoption of agricultural innovations to improve productivity and livelihoods for agrarian households and communities (Dusengemungu, 2011.p.1).

Mapped into twelve countries within Asia precisely in, *"Bangladesh, Cambodia, India, Nepal, Pakistan and Vietnam"* and in African particularly in, *"Zambia, Malawi, Nigeria,*

Sierra-Leone, Tanzania and Rwanda", RIU drove its objective of bettering livelihoods and scaling up adoption of agricultural innovations amongst its target countries. Herein we closely look some of RIU's African agricultural innovation platforms and how they have impacted on the livelihoods of rural agrarian populations (RIU, 2010 cited in Dusengemungu, 2011.p.23).

- Tanzania's National Innovation Coalition (NIC)

The NIC operates as a policy platform funded under the RIU and has over the years worked towards profiling and putting together lessons and experiences from the various RIU interventions that members benefitted from over the years. One of the experiences noted is that its members through the RIU-NIC platform, gained knowledge in improved farming methods, improved adoption of seed varieties and improved post-harvest handling techniques.

For farmers in the districts of, *"Kilombero, Kilosa and Mvomero districts"*, it was noted that they had gained more relative value from their on-farm outputs because of this IP, (RIU, 2010, cited in Dusengemungu, 2011.p.24). Other regions in which the platform made progressive impact was the coastal regions of Tanzania where numerous dairy farmers cited having access to better markets through the NIC. This in turn developed the dairy sector and created cohesion within its value chain (RIU, 2010 cited in Dusengemungu, 2011.p.24).

- Zambia's National Association of Peasant Smallholder Farmers (NAPSF)

The NAPSF membership grew over the years and its focus was on working towards gender inclusiveness and harness gender-based development, the year 2014 soared with an estimated 30% increase in female farmers within the IP.

With financial and technical support from the RIU, farmers under the NAPSF gained knowledge in sustainable agricultural production using strategies that embedded natural resource management in their farming practices and techniques like the use of conservation farming and irrigation farming. These efforts have been pushed forth by collaboration between research bodies like, *"CGIAR and Zambia's National Agricultural Research Stations"* and education institutions such as the, *"University of Zambia (UNZA)"* (Dusengemungu, 2011.p.24).

- Rwanda's National Crop Intensification Programme (NCIP)

The NCIP in collaboration with the Maize Platform in Rwanda is one programme under the RIU development partnerships geared towards scaling out improved maize seed agricultural technologies. It was launched in 2008, with support from the, *'Ministry of Agriculture (MINAGRI) and the Rwanda Development Organisation(RDO), a non-government organisation (NGO)"*.

According Nederlof*et al., (*2011.p.142), the maize platform under the NCIP was motivated to addressing farmers needs through, *"institutional strengthening by way of social networking"* with farmer groups, development partners, private and public sectors to improve maize production and increase resilience towards food insecurity (Dusengemungu, 2011.p.24).

In a quest to improve and increase resilience of rural small-scale farmers to food insecurity, the Rwandan Ministry of Agriculture heavily embarked on maize production as an avenue to improve food availability and security in the district of Nyagatare found in the Eastern Province of Rwanda. Despite this move, small scale farming households and communities barely adopted improved, *"maize technologies"* (Hakizimana, 2007 and Nederlof *et al.,* 2011. p.141). This move had been hampered by operational ineffectiveness and inefficiencies within the IP, with the lack of collaboration, coordination and communication being the major hindrance among key players within the maize value chain (Hakizimana, 2007 and Nederlof*et al.,* 2011).

However, through the RIU, small scale farmers in Nyagatare district were revitalized with skills, capacity building, knowledge and information and were later able attain a relative advantage in the increase of maize production, specifically targeting production and multiplication of improved maize seed varieties.

The RIU programme did this by intensifying multi-stakeholder dialogues, trainings and collaboration amidst all value chain players. This brought key players such as farmers, input dealers, extension officers, researchers and private agri-business entrepreneurs together creating a forum for knowledge generation, flow of information and access to new products and services amongst which were the desired inputs and seeds for small scale-scale farmers.

This boosted the capacity of the beneficiaries of the IP to improve farming methods, marketing knowledge, access to agri-innovation technologies and services for economic and social benefits (Nederlof *et al.,* 2011).

- Malawi's *"Research into Use*" (RIU) Project under its Ministry of Agriculture and Food Security.

The RIU in collaboration with the government's agricultural ministry spearheaded an advocacy campaign encouraging adoption of improved seed varieties, fish and animal breed technologies i.e. *"soya beans, groundnuts and livestock like cattle, goats alongside fish farming"* (RIU, 2010 cited in Dusengemungu, 2011.p.24). Through this platform, small-scale farmers were encouraged and driven to adopt new improved seed varieties alongside improving their production and post-harvest handling practices. This drive increased farmers' productivity and yield and further gave them greater access to markets and increased incomes. Furthermore, the RIU enabled greater collaborations and networks amongst individual farmers, development organizations, stakeholders and actors within the IP which was key to creating partnerships and generating knowledge across a range of actors (Dusengemungu, 2011.p.24).

- Uganda's Oilseed Sub-sector Platform

In cooperated in 2005 by the Uganda Oilseed Producers and Processors Association (USOPA), this platform had multiple diversities of members such as, *"small, medium and to some extent larger processors"*, all of whom came together with a common goal that was to gain a competitive market edge within the oil seed value chain (Nederlof *et al.,* 2011.p.114).

USOPA closely embarked on seed multiplication among small scale farmers, majorly in the production and distribution of, *"open-pollinated sunflower varieties of which the foundation seed was supplied by the National Agricultural Research Organisation (NARO)"* (Nederlof *et al.,* 2011.p.114). Despite having members with a common objective, the platform was facing internal conflicts associated with the conduct of the IP in coordination of its members. This was linked to the vast ideologies and contested landscapes placed forth by members hampering cohesion within the IP.

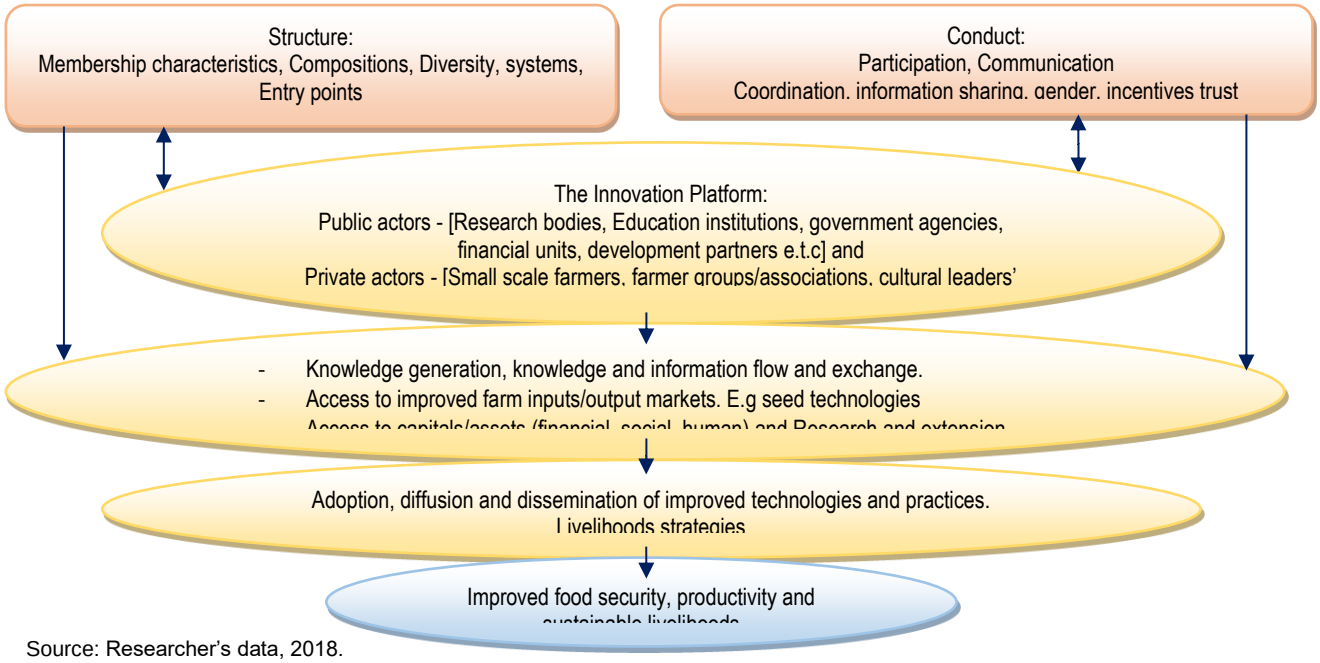
However, this hindrance was paced off when USOPA entered into collaboration with the Dutch Agri-Pro Focus network. This network came in as a *"new experimental stakeholder who initiated pathways towards engaging oilseed sector players like oilseed producers and processors'" into* building a more cohesive and collective action oriented approach instituted to gain better marketing power aimed at achieving,

"economies of scale, enhancing bargaining power and managing commonly pooled resources, inputs and finances" (Devaux*et al.*, 2009, Shepherd, 2007 cited in (Nederlof *et al.,* 2011.p.114)

2.7 Conceptual Framework

This study adopts its conceptual framework from Cadilhon (2013) whose evaluation of innovation platforms was woven around a, *"socioeconomic model of Structure-Conduct-Performance"* (Cadilhon, 2013 cited in Teno 2013.p.14). The researcher through this model urged that the, *"structure of the innovation platform"*, will have effect on the, *"conduct of its members"*; such effects [positive or negative] shall then influence members performances' attitudes towards anticipated outcomes of the platform. Despite this, it should be noted that the structure of the platform can as well directly impact the performance of its members who in turn redirect their interests and needs into anticipated outcomes and goals of the IP (Cadilhon, 2013 cited in Teno 2013.p.15).

Figure 5: The Conceptual Framework Establishing the Roles of the IPs



Source: Researcher's data, 2018.

Contrastingly Gildemacher and Mur (2012), demystify Cadilhon (2013)'s conceptual framework of the ''*socioeconomic model of Structure-Conduct'* 'arguing that it is only a suitable framework for establishing the roles of agricultural innovation platforms.

The scholars placed their arguments by stressing that this model is a basic model combining technique that does not critically look at the various aspects of platforms

such as governance and organization capacity; while applying methodologies like the, *‘‘cost benefit and control groups analysis’’*, as avenues towards unraveling internal operations but not necessarily functional roles of the innovation platforms (Teno, 2013.p.28).

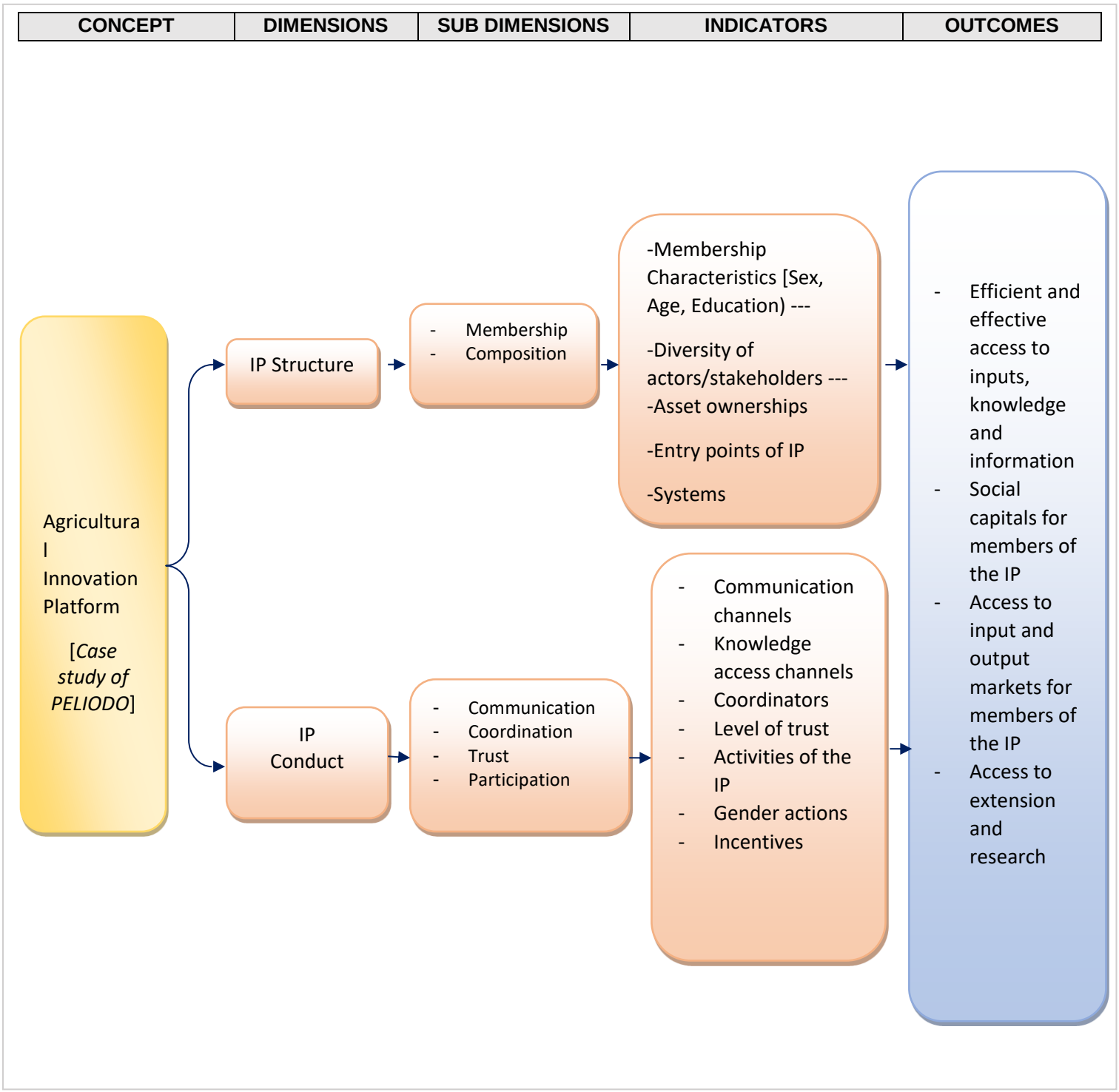
However, Cadilhon (2013) cited in Teno (2013.p.14) goes ahead to highlight the dimensional areas of any organisation through operationalising his model framework into dimensional areas that are the, *‘‘Structure-Conduct”* (Teno (2013.p.14).

Further noted by this scholar, is that this model calls for the application of both, *‘‘qualitative and quantitative data’’*. In this case the scoping of both secondary [project documents, scholar literatures relating to innovation platforms and primary data [focus group discussions, individual key informant interviews and controlled observation] remain vital to unravel, evaluate and establish the roles of agricultural innovation platforms as will be discussed in the next chapter (Gildemacher and Mur, 2012 cited in Teno, 2013.p.16).

Given this background, this study adopts the Cadilhon (2013) conceptual framework and its operationalisation will be explained in the next chapter to offer an insight into the methodological approach to operationalising and unpacking the role of IPs in scaling-up the adoption of improved seed technologies. Precisely by way of unraveling the ‘‘*socio economic model of Structure-Conduct’’* (Cadilhon (2013) cited in Teno, 2013.p.14).

2.8 Operationalising the Conceptual Framework

Figure 6: Unravelling the Conceptual Framework



Source: Researcher's data, 2018

CHAPTER THREE

METHODLOGY

3.0 Introduction

This part of the study provides a Methodological approach for establishing the role of Innovation Platforms in scaling up adoption of improved varieties under PELIDO Innovation Platform. It further goes on to elaborate how and where the research was conducted highlighting the study area, research design, sample selection, data analysis and interpretation methods and tools used to conduct the study.

3.1 Area of study

The study was conducted in Kisseka Sub-county in Lwengo district in south western Uganda. The neighbouring districts are Masaka, Mbarara and Rakai. This sub county is known as a leading hub in the production of beans, sweet potatoes and coffee crops (Ubos and Lwengo, 2011). Kisseka Sub-county has an estimated population of 44,855 inhabitants out of the total district population of 274,953 people(Mungyereza, 2016). Kisseka sub-county was chosen majorly because it harbours the PELIDO IP, found within the Kinoni trading town.

Additionally, Kisseka Sub-county was chosen because it has been targeted by the Makerere University extension services department to pioneer and experiment beans innovation platforms in the area (Mazur *et al.*, 2015).

Furthermore, several agribusiness NGO's are having field offices in the area such as the ISSD which is a national level platform working with smaller IPs to build a vibrant pluralistic and market-oriented seed sector through supporting farmers within IPs to start local seed business. All of which facilitated the selection of Kisseka Sub-county in Lwengo district as the area to conduct the study.

3.2 Scope of the Study

The study focused on PELIDO, a formalised and registered IP as a community-based organisation CBO with a membership 304 farmers clustered into 4IP clusters i.e. beans, sweet potatoes, honey and poultry clusters with a range of activities that harness livelihoods and reduce the vulnerability of its members to food insecurity. PELIDO is classified as a local Innovation platform and Local Seed Business (LSB) by the Integrated seed sector development programme(ISSD) and Ministry of Agriculture (MAAIF)(Mastenbroek, 2015).

For purposes of this study, focus was put on the farmers in the bean IP which was purposively chosen because it constituted a majority membership of 86 people making it the biggest IP cluster and was used to pioneer the seed multiplication approach by ISSD through which farmers were empowered to start local seed businesses (LSB) and produce quality declared seed for adoption and diffusion within their communities.

The IP had 86 registered members who included chain actors, stakeholders, public and private partners. The PELIDO IP provided a pathway to unpack structure and conduct and the roles they play in scaling adoption of improved seed technologies among small scale farmers.

3.3 Research Design

The study was operationalised through the application of, *"mixed methods research"* (Law *et al.,* 2013. p.143) to unravel the case study of the PELIDO IP in which both qualitative and quantitative data was obtained. In-depth interviews were conducted using questionnaires to gather both quantitative and qualitative data essential to describing the structure and conduct. Questions on structure of the IP aimed at identifying the membership and composition of the IP focusing on individual characteristics such as age, sex, gender, level of education, entry points, indicators of wealth such as assets and systems within the IP.

Questions related to conduct aimed at the processes of interaction and participation using elements such as communication and coordination, the channels used, incentives, and levels of adoption (See Appendix).

This was supported with in-depth interviews done with key informant respondents, 2-focus group discussions of 6 members each, observations and photographic evidence noted during the study. The essence of applying the mixed methods was that the study would reach at unbiased conclusions using various methods (Oliver, 2014 and Turner, 2007). Extensive desk scoping was under taken and literatures collected from scientific journals, books, organisational reports, research papers and online sources for secondary data. Primary data was on the other hand gathered through a descriptive case study of PELIDO using questionnaires and in-depth interviews (Verschuren and Doorewaard, 2010 and Law *et al.,* 2013).

Figure 7 below shows a research design framework adopted from Verschuren and Doorewaard, (2010).

Figure 7: Research Design Framework

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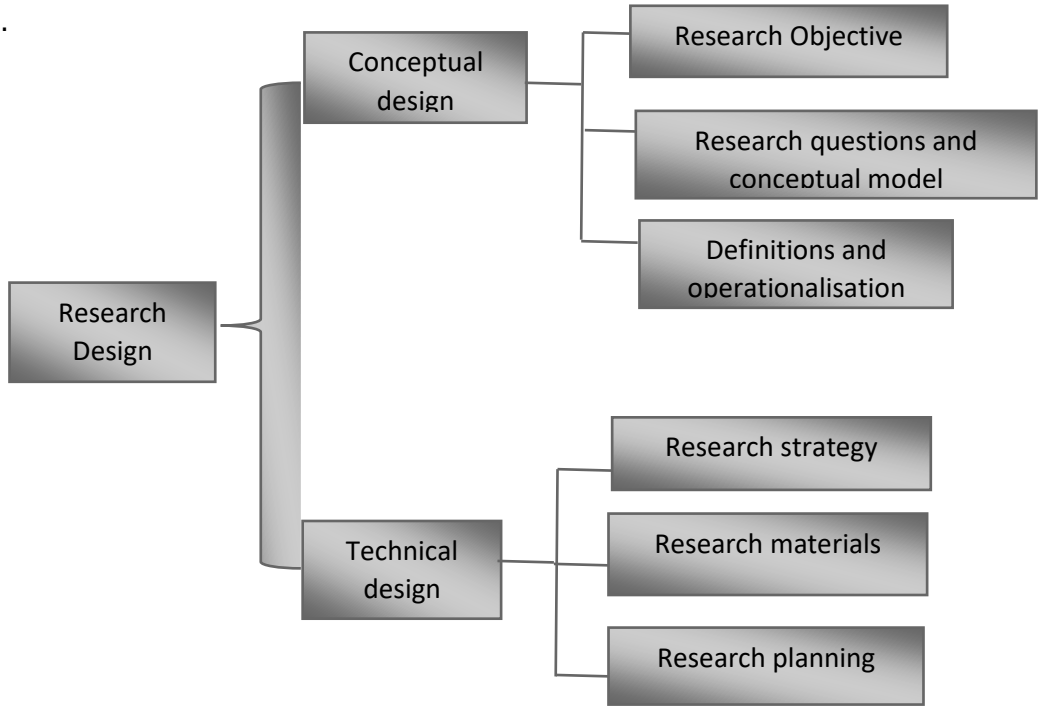
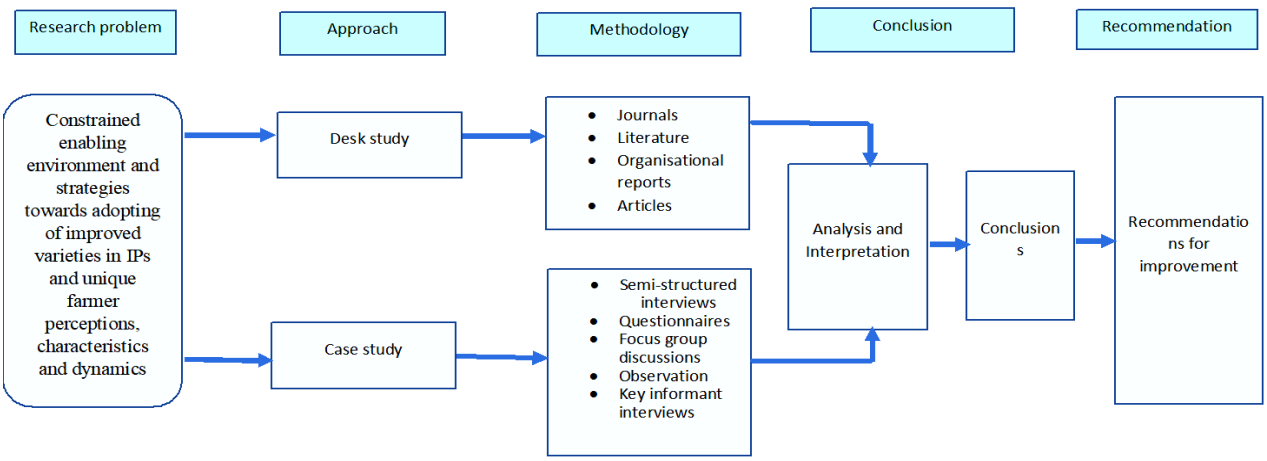


Source: Verschuren and Doorewaard (2010).

In operationalising the research framework above, the application of the quantitative design was used to identify the background characteristics of the respondents. Whilst the qualitative design was used acquire in-depth descriptions on the subject using triangulation as key strategy in mixing different methods of achieving the best possible conclusions (Baarda, 2010).

Figure 8: Unravelling the Research Design



Source: Researcher's Data, 2018

3.4 Sample Selection and Size

The total population comprised of 304 members of PELIDO however the beans IP cluster was purposively chosen because of its role in pioneering adoption, diffusion and multiplication of seed technologies among small-scale farmers within the areas. It comprised of 86 members from whom 25 respondents were selected by use of systematic sampling (Oliver, 2014; Verschuren and Doorewaard, 2010).

The researcher did this by obtaining the list of the members of the beans IP from PELIDO staff and using an interval of two between each name, 25 respondents were chosen and contacted to schedule an interview.

The rationale for having chosen systematic sampling was the conviction that, it would retain in-depth analysis and responses on the structure and conduct of the IP without a bias on selection and equally cater for demographic variables like age, gender and level of education (Law *et al.*, 2013).

The study worked with five key respondents and included an extensional officer PELIDO (staff), a District Agricultural officer, a Programme officer of PELIDO, an officer from the ISSD program (agribusiness consultant) and an input dealer (private business owner within the IP-pearl limited).

These key respondents were purposively selected based on their work experience and interrelations with small scale farmers and further provided in-depth insights on the IPs structure and conduct with a more detailed perspective on the elements in and out of the IP (Oliver, 2014).

Furthermore, two Focus Group Discussions (FGDs) were held with six participants in each group. The FGDs members were purposively chosen using an IP list provided by PELIDO staff. The participants were selected based on inclusiveness, gender, diversity, age and experience among others.

3.5 Data Collection

Data collection was done using a mixed methods approach (Law *et al.*, 2013). This involved the application of both secondary and primary data. Secondary data was gathered from scientific journals, books, organisational reports, research papers and online sources, closely looking into IP organisation parameters of structure and conduct as relates to their roles in up scaling adoption of improved technologies.

Primary data on the other hand was gathered through the application of participatory rural appraisal tools. These included; guided interview questionnaires, Focus Group Discussions (FGDs), in-depth key informant interviews and controlled observations. Plus, photographic evidence was also done to support the findings of the study (Oliver, 2014).

The essence of using triangulation was to derive and affirm concrete and meaningful conclusions using different methods and verify the data using more than one source (Baarda, 2010).

According to Law *et al.,* (2013), triangulation comprises of using a mix of or combination of methods to derive meaningful data conclusions. An observation checklist was as well adapted to further highlight different observations to support the study (Oliver, 2014).

3.6 Data Analysis

Both quantitative and qualitative data was collected, quantitative data was entered Microsoft excel and analysed using frequencies and percentages to describe the characteristics of the respondents.

Furthermore, qualitative data was obtained through observations, FGDs plus, in-depth-interviews and key informant interviews, Both data responses were listed and corded according to three themes namely; structure -membership and composition and for the conduct-communication, coordination, trust, participation and conclusions were drawn based on similarities and the frequency of the responses obtained (Baarda, 2010).

3.7 Ethical Considerations

Before the roll out of the research study process, respondents were presented with an introductory letter and permissions were sought from the IP leadership and community leaders highlighting the cause and purpose of the study.

Confidentiality and anonymity was assured to respondents and there was no inducement to participate in this study all respondents acted voluntarily and were introduced to the purpose and cause of the study in an appropriate manner(Baarda, 2010).

3.8 Limitations

IPs are a unique and dynamic entity that in Uganda have been in existence since 2009, the concept was new to many farmers and IPs are being used to pioneer different experiments and innovations with the Uganda.

Thus the farmers still have limited understanding of the workings of IPs but are knowledgeable on the participation, activities and benefits(Seed and Development, 2015).

Using systematic sampling to choose respondents was costly and time consuming and the no similar studies have be conducted on a wide scale in Uganda.

3.9 Quality Control

To ensure that high quality data was collected, a pilot study was carried out within the same area with a beans farmer group to pre-test the questionnaires and tools to cross check for necessary adjustments and ensure accuracy of the findings.

Furthermore, the analysis was done combining all the data in themes to support each element of the study with strong conclusions(Pathways, Provision and Crops, 2016).

The above methodology was adopted to gather and interpret the findings in the next chapter in both a descriptive and thematic manner to give a detailed understanding on the structure and conduct of IPs in scaling-up adoption of improved seed technologies among small scale-farmers.

CHAPTER FOUR

PRESENTATION AND INTERPRETATION OF THE FINDINGS

4.0 Introduction

This chapter presents the analysis and interpretation of the findings of the study, presented and aligned to the research questions and study objective using descriptive statistics, frequencies and percentages clearly showing the distribution of respondent's characteristics in relation to the topic of study.

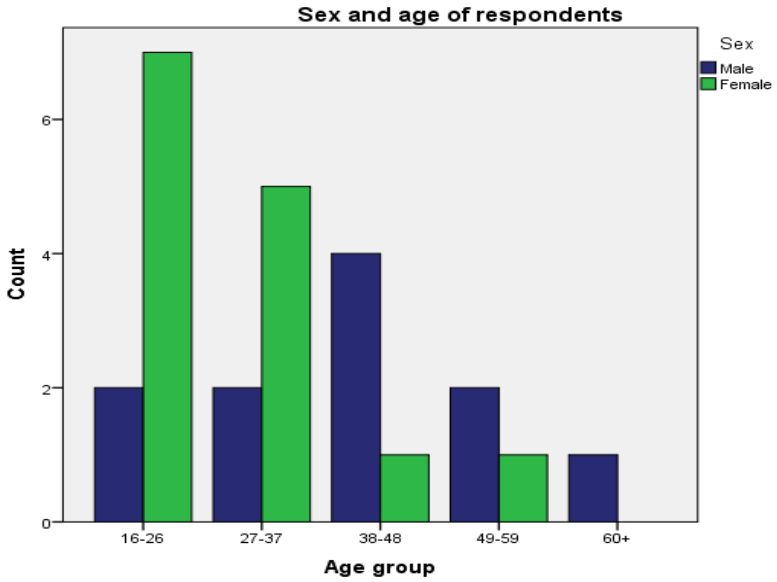
4.1 The Structure of the IP

The structure of PELIDO in this part of the study focused on the membership and composition of the IP based on the membership characteristics, diversity of IP, entry points and IP systems.

- **Membership Characteristics of the IP members**

4.1.1 Sex and Age of the Respondents

The age and sex of respondents was a key factor in the study because of diverse needs of each age group, inclusive integration and difference in proactiveness which can stimulate new memberships, strategies for adoption and diffusion of technologies across a scale of people hence sustainably replicating the goals of the IP on a larger scale.



Out of 25 respondents, 56% were female while the males accounted for 44%. More females of the age group 16-26 and 27-37 participated in the IP majorly due to their curiosity to experiment, test and acquire knowledge on IPs, new products and services.

This affirmed the IPs as being a conduit through which they can articulate their needs to stakeholders and policy makers, exchange and share knowledge and experiences while disseminating the same within their peers.

The DAO, a key informant noted, younger age groups and especially women are an asset to the IP because they bring in new ideas. He noted that they are proactive in the IP events such as social mobilisation, research and extension, marketing fairs and disseminating of information such as distributing flyers, posters and recruiting new members which scale-up adoption practices within the community.

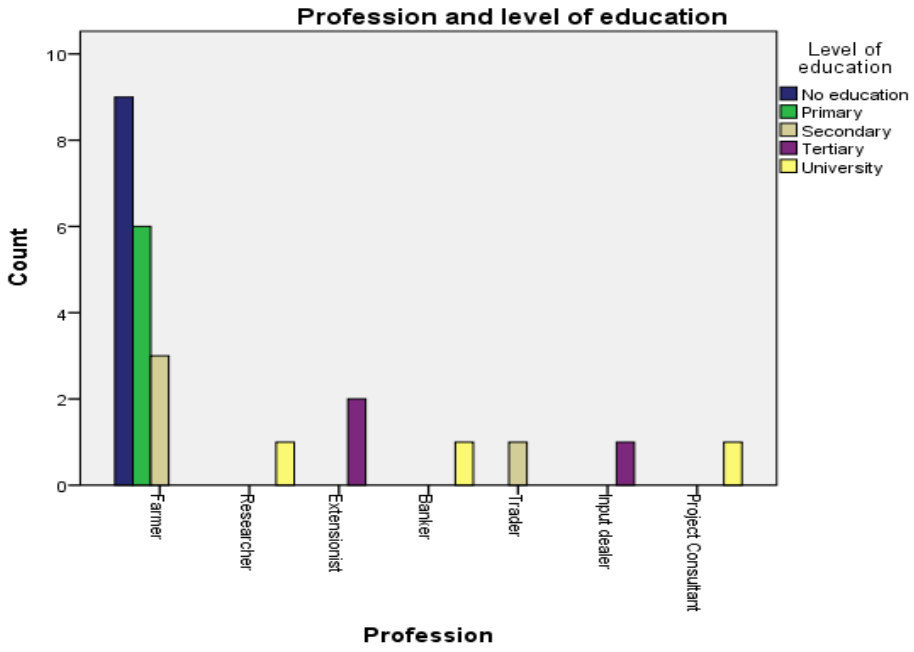
Similarly, 5 key informants were interviewed and were all male in the age group 27-37 years; this was attributed to the preference of males in working as research and extension officers by PELIDO, governmental organisations and NGO's due the belief that men endure rough inaccessible terrains and roads in remote communities to deliver products and services to the masses.

However notably, youth and women were not key resource owners and decision makers and though their interest and participation were rigorous and proactive, they were hindered by the resources to produce.

4.1.2 Level of Education and profession of the respondents

The level of education and profession of the IP members was imperative to the study because it determined the reinforcement in knowledge generation, dissemination and scaling out of information on improved seed technologies.

This was a pathway to adoption among marginalised sub-groups like youth and women hence propelling their confidence in building their capacities to adopt and to address higher level constraints affecting their adoption of improved seed varieties.



Out of the 25 respondents, 36% of the respondents had no education, 24% of the respondents had attained primary education, 16% had attained secondary level education and 3% for the university and tertiary levels respectively. The farmers were dominant among all the other profession gathering 72% of the respondents .

The level of education was overwhelmingly low and though the farmers needed skills and expert advice, the technocrats were few and characterised by absenteeism within the IP.

Discussants from the FGD stressed that education was vital as it induced the capacity to skill, learn and disseminate information and knowledge which maximised the efficiency of the IP in seed multiplication, diffusing technologies and disseminating extensions messages to the intended beneficiaries.

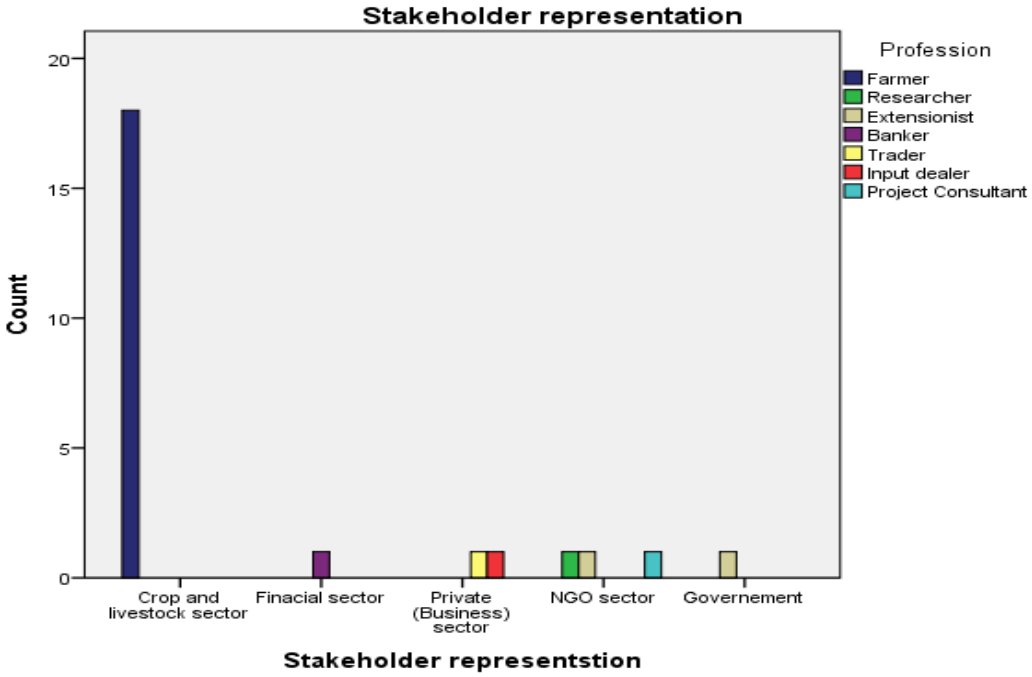
The agribusiness expert ISSD noted “Different *professionals influence knowledge development and generation which fast tracks experimentation, research and disseminates information and knowledge on new improved technologies, maximising the efficiency of the IP in seed multiplication and diffusing technologies to the intended beneficiaries, however these professionals were few”.*

The findings concurred with the key informant response as the technical professions were the least in number within the IP.

- **Diversity of actors and stakeholders**

4.1.3 Stakeholder and actor representation

This diversity in sector representation was key to the study because it determined the pool of resources from different sectors and created links, partnerships and networks to induce accessibility to input and output markets, finances, technical skills and opportunities for the members of the IP.



The crop and livestock sector were dominant accounting for 72% of the respondents, majorly comprising of farmers. This was attributed to the poor management of powerful key stakeholders by the IP leadership, there wasn't clear link, relationship and understanding between the IP leadership and the stakeholders and the knowledge on the IPs agenda was centralised which demotivated key stakeholders. Some key stakeholders such as researchers came in and deserted later since the subscription the membership within the IP was voluntary.

However, the famers were driven by incentives; the will to adopt new technologies, networking opportunities and curiosity to experiment the IPs products and services.

The private or business sector had 8% representation, with an input dealer and trader, the NGO sector at 12% represented by a researcher, extension officer and project consultant (ISSD).

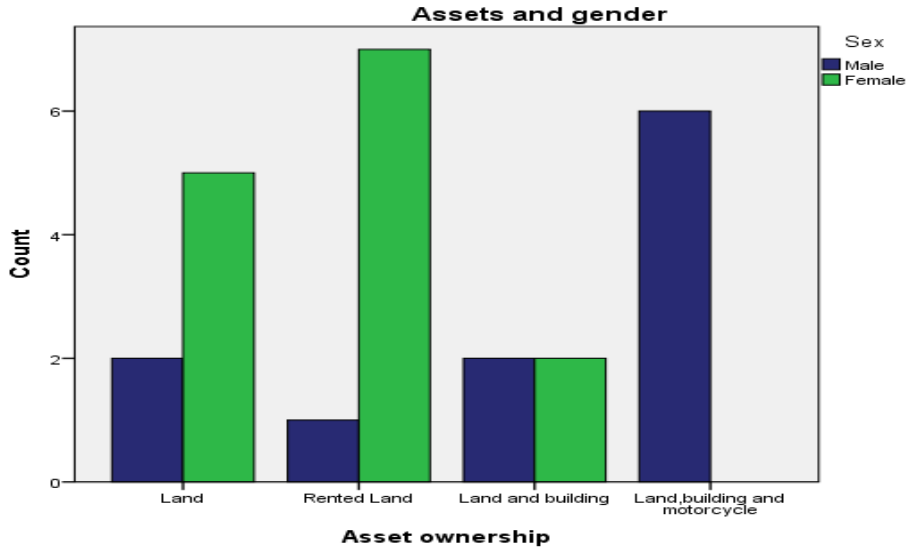
The government stood at 4%, represented by the District Extension officer and 4% for the financial sector represented by a banker. According to the PELIDO programme officer a key informant, sector representation was key in setting up priorities, determining entry points, reinforcing knowledge and creating opportunities.

However, famers were the majority, least educated and above all mostly female and not seen as equal players. Their knowledge was considered inferior as noted during the Focus Group Discussion. Despite this, to the IP they were key assets in mobilising fellow farmers, transferring knowledge and information, recruiting more members to adopting technologies and practices.

The programme officer PELIDO, a key informant in the study noted, *"diversity in sector representation has flourished this IP with a spectrum of ideas, knowledge, links and information and certainly the farmers are benefitting enormously through having a clear understanding of seed multiplication, adoption and it's supporting practices" (PELIDO programme Officer 2018).*

4.1.4 Asset ownership within the IP

Assets were an important element in the study because they are a key resource in the production process and were key in interpreting household dynamics which directly influences individual membership to the IP.



Of the 68% of the responses who owned land 28% were female and 40% were male, those who rented land accounted for 32% of the respondents, of these 28% were female.

The females were the majority within the IP however they had the least access, control and ownership of land, most only rented land and those who did own land were single, widowed or divorced grappling with disputes within the family over land as noted in the FGD. This was a key hindrance to the membership of the IP and most members participated intermittently or deserted due to challenges associated with land.

Key informants attributed this to the customary practice of sharing land for inheritance amongst the boys in a household excluding the girls while subjecting them to farm labour, household chores and denial for an education which slowly sinks them into reproductive roles and early marriages (DAO and PELIDO Programme officer 2018).

Land was essential for key decision making on adoption and production, experimental learning, agricultural extensification, field demonstration and collateral for accessing loans and credit.

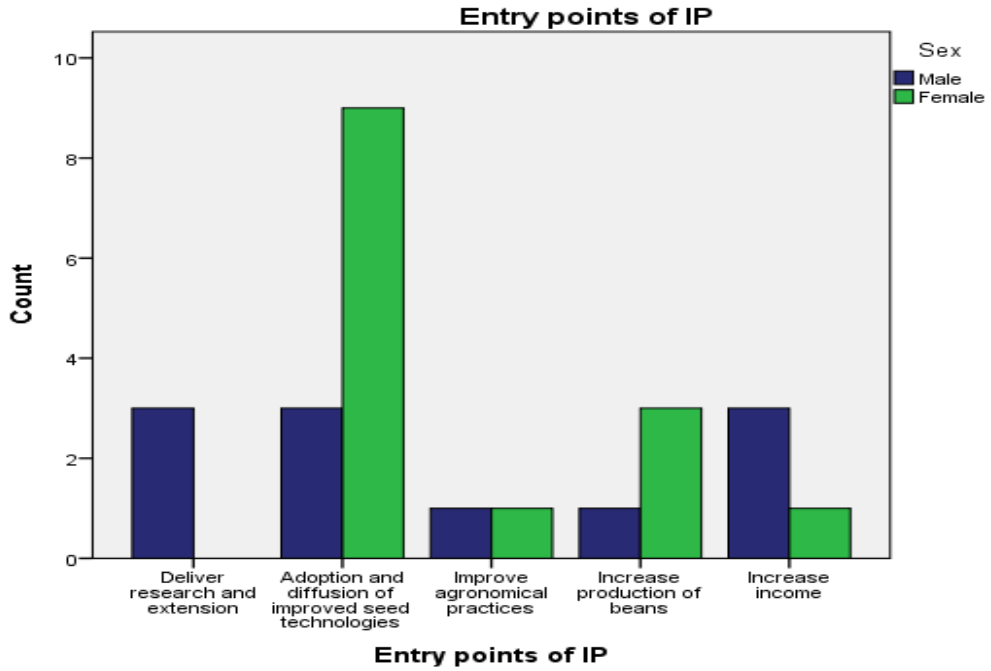
24% of the respondents who owned land, a building and a motorcycle were extension officers, input dealers and traders because as part of their duties they commuted to reach out to farmers in rural areas to deliver seeds, inputs and disseminate knowledge and information.

PELIDO owned 4 acres of land which was used for demonstration, experimentation, Participatory Varieties Selection (PSV) and testing of the foundation seeds meant for the seed multiplication. Assets not only facilitate and determine the farmers' capacity to adopt and diffuse improved seed technologies but also the farming practice and strategy a household adopts for a livelihood (DAO, 2018).

4.1.5 Entry Points of the IP

The entry points were imperative to the study because they determined the alignment of the goals and objectives of the platform with the activities and programs of the IP. They were a catalyst to short term, medium term and long-term interventions of the IP among which was adoption and diffusion of improved seed technologies. The entry

points created the shared values within the IP structure which was key in organising the IP objectives and goals.



48% of the respondents affirmed that the IP was started to increase adoption and diffusion of improved seed technologies as compared to 16% of the respondents for the increase of production and 16% of the respondents for the increase to income respectively which were affirmed as the IPs main entry points as confirmed by the PELIDO programme officer.

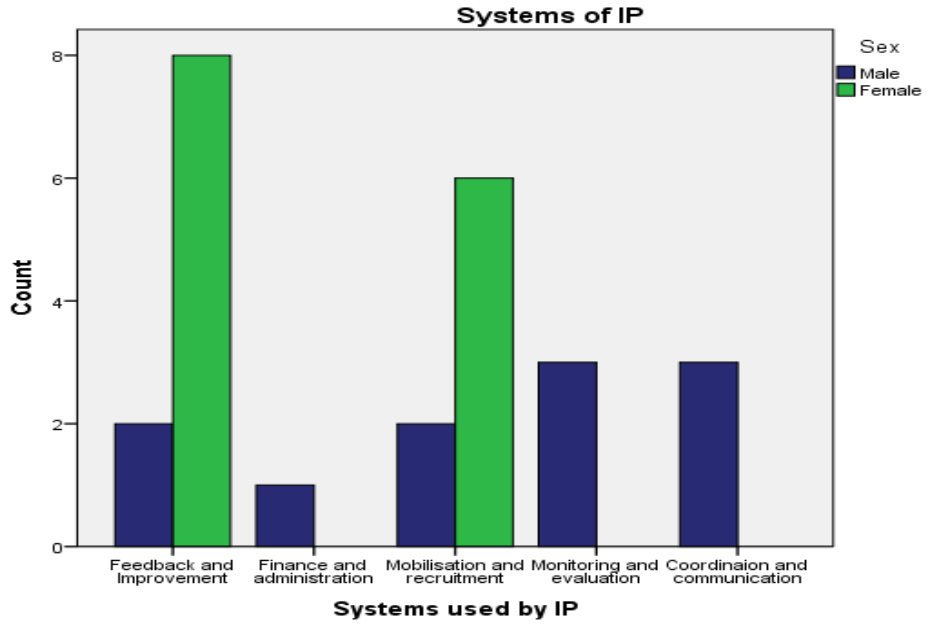
It was clear that there was a knowledge mis-match between the IPs entry points and the entry points known the members, however what stands out is the motivation for adoption and diffusion which ranked highest.

According to the Agribusiness Expert ISSD, entry points can translate into new memberships and scale adoption, where members are instituted with the responsibilities of further disseminating the IP goals, knowledge, products and services both internally [within the IP]and externally [outside the IP], which in turn benefits the wider communities.

4 of key informants affirmed that the IPs entry points were the increase of bean production and incomes while 1 key informant asserted that the entry point was adoption and diffusion of improved seed technologies.

4.1.6 Systems used by PELIDO

For purposes of this study, a system was defined as an integrated assembly of interacting elements or components designed to carry out cooperatively a predetermined function(Makini *et al.*, 2013).



The systems of the IP were relevant to the study because they strengthen the capacity of the IP to expand, monitor and address organisational and institutional constraints that hinder its agenda and simultaneously integrate different elements of the IP together.

72% of the respondents affirmed that they had been involved in the feedback and improvement and mobilisation and recruitment. Of these 56% of the respondents ere females and 16% were males. This noted involvement and participation was due to an inadequate follow up on gender actions and policies and the low levels of education by the females as compared to males who were technically equipped with skills in finance and administration, monitoring and evaluation, communication and coordination accounting to 28% of the responses.

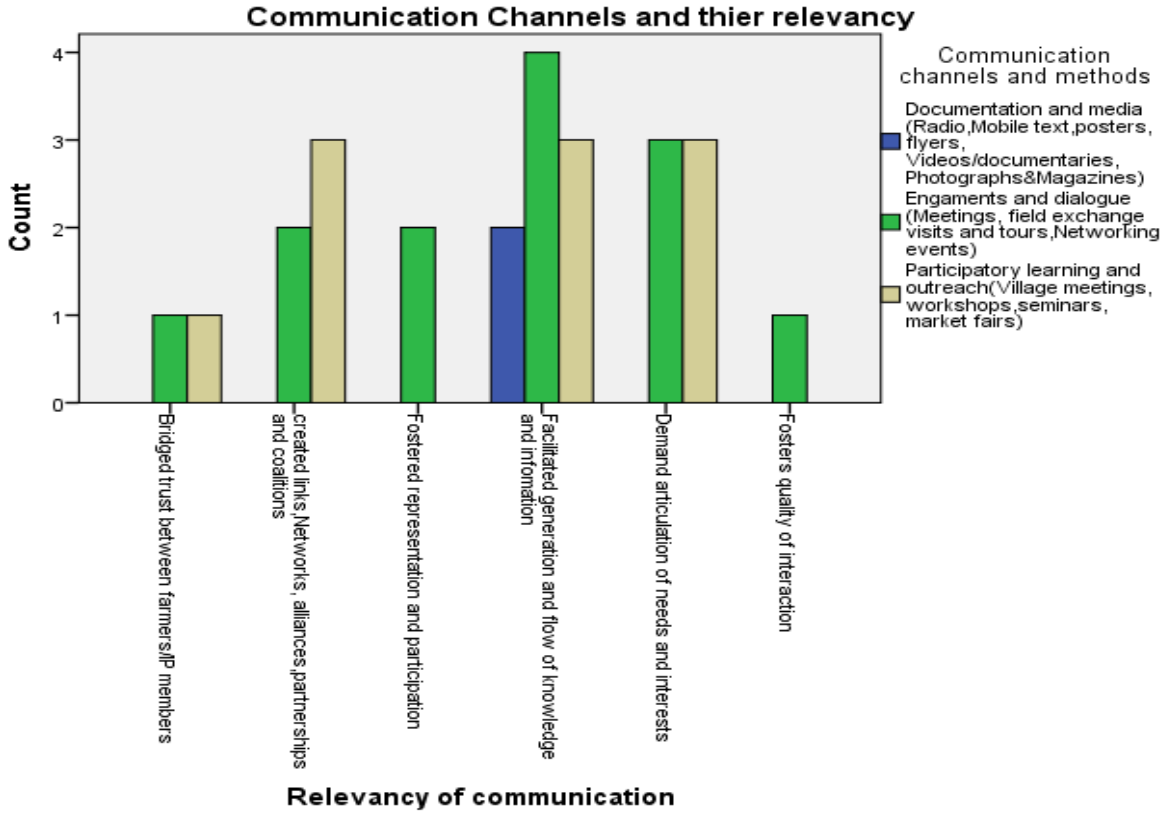
According the extension officer PELIDO, the participation in these systems included disseminating of community score cards, feedback sessions, feedback interviews, while for the recruitment involved community mobilisation and bio-data registration.

Systems such as the ones for mobilisation and recruitment were entirely aimed increasing membership, adoption practices within the IP and community and increasing the flow of information and knowledge to small scale farmers (PELIDO extension officer, 2018).

4.2 Conduct

4.2.1 Communication Channels within the IP

Communication was key to the study because if facilitated interaction, information flow and knowledge sharing, coordination and congregation of the IP members.



Of the 25 respondents, 52% affirmed that participatory engagements and dialogues including meetings, field exchange visits, tours, networking events, road shows and market fairs were the best way through which the received communication.

40% of the respondents affirmed that participatory learning and outreach was the best way through which they attained communication and only 8% of the respondents affirmed that they had received communication through the media, documents, flyers, posters, radio and mobile phone.

The findings clearly illustrate that the conduct of the IP in using participatory approaches and engagements determined the level of interaction and information flow, a precursor to scaling adoption. The district agricultural officer DAO stated that,

> *"Participatory approaches were quick and flexible in channelling information and knowledge to farmers while promoting collaboration, transaction, integration, information sharing, trust building, partnership, articulation of needs and interests, vital elements in dissemination, research and technologies.*
>
> (DAO, Key Informant 2018).

4.2.2 Relevancy of Communication within the IP

Out of 25 respondents, 36% of the respondents acknowledged that communication facilitated the generation and flow of knowledge and information, 24% of respondents asserted that communication had created a space for them to articulate their concerns on adoption practices and share their knowledge, cross-learn from fellow farmers and connect to other IP members.

20% of the respondents agreed that communication had created links, networks, alliances, partnerships and coalitions within the IP which contributed to the access to information, inputs, improved seed and technical support on proper agronomical practices.

"We always received communication on events, meetings, trainings and most of these are on new products such as the NABE 17, though we stay quite far we endeavour to attend these meetings or send representatives to attend" (Focus Group Discussion 2018).

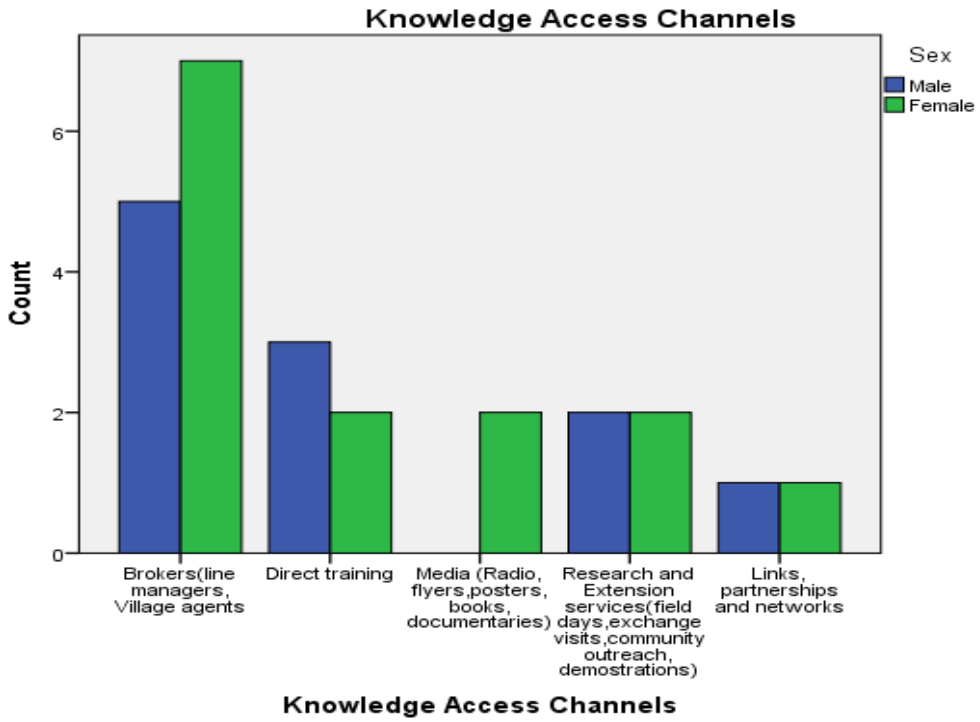
8% of the respondents asserted that communication had improved and repaired their trust amongst themselves and the IP leadership which facilitated participation and increased interest in the processes and activities of the IP.

Furthermore, 8% of respondents asserted that they accurately represented their colleagues within the IP and had improved their quality of interaction, communication created a pathway through which they ably participated in decision making relating to adoption of improved seed varieties.

> "*All the IP members have a shared vision and objective in this IP, communication is key in linking farmers to adoption. However, it is unfortunate that some members receive communication while others don't, if communication is mishandled, we all loose and we are all held accountable, and processes such as adoption and dissemination of information on improved varieties is distorted slowing adoption".* Extension Agent, PELIDO - Key Informant, 2018

4.2.3 Knowledge access Channels

Knowledge access channels were key to the study because they determined the conduct of the IP in exercising knowledge generation, flow and exchange which are a precursor to motivating the adoption of improved seed varieties.



48% of the respondents affirmed that they accessed knowledge through the IP brokers who included the staff at PELIDO, facilitators from ISSD, IP champions and village

agents. The broker facilitated mediation, interaction and created partnerships in and out of the IP which created input and output markets for the IP members and scaled-up adoption within and out of the IP (FGD, 2018).

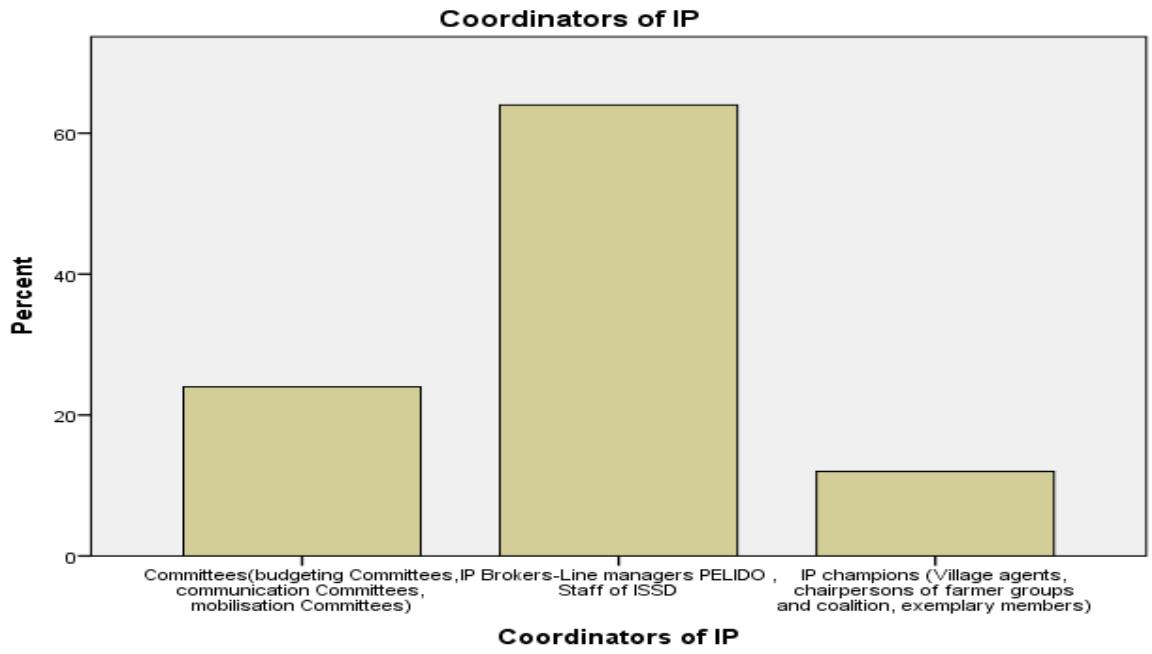
However, the DAO a key informant noted that, “Though the IP broker was catalysts to the smooth access of knowledge, there were no specialised resources to recruit a technical person or team and relied on a voluntary, under sourced, unskilled, unknowledgeable brokers and a line support”.

The researcher observed an extension officer teaching rather facilitating Knowledge exchange since they were doing it voluntarily inclining the IP into a linear approach of delivery. This affirmed that the IP conducted itself in a technically undermining manner to the function of the broker and coordination.

However, 20% of the respondents still accessed knowledge through direct training, 8% of the respondents through media (radio, flyers, and books). 16% of the respondents affirmed research and extension as being the access channel to Knowledge while 8% of the respondents cited getting knowledge from their links, partnerships and networks. 4 key informants asserted that knowledge was channelled through the IP broker while 1 affirmed to direct training as the most obvious channel of knowledge access.

4.3 Coordination of within the IP

Coordination was imperative to the study because it was essential in highlighting the interdependent relationships necessary to achieve mutual outcomes in a flexible and restraining use of power**.**



64% of the respondents agreed that most of the coordination within the IP was done by IP brokers, since the IP was formally registered as a community-based organisation; the coordinating role was done by the facilitators and management of the IP who included staff from PELIDO and facilitators from ISSD.

The IP champions accounted for 12% of the respondents and these were mainly the exemplary members of the IP and they included the chairpersons of the different farmer groups and coalitions and IP village agents whose main role was to communicate, connect, co-facilitate and coordinate some of the activities and processes of the IP.

The IP also had different committees on budgeting, communication and mobilisation who accounted for 24% of the respondents and were mainly a link that provided fresh insights on constraints and opportunities, action planning and leadership in multi-stakeholder processes and activities.

During the FGDs, it was noted that coordination within the IP facilitated interaction and connection of different people at a relatively impartial position bridging all levels together. An observation by the researcher noted that, the quality of coordination and facilitation was still poor with a laxity in mobilising and sensitizing the farmers by the IP brokers who did not pay attention to detail and often treated farmers as subordinates. Furthermore, “scientists, researchers and IP elite were finding it difficult

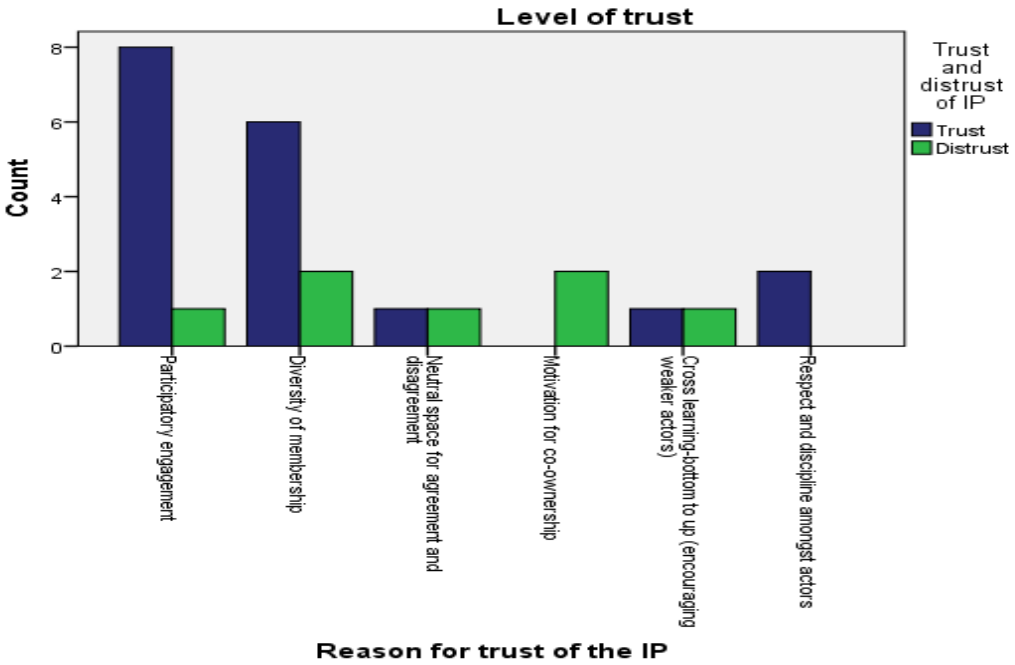
to accept local uneducated farmers as equal players on the platform and still exercised a bottom to down approach submerging the interests of the local farmers and hence the desire to have a neutral broker to all parties together for a common goal", (PELIDO Programme Officer 2018).

The dimension of coordination was important to the study because it was a recipe to fostering collaboration, coherence, communication and cooperation among the various actors in implementing the IP's activities. In relation to adoption, it was key in ensuring that farmers attend events, participate experiments, demonstrations and participatory variety selection, a precursor to adoption (PELIDO Extension Agent, 2018).

4.3.1 Level of Trust

72% of the respondents affirmed that they held high trust of the IP's processes, activities, governance and coordination while 28% did not append to the trust of the platform. Those who upheld their trust in the IP suggested reasons such as participatory engagement (36%) and diversity of membership (32%) was being the main reason why members trusted the IP.

Other reasons included the existence of a neutral space for engagement (agreement and disagreement) accounting to 8%, motivation for co-ownership, cross learning using the bottom to top approach (encouraging weaker actors) (8%) and respect and discipline amongst actors (8%).



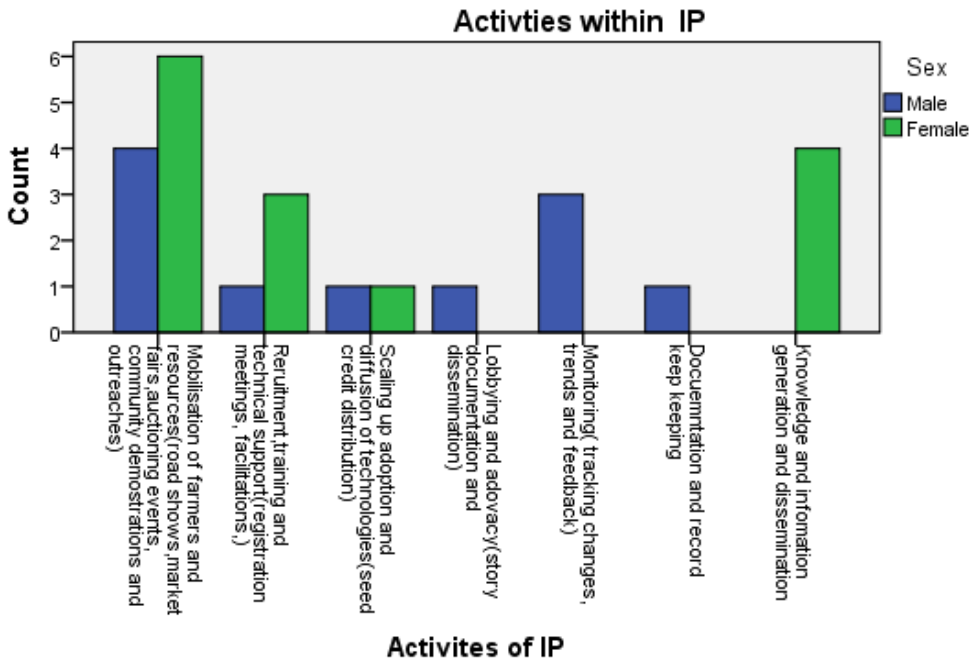
The level of trust depicted IPs conduct as an enabler for dialogue, interactions, relationships and facilitating the proper functioning of the IP. According to a key informant DAO, the adoption and diffusion of technologies is shaped by the trust farmers have in the IPs activities and conduct if its management, membership, products and services

However, among the reasons given for distrust was the Inadequate accountability mechanisms (32%), marginalisation of special interest groups (28%) and selective communication and participation accounting for (28%) of the responses respectively, among the other reasons for distrust was power struggles, conflict and corruption tendencies accounting for 8% and 4% respectively.

3 key informants affirmed that the IP lacked accountability mechanisms and they didn't know who was answerable, the farmers were not convinced enough concerning conduct of the management and leadership of the IP.

4.3.2 Activities within the IP

Identifying the activities within the IP during the study was essential in highlighting the various ways through which IP members participated in the IP and how it contributed to scaling-up the adoption of improved seed varieties.



40% of the respondents affirmed that they had participated in mobilising farmers and resources and they did this through road shows, market fairs, community demonstrations, dialogue meetings and village outreaches. This activity consisted of the promotion the products and services within the IP, establishing farmer cells and groups and setting up village saving and loans associations (VSLA) to harness financial resources for the farmers.

It attracted more participants because of the incentives attributed to it which included financial reimbursements and per diem for the participation. 16% participated in knowledge generation and information dissemination, distributing flyers, posters and leaflets while recruitment and training accounted for 16% respectively.

The other activities included monitoring (12%) which included tracking changes, trends and feedback though meetings and surveys, scaling-up adoption through seed credit distribution (8%), lobbying and advocacy through storytelling and documentation (4%) and documentation and record keeping at 4%.

Mobilisation, knowledge generation and dissemination of information were dominated by females and these were linked to their low levels of education as compared to the males who participated in monitoring, documentation and lobbying and advocacy. The PELIDO programme officer noted,

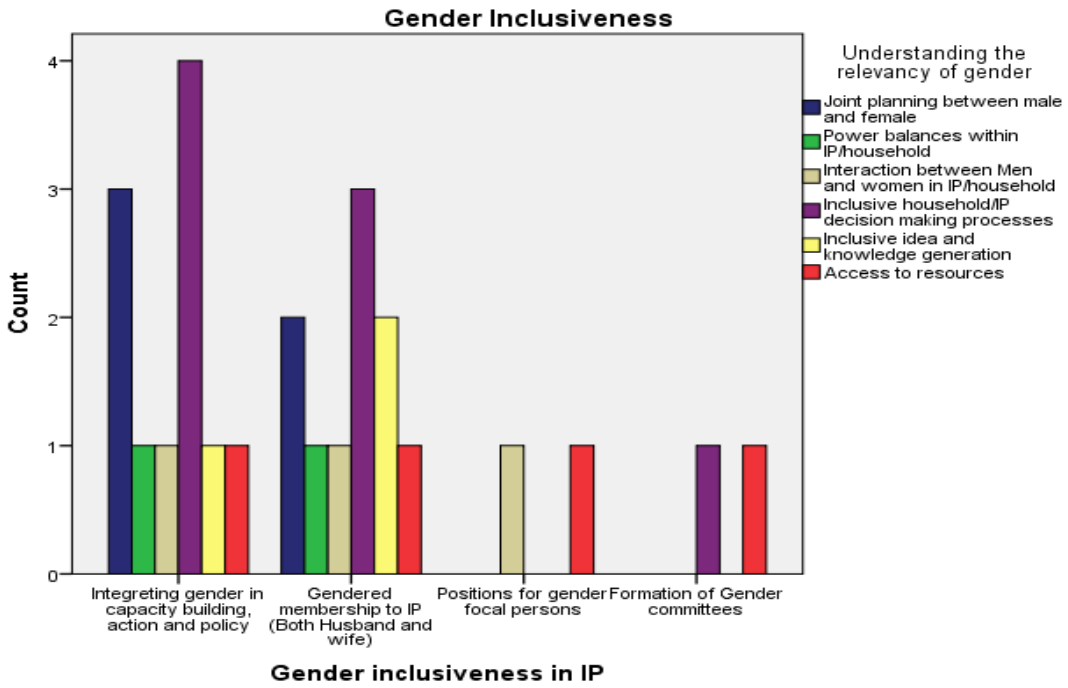
"Some of the IP members especially female farmers help us to disseminate information, distribute information, flyers and posters and above all they participate in seed trade shows and market fairs which makes their role pivotal in delivering peer to peer farmer adoption and information and knowledge however fewer participate in monitoring because of their low levels of Education" (PELIDO Programme Officer 2018)

As noted by the Agribusiness expert ISSD, a key informant,

"IPs operate at various degrees of complexity and synergies drawing their activities from complex social processes, scientific research, managerial and entrepreneurial facilitation, participation in these activities drive interaction between actors, stakeholders and brokers which is important in achieving the IP goals".

4.3.3 Gender Inclusiveness with the IP

Gender was a key element in the study because an IP's conduct on gender influences idea integration, decision making and awareness on gender beyond the IP which has the potential to identify problems and opportunities beyond the IP and use them to intervene and scale out adoption.



44% of the respondents affirmed that the IP integrated gender in capacity building, action planning and policies while 40% affirmed that the IP promoted a gendered membership i.e. promoting the membership of the husband and wife within the IP which was also known as the household approach. The other approaches used by the IP were creating positions for gender focal persons and formation of gender committees which accounted for 8% each respectively.

The study affirmed that gender equality was understood by the IP members as inclusive household decision making accounting to 32% of the respondents, joint planning between a male and female accounting to 20% of the respondents , and access and control of resources at 16%, among other reasons given was power balance between men and women, equal interaction and participation between men and women and inclusive idea generation accounting to 4% each respectively.

According to the agribusiness expert ISSD, the platform had more females than males. However, the females were underrepresented in the administration, committees and participation of key activities which has a potential to demotivate participation. Concurring with an observation the researcher made, a group of women were seen sorting, grading and packing beans while the men did the office work such as record keeping and planning for the activities of the IP.

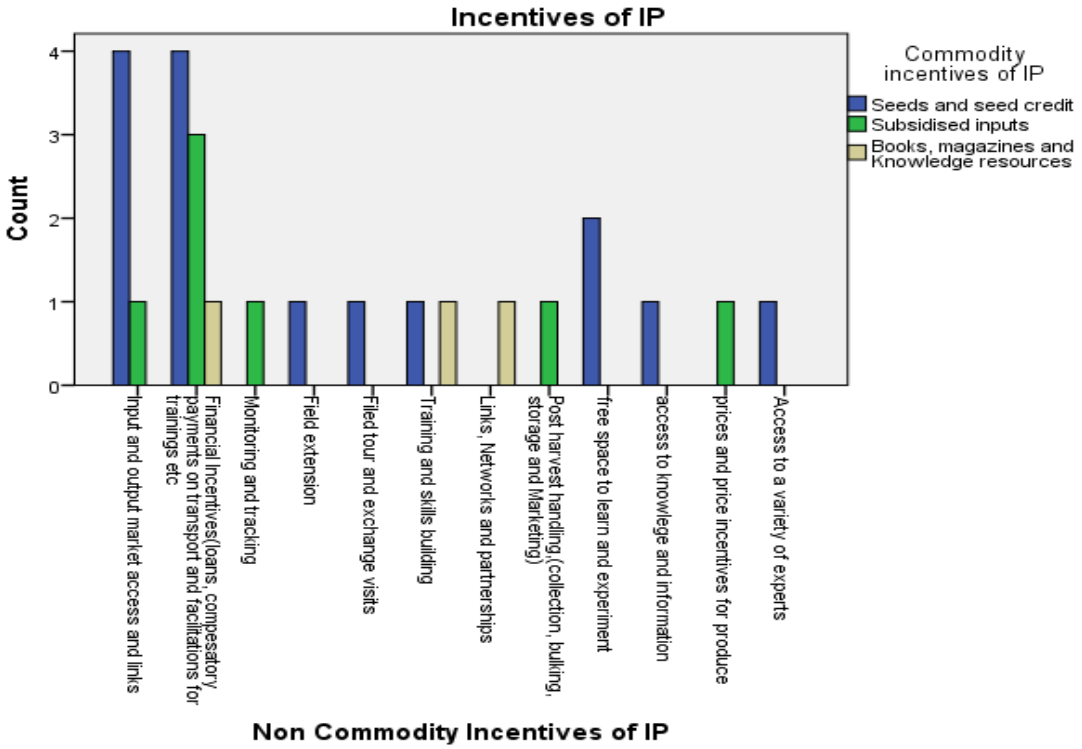
The findings proved that the IPs conduct towards gender was making tremendous progress in gender equality however with less men subscribing to the membership of the IP, it was difficult for the IP to address gender beyond the IP to a households' level. As noted during the FGD, the women asserted that they have little or no control and access to the resources within their households amongst which is land, and thus this limited their decision making on adoption and diffusion of improved seed technologies.

However, with the instituted household approach encouraging wives and husbands to subscribe to the IP created gender awareness and a glimmer of hope to scale adoption as noted by one respondent;

"The IP brings us together as equals, men and women participate equally due the set policies within the IP and the training on gender, my husband is also a member and now we table issues to deal with adoption and discuss them together to the benefit of our household" (Respondent no PSVHL05, 2018).

4.3.4 Incentives within the IP

The IPs conduct on incentives was important because incentives accelerate participation, motivated membership and strengthen the relations between the actors and stakeholder.



60% of the respondents affirmed that improved seed and seed credit was the most attractive incentive the IP had, they attributed this to the Local Seed Business (LSB) approach facilitated by the ISSD program whose focus was on seed multiplication in resource poor communities and production of Quality Declared Seed (QDS).

28% of respondents agreed that the price subsidised inputs kept them attracted to the IP, with farmers buying inputs such as spray pumps, pesticides, farm tools at lower prices than the market price.

Knowledge and information resources including books and magazines accounted for only 12% of the respondents on commodity incentives; this was attributed mainly to the low levels of education of the IP members who were mostly uneducated and relied heavily on information given to them by the facilitators (Focus Group Discussion 2018).

The non-commodity incentives such as financial incentives including loans, reimbursements and per diems on transport to attend trainings and meetings ranked highest among the responses accounting for 32% of the respondents.

The DAO, a key informant noted that some farmers only came to the platform after realising that per diem reimbursement was offered during the training, however they were able to connect with other farmers, acquire new skills and have access to a multitude of links and opportunities within the IP including the access to input and output markets which accounted for 20% of the respondents.

The other non-commodity incentives included access to a variety of technical experts, price incentives for produce, access to knowledge and information, post-harvest handling, (collection, bulking, storage and Marketing), links, networks and partnerships, training and skills building, field tours and exchange visits, field extensions, monitoring and tracking which all accounted for 4% of the respondents respectively and finally free space to learn and experiment accounting for 8% of the respondents.

CHAPTER FIVE

DISCUSSIONS

5.0 Introduction

This chapter relays through discussion findings realised from primary data collected and is further supported by secondary data reviewed.

5.1 Respondents' Background Characteristics

5.1.1.1 Sex and Age

More females than males participated in the study; arguably the IP had more women than men. A key informant the DAO argued that the sex of the members within the IP is important and always strikes a balance between men and women presenting the IP with a scale of opportunities and challenges across the social spectrum such as household dynamics which can accelerate or deter adoption.

Ayanwale *et al.*, (2017), asserts that most females provide labour for the home and are the most economically active persons in agriculture which empowers them with a knowledgeable essential for their membership within the IP which concurred with the findings of the study.

Ayanwale *et al.*, (2017), further argues that having equal membership of men and women in an IP could stimulate quick action, decision making and mobilisation, a key element in recruiting members for the IP.

However, Wanjiku *et al.*, (2016)argues that both men and women being the fenders and caretakers of most households, the burden can drive them to be quick adopters or non-adopters or deserters of improved seed technologies due to the livelihood options they are faced with. However, Wanjiku *et al.*, (2016)stresses that women are at a disadvantage because their most immediate constraint was always the inability to make decisions within the household and access and control assets such as land(Wanjiku *et al.*, 2016).

Wanjiku *et al.*, 2016, agrees that household dynamics influence adoption; with men being the primary decision makers with control and dominancy over ownership of assets like land which is a key production resource.

Pyburn, (2014), argues that expectations, limitations and possibilities are placed on people by other people based on their sex and age, the sex and age within the IP determines how well integrated the IP is with younger people being a recipe to new ideas and synergies needed to generate knowledge, research, and disseminate information and knowledge(Ayanwale *et al.*, 2017). Ayanwale *et al.*, 2017 further argues that younger members of an IP can be a source of new insights and act as a conduit to defining new challenges and identify emerging gaps for long term sustainability of innovations.

Age group 16-26 and 27-37 dominated the membership of the IP. According to an ISSD expatriate, a key informant, having young, old, male and female members had created an opportunity for the IP to create organic relations, the youth articulated their needs and interests more concisely and were more capable to learn and adopt new practices more than the older guard.

Ayanwale *et al.*, (2017) supports notion by asserting that age is directly linked to trends and thus older people are unlikely to change with times and are incapable of learning or bringing new skills and ideas which affirms the advantage the IP as depicted in the findings of the study.

This was confirmed by the PELIDO programme officer who intimated that the youth were quick to adopt improved seeds and the IP often used them in events such as seed market fairs, village outreaches where seeds and information are disseminated. However, Ayanwale *et al.*, (2017), notes that young people are inferior and have no access to productive resources and decision making.

5.1.2 Education, Professions and stakeholder representation of IP

The findings affirmed that the levels of education were low within the IP and there was a heavy reliance of educated and knowledgeable members of the IP who were few.

According to the DAO, a key informant noted that education was important to the membership of the IP because it supplied knowledge and information to the IP, eased communication between members and was essential in facilitating social change across several domains.

The DAO noted*, "The IP is composed of heterogeneous actors engaging one another under formal or informal policies, rules or regulations which make education vital in facilitating the transfer of knowledge and information leading to a clear understanding of a choice of strategy such as adoption"*.

According to Spielman and Birner, (2008), education remains a key domain for any IP because it facilitates generation of knowledge and intensifies technological readiness and transfer. Furthermore, education enables members to package information, products, services and ideas and strengthens their abilities to participate and engage with fellow members in disseminating and using them(Spielman and Birner, 2008).

The programme officer of PELIDO cited that through education, ways in which to conduct research were suggested and the capabilities to offer technical capacity within the IP were determined directly influencing the performance of the IP.

However, Spielman and Birner, (2008) further argue that education is an enabler, suggesting that before education, indigenous knowledge already existed and the success of the IP would not only be determined by the level of education but a set of interactions and relationships between the actors and stakeholders. This resonated with the findings of the study where 36% of the respondent had no education but were active participants and beneficiaries of the IP.

Through the FGDs, it was further noted that the diversity in profession, sectors and stakeholders within the IP created a pathway to a pool of resources and assets to the IP. It also created a link to bring in all forms opportunities such as financing, marketing, partnership through which actors and stakeholders of different backgrounds engaged, articulated insights and benefited based upon the opportunities and challenges within their professions and fields. (Dror*et al.*, 2015).

As noted by the DAO a key informant, this form of diversity creates a space for appreciation of the roles played by each professional and the awareness it creates for understanding mutual dependency in achieving competitiveness and success within and out of the IP.

However, Nederlof and Pyburn, (2012) argue that despite this diversity, the possibility of being side lined for the least educated, the vulnerable and persons with professions demeaned in society is eminent. This was highlighted during the focus group discussions where respondents expressed their concern on the exclusions and selective participation done by leadership of the IP.

One respondent noted *"I am rarely selected for activities such Participatory Variety Selections (PSV) and trainings simply because there is a higher per diem paid to participants and participation is selective based on farmers' familiarity with the IP's leadership"* (Respondent no PSVHL12, 2018).

It was clear that some form of exclusion existed with the IP as noted by the Input dealer-pearl seeds, a key informant, noted; *"events such seed market fairs and PVS are usually meant for exemplary, knowledgeable and active members as determined by the IP management",* Input Dealer-Pear Seeds Limited.

However, Lydia Kimenye and Margaret McEwan, (2014), argue that there will always be some form of exclusion in IPs due status and power differences but the vital role remains the brokering of knowledge, facilitating information flow, diffusing improved technologies, research and development.

According to the agribusiness expert for ISSD, Sector wise and stakeholder diversity was key to the IP because promoted and guided the IP in collaborative decision-making, planning and implementation of development objectives (Dror, Cadilhon and Schut, 2015).

An agribusiness expert for ISSD, a key informant, noted that different sectors within the IP foster collective action subdue conflicting interests and connect the IP to national and international platforms. The DAO further confirmed that every sector has a pool of resources and assets they invest into the IP such as knowledge and technical expertise. The DAO gave an example on how the IP thrives on the governments community communication system to collect data and disseminate knowledge and information to farmers in rural communities(UBOs and Lwengo, 2011).

Pyburn(2014) argues that diversity creates a pathway to opportunities in mobilizing people and resources and guiding members through complex processes of multi-

agent interaction to foster change which influences their practices, behaviours to catalyse technological adoption and diffusion.

However, Makini *et al.*, (2013) argues that IP's do not have control mechanisms to control the balance of the actors and stakeholders since participation is voluntary which stretches the IPs capacity to possess specialised experts vital to the IPs membership and composition.

The diversity of the membership of the IP also creates links to several processes, networks, interactions and relationships aimed at improving the small-scale farmer's adoption such as *"linking farmers to markets, finances, inputs and building multi-stakeholder coalitions"* (KIT *et al.,* 2005, KIT and IIRR 2007, KIT and IIRR 2010 cited in Nederlof and Pyburn, 2012.p.17).
Furthermore, the diversity of members within the IP accelerates the interface of knowledge and, *"propels the importance of establishing networks and partnerships to strengthen the innovation platform"* (Rajalahti *et al.,* 2008).

However as noted by the DAO, although the platform was diverse, it was severely hindered by absenteeism, poor attendance and non-adherence to schedules and meetings for both the farmers and other actors and stakeholders, this was attributed lack of financial incentives (transport reimbursements), remote location of the IP and pure disrespect of the IP by more powerful stakeholders and actors.

Nederlof, Wongtschowski and Van Der Lee, (2011.p.40.) noted that, "financial incentives may, in the short term, lead to individual interest but it does not necessarily lead to a stronger interest from the organisation to which the individual belongs. Such interest at the organisational level is important in the long run, as individuals come and go".
Diversity within the membership of the IP determines the knowledge base, knowledge generation, level of integration and linkages amongst the IP memberswhich is a key accelerator of adoption and diffusion of improved seed technologies (Nederlof and Pyburn, 2012).

5.1.3 Asset Ownership

Assets are a major pre-condition for sustainable agricultural production and an upward mobility beyond survival towards economic empowerment. Assets were key to the study because they could be used to examine intra-household dynamics associated with power, decision making processes, and control of resources(Ayanwale *et al.*, 2017).

Furthermore, assets such land, acted as a thresholds for entry and membership into the IP for some members while assets like motorcycles for example facilitated movement of inputs, outputs and delivery of extension services(Ayanwale *et al.*, 2017).

More men within the IP owned land as compared to the women, even though the women constituted to the majority within the IP, most of the women simply rented land which was a deterrence to their adoption(Wanjiku *et al.*, 2016).

Furthermore, the agribusiness expert ISSD asserted that the women who owned land were either single women, widowed or divorced and were seeking independent ways in which to harness a livelihood however those who lived as married couples with their husbands had difficulty in accessing and using the land meant for the household since the man had absolute power over the decision making processes and often preferred growing cash crops such as coffee rather than beans.

The programme officer PELIDO also asserted that assets were important for the daily operations and implementations of the members' activities and programmes of the IP. To this extent the IP had lobbied and secured a grant which was used to purchase land on which demonstrations, PVS, experimentations and a building was constructed to house the storage facility, training rooms and offices for the IP however they were not fully utilised due the small membership of the IP.

Furthermore, IP members such as village agents who were directly involved in diffusion of improved bean seed varieties often used their land and premises as demonstration sites and their homes as collecting, bulking and storage centres for produce and meeting places.

However, Ayantunde *et al.*, (2013), argues that assets are only an enabler and don't determine membership to the IP, affirming further that adoption is a conscious decision determined by the amount of knowledge and access the individual has of the targeted technology.

5.1.4 Entry Points of the IP

Makini *et al.*, 2013, defines an entry point as an interest and common goal of the IP, it sets the agenda for mobilising the IP, narrowing down the IPs agenda to critical areas of interests.

48% of the respondents affirmed that the IP was initiated to increase the adoption and diffusion of improved been seed varieties, this was a key selling point to mobilise and recruit members into the IP.

According to agribusiness expert ISSD, the main entry points of the IP were to increase bean production and incomes for resource poor farmers. This depicted a misunderstanding of the IPs main entry points which affirmed that the implementation of the IP was still unknown to the members.

Taking note of Nederlof and Pyburn (2012.p.7), most IPs membership is acquired due the focus on improving production, incomes and adoption of improved technologies for their members, which was affirmed during the study as 8% of the respondents subscribed to agreeing that the IP was, *"initiated to increase the incomes of resource poor farmers"*.

Citing Nederlof and Pyburn (2012) the researchers note that, an IP will have to go through a trajectory of discussions and turbulence before it discovers its proper functioning and entry point's by overcoming contrasting views and interests.

IP's use their entry points to congregate farmers and support them with inputs, seed credit and technical skills to improve their practices and increase their production and incomes respectively (ISSD, 2015).

Pyburn (2014), argues that entry points of the IP help to align the IPs activities to the goals and objectives of the IP and its members. As such during the FGD the respondents intimated that they were attracted and motivated to the IP because of improving the famers' income and providing them with high quality price subsidised

inputs, seed credit and agronomical technical support which is directly linked to adoption of improved seeds, technologies and practices.

According to the programme officer PELIDO, the IP depended on its entry points to seek partnerships and grants from development partners in similar areas of concern which propelled the IP to amass its mobilisation capacity, increase coverage and invest in research and extension services, directly supporting farmers in production.

5.1.5 Systems of the IP

Potocki and Brocato, (1995) urge that, a system, is defined as an integrated assembly of interacting elements or components designed to carry out cooperatively a predetermined function. The IP was development and research oriented focusing on adaptive research and seed multiplication to improve the lives of resource poor farmers.

However integrating the different actors and stakeholders required a set of systems to plan, monitor, execute activities and seek feedback for improvement(Seed and Development, 2015).

The IPs structure was composed of systems like mobilization and recruitment, directly targeting the up scaling of adoption and diffusion, where members of the IP were positioned as recruitment agents for new members within their communities(Willy *et al.*, 2017). The responsibility of educating fellow farmers on the benefits of the IP and thereafter recruiting them is placed upon the members of the IP as noted during the FGD.

Kilelu, Klerkx and Leeuwis, (2013) , argue that key interventions within an IP should focus on systems as they determine the membership and performance of the IP . Kilelu, Klerkx and Leeuwis, (2013), further argue that practices in a system that are discriminative can cause unchecked power and are risky for the IPs functioning and monitoring and thus the systems must be inclusive and self-sustaining.

IP processes can be complex and demanding which is why systems are important in establishing effective monitoring, evaluation and feedback mechanisms, these can stimulate the membership and coverage of the IP, facilitate recruitment of new members into the IP which is an enabler in increasing farmer adoption and diffusion of improved seed technologies(Nederlof, Wongtschowski and Van Der Lee, 2011).

5.2 Conduct of the IP

5.2.1 Communication Channels within the IP

The quality of organisation, coordination, facilitation and delivery in IPs is determined by the conduct of speed, frequency and effectiveness of communication (Dor*et al.,* 2015)**.**

According to the programme officer for PELIDO, communication was key in shaping relations, interactions and alliances to create change, facilitating new paradigms of thought, bringing knowledge and practice to the IP. 52% of the respondents affirmed to had received their communication through participatory engagements and dialogues such as meetings, field exchange visits, tours, networking events, road show and market fairs.

According Willy *et al.*, (2017), events such networking and dialogues are of interest to IP members because they stimulate co-ownership and participation, they allow the members to express themselves confidently in and out of the IP and have the potential to facilitate peer to peer knowledge exchange, a key element in fostering adoption practices.

Victor *et al.*, (2013.p.1), argues that *"communication is the electricity that powers the platform and the conduct of the Innovation Platforms towards communication can deter or accelerate the steady flow of knowledge and information to and from different parts of a platform. Communication regulates power flows, avoids overloads and blackouts on the innovation platform, and connects to other parts of the platform"*.

According to the FGD, most of the communication was through participatory learning approaches and outreach and this was done through village agents whose role was to congregate and deliver vital information to farmer group and individuals, they also acted as conduits through which feedback would bounce back to the IP.

Further noted by the programme officer of PELIDO, a key informant, is that village agents who were the IP champions were chosen by other IP members to support the IP in disseminating all manner of information and knowledge on improved bean seed varieties which increased the IPs coverage, recruitment and adoption levels by small scale farmers who got information and knowledge on improved been seed varieties in a peer to peer manner. In concurrence, Pyburn (2014) noted that communication is a

key element within the IP because its acts a precursor to participation and cross learning which creates a pathway to integration, information and knowledge sharing**.**

However, Kimenye and McEwan, (2014), argue that communication can be distorted and though it may facilitation flow of information, meetings, shared learning, there is a high risk if communication is poorly administered.

One respondent noted: *"We don't get the right communication because the managers are not organised, different people communicate to us with the same messages but in different ways using different methods, so we always get confused, also not all of us have mobile phones which makes communication selective*" (Respondent no PSVHL12, 2018).

A key respondent the DAO, agreed that communication channels were poor due to inconsistencies in communication, remoteness and farmers' limited access to communication devices such as mobile phones. The village agents who were the go-between the IP management and the members often distorted communication messages and the IP management too had no resources to exhaust the options available to communicate. Nederlof, Wongtschowski and Van Der Lee, (2011), argue that communication gaps cause distrust, break down relationships and limit interaction and participation.

5.2.2 Relevancy of Communication in Scaling-up Adoption

Nederlof*et al.*, (2011), reflects on communication as a strategy to disseminate and diffuse knowledge and information. 36% of respondents affirmed that communication facilitated their learning, access to information, knowledge and connectivity.

Various scholars, have taken communication to be a tool of varying degrees in facilitation, brokering, multi-stakeholder processes, trust building, conflict resolution team building and mediation within the IP(Nederlof, Wongtschowski and Van Der Lee, 2011).

20% agreed that communication within the IP had eased their access to links, partnerships and created coalitions among the farmers. However, through the FGDs, it was expressed that the remoteness and distance for some actors was a hinderance and stalled coomunication and this was compounded by the lack of access to

communication tools such as radios and mobile phones by the farmers which is why the IP introduced the household approach through which trainings were being decentralised and conducted within a community or household.

5.2.3 Knowledge Access Channels

According to Annet Abenakyo Mulema, (2012), knowledge translates it into operational decisions for small scale farmers influencing their zeal to generate outputs. Mulema, (2012), further argues that knowledge access empowers farmers to make and implement decisions that impact their livelihoods and how an IP conducts itself along this element determines its success in developing and delivering knowledge.

According to the agribusiness expert ISSD, knowledge access was a key element within the IP because it facilitated information sharing and access, it reduced contestations, misunderstandings and conflicts within the IP and above all it quickened adoption of seed varieties and agronomical practices.

However, during the FGD, it was noted that knowledge access was hindered by the poor communication strategies, linear approach of delivery (top-down approach) and poor quality of knowledge which was often misunderstood, (Focus Group Discussion 2018).

5.2.4 Coordination of the IP

Coordination determines the scale of connectivity, degree of participation, quality of interaction and relationships within the IP and further facilitates the linkages with various institutions, stakeholders and actors at all scales towards achieving the same goal(Pyburn, 2014).

64% of the respondents asserted that coordination was done by a broker and affirmed that the broker acted as an interventionist facilitating multi-level processes of change(Nederlof and Pyburn, 2012).

The programme officer PELIDO confirmed that the line managers within PELIDO and support staff from ISSD oversaw all manner of coordination including horizontal coordination (amongst IP members) and vertical coordination (external or out of the IP), between farmers and output markets and partnership.

During the FGD, the respondents asserted that the coordination was ineffective with gaps in communication and information distortion which affected the IP processes and participation. Furthermore, coordination was done by unskilled and unknowledgeable cadres of the IP pausing a risk of demotivating membership and participation to the IP.

They further agreed that coordination builds synergy, addresses tension and gaps and creates an opportunity for farmers to fast track access to products and services, adequately equipping farmers with an opportunity to adapt to changes in their strategies, practices and patterns such as adoption of improved seed varieties.

In concurrence, Nederlof, Kamau-mbuthia and Hawkins(2011), went ahead to define a broker as key coordinator and *" an actor that has the central role of bringing the right people together, at the right time, linking different organisations when the need arises, analysing the progress and taking actions accordingly"*.

According to the DAO, a key informant; the broker coordinated interactions, nurtured relationships, facilitated meetings and addressed power struggles, governance and interests within the IP in a neutral manner. During the FGD the respondents made known that this role was done by the staff of PELIDO and ISSD who included the line managers.

Makini *et al.*, (2013), argues that a coordinator is catalyst who for operational purposes initiatives vertical and horizontal connections, within the IP and brings in connections to resources, stakeholders, links and networks within the IP.

Makini *et al.*, (2013), further argues that such resources are key to improving access to inputs, expert advices and research which all foster change within the IP.

Discussions within the focus group discussions, it was noted that, the broker was supported by IP champions who were the village agents and chairpersons of farmer groups. The discussants further expressed that the criteria of selection of these agents was based on exemplariness within the IP and their role was supported by committees formed within the IP, specifically tasked to facilitate mobilisation, communication and participation.

5.2.5 Activities within the IP

During the study, through the FGD, it was noted that the most revered activities within the IP were mobilisation of farmers, resources and recruitment; this was attributed preference of activities that required lower levels of education. The activities of an IP operationalise its conduct on participation and determine who does what when and where(van Rooyen *et al.*, 2013).

According to the programme officer PELIDO, the IP composition was made of most women who accessed and used the products and services of the IP by directly participating in experimentations, participatory cross learning and cross visits, exchange visits and outreach extension demonstrations, seminars and workshops.

These women as noted during the FGDs played a key role in recruitment since they were more willing to share information, knowledge and products such as seeds and inputs. One woman noted *"It is easier for me to recruit and convince my friends to join the IP because we are already in the same village savings groups*".

Furthermore, a clear majority asserted that they had participated in capacity building which was delivered in form of trainings, extension and consultations. The DAO confirmed that this activity is of essence as it offers farmers insights into how to apply new agricultural farming technologies. It further accelerated their adoption rates as they are empowered to make decisions on adoption and diffusion of new technologies (Rogers, 2003).

However, fewer respondents were involved in documentation, monitoring and tracking progress which accounted for 4%. This role was assigned to the IP brokers who in this case were the staff at PELIDO(Wanjiku *et al.*, 2016)

5.3 Gender and Incentives within the IP

According to Wanjiku *et al.*, 2016, both women and men have different starting points within the IP due to the gendered cultural attributes that determine social roles and participation in within the IP.

Wanjiku *et al.*, 2016, further argues that equitable social and economic empowerment of different groups if properly constituted and guided has the capacity to achieve tremendous results within an IP.

Such gaps were identified during the study where more women participated in the IPs mobilisation and recruitment drive for the IP which potentially scaled-up the flow of knowledge, products and services of the IP.

However, these women were limited in accessing resources and decision making within the IP and at household level. Wanjiku *et al.*, 2016, attributes this to inadequate of knowledge on gender, resources, technical expertise, attitude and political will to mainstream gender within the IP as this was exemplified in the study by the numerous gender actions which lacked a follow up mechanism.

Annet Abenakyo Mulema, (2012) argues that incentives contribute to the realisation IP goals stressing that farmers are mainly motivated to IPs by economic incentives, although in the end they gained developmental benefits such as knowledge and skills. The extension officer PELIDO, a key informant noted that farmers were attracted to the IP because of incentives such as see credit and reimbursements on training and transport, in the short run it scaled-up their participation and adoption practices but was not sustainable in the long-run.

Nederlof, Wongtschowski and Van Der Lee, (2011.p.40.), argue that "*incentives (sitting allowances and direct payments for participation) may be good but need to be discouraged as Individual financial incentives may, in the short term, lead to individual interest without necessarily leading to a stronger interest from the IP to which the individual belongs".*

CHAPTER SIX

CONCLUSIONAND RECOMMEDATIONS

6.0 Introduction

This chapter summarises the study and supports it with recommendations to improve the structure and conduct of PELIDO towards scaling up adoption among small-scale farmers

6.1 Conclusion

6.2 Structure

The study affirmed a growing interest of youth aged (16-26) small-scale farmers subscribing to the membership of IPs keen to amassing and replicating the adoption of improved seed varieties across a scale of age groups. Furthermore, it was affirmed that more women participated in the IP more than men, however most of the women and youth still lacked access to basic production resources such as land and were not key decision makers within their households which was a key constraint to their adoption practices.

Furthermore, diversity was a key component in the structure of the IP especially pooling resources, generating knowledge, disseminating information and scaling adoption practices however more technically equipped persons, youth and experienced persons were needed as a recipe to the platforms resource base.

However, the farmers dominated the membership of the IP and the participation from other stakeholders such as researchers was minimal characterised by high levels of absenteeism and those who attended were there by work obligation or with hidden agendas such as personal research. Some of the stakeholders were facilitators and coordinators within the IP and their absenteeism meant the stalling of the activities within the IP.

The IPs were a new concept that is being pioneered in most communities as a transforming process for the adoption practise however the understanding structure and conduct of the IPs was distant from the goals and objectives with several members asserting different understandings of the IP.

PELIDO’s entry points were to increase the production of beans and improvement of farmers’ incomes, however most frequent response concerning relating to the IPs entry point was adoption and diffusing of improved seed technologies. The IP acted as a conduit to access to inputs for adoption, networks, resources such as finance link and markets through its diverse structure and activities.

However, the cohesion was poor especially among the members who had more power, more resources and more education who did not view small scale farmers as equal players within the IP which hindered participation, fostered a linear approach within the IP, slowed collective decision making and articulating the different demands and needs of the diverse members based on their individual characteristics.

Though the systems were available and essential in running and monitoring IP they were discriminatory based on education, exemplariness and favour upon some members. For example; the most vulnerable, marginalised like women participated on mobilisation and recruitment which was essential for increasing the adoption rate and membership of the IP but created trust issues since nothing was clear to the member concerning the monitoring and evaluation, finance and administration, coordination and communication which all were at the sole discretion of the IP broker.

Coordination, communication, participation was notably instituted within the IP but were not monitored hence there were inconsistences, distortion and incoherence which demotivated farmers and killed the trust amongst the members.

6.3 Conduct of the IP

Communication supported the IP selling its products and services to its members, it determined the level of participation facilitated the flow of knowledge and information on inputs among which improved seed technologies.

However, it was ineffective and inconsistent, the channels used were not readily accessible by all the farmers some channels were unrealistic such as the radio because not all farmers owned a radio. The IP further did not have enough resources to use different avenue to communicate and only relied on village agents who did the IPs work on voluntary basis.

Although 72% of the respondents trusted the IP, which flourished the mandate of the IP and increase trust of the inputs and products of the IP; 28% did not agree and asserted reasons such as lack of accountability which relates well with the lack of involved in higher systems such as monitoring, finance and administration, marginalisation of special interest groups and selective communication and participation which was a demotivating factor for the farmers.

Although the IP had amended its bylaws to include policies on gender and had instituted gender inclusive actions there weren't any follow up mechanisms. Most respondent affirmed that they had been attracted to the IP due to incentives such as seed credit which kick started their adoption processes. However, incentives such as financial reimbursements or per diem attracted opportunists rather than determined adopters willing to scale improved seed varieties beyond the confines of the IP.

The IP through communication channels reinforcement human and social capacity through a better exchange of information and knowledge, a better interaction between different stakeholders and a better access to different support services, coordination of activities among IP members and better exchange of ideas

6.4 Recommendations

Decentralise the IP structure by creating 10 zonal and household satellite centres and build their capacity for recruitment, training, demonstrations, experimentation, cross learning and exchange visits by the year 2020. This will increase the membership and diversity within the IP, ease communication and coordination, disseminating best practices and improved seed varieties in an easy to reach manner, reduce the IP costs on reimbursements and transport for the participants, where the IP activities, processes and programmes can be replicated in collaboration with community leaders and IP agents.

Develop and implement participatory community based equitable resource distribution community initiatives for IP members and support them with training in gender sensitive business management and planning by the year 2020. This initiative will improve the access and control of resources in an equitable manner, foster entrepreneurship, grow the assets and financial base of the of the

members, create awareness and sensitization on gender equality and foster inclusive decision making at community and household level.

Develop and implement a monthly intermediary multi-actor interactive monitoring and feedback cycle for IP members to assess the internal and external environments of the IP focusing on trends in diversity, gender, communication and coordination to improve performance of the IP by 2019. This recommendation will check the quality and effectiveness of communication, coordination and participation of the IP and engage the IP members in monitoring and determine their course of direction, hence increasing their trust and co-ownership of the IP.

ANNEXES

7.0 ANNEX 1: STUDY QUESTIONAIRES AND OBSERVATION CHECKLIST

- **Observation Checklist and guide that was used in the study**

Dimension	Details	Observation	Analysis	Comment
Structure	**Existence of platform**			
	Location (offices, buildings, assets)			
	No of Staff at PELIDO			
	Number of members in IP			
	Variation in Sex of the IP participants			
	Sector representation			
	Participatory systems and variation in participation			
	Stakeholders and actors			
Conduct				
	Communication channels			
	Knowledge and information sources and channels			
	Activities within the IP			
	Seed Varieties for adoption/agronomical practices			
	Gender actions			
	IP incentives			

Questionnaire for the Focus Group Discussion

Focus group discussion (2 focus group discussion-Minimum 10 members)

Target persons for the Focus Group Discussion Committee members: Director, Secretary, Business development officer, key actors: Researcher, Extension officer, Seed multiplier, Processor, Input supplier, microfinance officer and small-scale farmers Gender 6 Males 6 Females Size of the group: 12Study area: Aspects regarding the IPs: structure and conduct in influencing the adoption of improved seed technologies.

No	Questions for the Focus Group Discussion
1	**Structure**
	Membership characteristics, diversity, systems and entry points 1. Which is the most represent sex within the IP and why? 2. Which age group is most represented within the IP and why? 3. What is the importance of education to the IP 4. What Professions and stakeholders are most represented and why? 5. What sectors are most and least represented in the IP and why? 6. What is the benefit of this diversity to the IP and precisely the adoption of improved seed technologies? 7. Why was this platform started? 8. What systems are employed in the operations of the IP?
2.	**Conduct**
	Communication, coordination and trust 9. In what ways is communication conducted and of what usefulness is it to a small-scale farmer? 10. How is coordination administered within the IP? 11. How relevant is this coordination to a small-scale farmer within the IP? 12. What are the knowledge and information sources within the IP? 13. What are your reasons for trusting or distrusting the IP? 14. What activities are available for member participation within the IP and how relevant is it to a small-scale farmer? 15. What varieties are available for adoption within the IP 16. What gender actions are exercised within the IP and why? 17. What incentives does one gain through being a member to the IP?

Interview schedule for individual members of the IP

Dear Respondent, this interview is conducted based on the topical discussion "***The role of agricultural innovative platforms as a best practice to scale-up the adoption and use of improved seed technologies amongst small-scale farmers***" The aim of study is to investigate the structure, conduct and performance of Innovation platforms towards improving farmer adoption of improved seed varieties. The purpose of the questionnaire is purely academic, and Your responses will be treated confidentially, and will not be used in any other way except that which is mentioned herein. You will participate at you own voluntary will and your contacts will only be given at your will however your participation is highly encouraged as this will result into recommendations necessary to improve structure and conduct of PELIDO in integrating and delivering products and services to small scale farmers in your area.

Name if interviewer: _____ Date of interview: _____

Identification of the respondent: (PSVHL01-PSVHL25)

Name of interviewee: _____

Village: _____ Cell: _____

District: _____ Sector: _____

Name of the innovation platform: _____

Structure of platform

Membership Characteristics

1. State your gender

a) Male ☐ b) Female☐ c) Other ☐(specify)_____

2. State your age group

a) 16-26 ☐ b)27-37☐ c) 38-48☐ d) 49-59☐ e) 60+ ☐

3. State your level of education
   a) Primary☐ b)secondary☐ c) Tertiary☐ d) University☐ e) Non ☐

Diversity of actors

4. What is your profession?
   a) Farmer ☐b) Trader☐ c) Researcher☐ d) extension officer e) Input dealer f) Other please specify_____
5. Which stakeholders are represented on this platform?
   a) Private sector and business sector☐ b) Government (LCs, sub-country chiefs and District agricultural officer☐ c) NGO sector ☐ d) Financial sector ☐ e) Crop and livestock ☐ f) Others please specify _____

Assets of IP

7. Which assets do you possess

1. Land 2. Rented land 3. Land and building 4. Land, a building and motorcycle 5. others please specify

Entry points

6. Why was this platform initiated?

Systems of the IP

7. In which IP systems have you been involved and what is your role?

CONDUCT OF THE PLATFORM (IP)

Communication within the IP

8. How is communication managed within the platform?
9. In what ways is communication passed on to small scale farmers within the IP (tools for communication used within the IP?
10. In what ways is communication useful to a small-scale farmer?

Positive Impact	**Negative Impact**

11. In what ways do you access knowledge and information within the IP?

Coordination within the IP

12. How are the activities and processes of IP coordinated?
13. Do you trust this IP? (Yes☐ or No☐)
14. What are your reasons for your trust or distrust of the IP's conduct?

Reasons for trust of IP conduct	**Reasons for distrust of IP conduct**

15. Describe the activities in which you are involved on the platform?
16. What seed technologies have you accessed and adopted within the IP?
17. What reasons support your adoption of these Varieties?
18. In what ways is gender achieved within the IP?
19. How relevant is gender to the IP?
20. What incentives motivate your interest in PELIDO?

QUESTIONNAIRE FOR KEY INFORMANT INTERVIEWS

Key Informant Interview for other IP actors and stakeholders

Dear Respondent, this interview is conducted based on the topical discussion "***The role of agricultural innovative platforms as a best practice to scale-up the adoption and use of improved seed technologies amongst small-scale farmers***" The aim of study is to investigate the structure, conduct and performance of Innovation platforms towards improving farmer adoption of improved seed varieties. The purpose of the questionnaire is purely academic, and Your responses will be treated confidentially, and will not be used in any other way except that which is mentioned herein. You will participate at you own voluntary will and your contacts will only be given at your will however your participation is highly encouraged as this will result into recommendations necessary to improve structure and conduct of PELIDO in integrating and delivering products and services to small scale farmers in your area.

Name if interviewer: _____ Date of interview: _____

Identification of the respondent: (PKVHL01-PKVHL05)

Name of interviewee: _____

Village: _____ Cell: _____

District: _____ Sector: _____

Name of the innovation platform: _____

Background Characteristics

1. State your gender

a) Male ☐ b) Female☐ c) Other ☐(specify)_____

2. State your age State your level of education

a) Primary☐ b)secondary☐ c) Tertiary☐ d) University☐ e) Non ☐

3. Actor/stakeholder sector or category----------
4. Actor profession _____
5. What assets do you possess?
6. What are the entry points for PELIDO and how relevant is this to a small-scale farmer?
7. What systems are used by the IP to achieve its objectives and how relevant is to for adoption?
8. How is communication achieved in PELIDO and how beneficial is it to the IP?
9. How is knowledge accessed and disseminated within PELIDO?
10. How are the activities and programmes of PELIDO coordinated?
11. What are your reasons for trusting or distrusting the IP?
12. What seed technologies are accessed within PELIDO and for what reasons are they preferred?
13. How is gender achieved within PELIDO?
14. How important is gender to PELIDO?
15. What incentives does the IP offer to its members and of what benefit is it?

7.1 ANNEX 3: KEY INFORMANT INTREVIEW RESPONSE GUIDE

Key	**1-DAO, 2-ISSD Agribusiness Expert,3-Programme officer PELIDO, 4-Extension officer PELIDO,5-Input dealer Pearl Seeds Ltd**		
Structure of IP Sex and age group	**Code**	**Responses**	- **Analysis Pool**
	KSS1	The age group of the respondents is good for the diversity and sake of feedback, upscaling of IPs activities across all levels. The sex highlights the difference between needs and interests of both male and female which in key in articulating demand within the IP background of the IP	- Seekfeedback regarding up scaling of IPs activities - Key in articulating demanddifference scale in society, their challenges and opportunities differ, their understanding is also different - Knowledge base of the IP and essential for dissemination and diffusion across of a scale of persons in a community - The relation, interaction and ideas between male and female which is necessary for the success of the IP and gender equality - Increases understanding across different groups and improves on gendered relation between male and female, young and old - Classes of people and helps IP in identifying opportunities for change, economic development and sustainability of IP
	KSS2	Different people hail from difference scale in society, their challenges and opportunities differ, their understanding is also different which is an input in the knowledge base of the IP and essential for dissemination and diffusion across of a scale of persons in a community	
	KSS3	Age reflects diversity in membership which is important in communication a larger spectrum of people in the community. Sex is key in fostering the relation, interaction and ideas between male and female which is necessary for the success of the IP and gender equality	
	KSS4	Increases understanding across different groups and improves on gendered relation between male and female, young and old	
	KSS5	Highlights the different needs of all classes of people and helps IP in identifying opportunities for change, economic development and sustainability of IP	
Education	KSE1	Determines the technical capacity to deliver IP objectives, human resource for the PELIDO, ability to relate, perceive and community among the different actors and stakeholders	- Determines the technical capacity to deliver IP objectives, human resource for the PELIDO, ability to relate, perceive and community

	KSE2	Vital in knowledge generation, ideation and research and development, Education improves farmer's creativity and knowledge base which is key in adoption and diffusion	- Vital in knowledge generation, ideation and research and development, Education improves farmer's creativity and knowledge base. - Help farmers in decision making, more educated - Gives farmers confidence during participation facilitates interaction across - Determines level of interaction within IP, however has risk of exclusion where farmers who are vulnerable are exposed to exclusion within the IP
	KSE3	Help farmers in decision making, more educated farmers are better informed than those that are not educated	
	KSE4	Gives farmers confidence during participation facilitates interaction across the IP divide. Key in generating and transferring knowledge and information amongst the actors, stakeholders and prospective members of the IP	
	KSE5	Determines level of interaction within IP, however has risk of exclusion where farmers who are vulnerable are exposed to exclusion within the IP	
Profession	KSP1	Brings a variety of resources to the IP including knowledge, information	- Variety of resources to the IP including knowledge, information - IP with links, networks and partnership relevant to farmer needs hence creating opportunities - Increase the knowledge base, interactions and relationship within the IP,key in opening vertical and horizontal networks for the IP - Know ledge generation which is key in undertakin0[g research
	KSP2	Facilitates the IP with links, networks and partnership relevant to farmer needs hence creating opportunities for small scale farmers	
	KSP3	Facilitate decision making processes and diversity in knowledge	
	KSP4	Increase the knowledge base, interactions and relationship within the IP, the profession is key in opening vertical and horizontal networks for the IP	
	KSP5	Know ledge generation which is key in undertaking research and making modifications towards improved seed technologies	
Stakeholder	KSST1	Create opportunities for the IP in the areas of finance, gender and entrepreneurship	- Opportunities for the IP in the areas of finance, gender and entrepreneurship - Diversity in knowledge and links e.g. the IP was using the community communications system to disseminate knowledge and information - Policy and advocacy and links to government and support, winder coverage and access to different
	KSST2	Diversity in knowledge and links e.g. the IP was using the community communications system to disseminate knowledge and information	
	KSST3	Essential for policy and advocacy and links to government and support, e.g. the involvement of the district agricultural officer facilitated the grant on training in inclusive budgeting at local government where farmers were invited to the	

		district to participate in budgeting processing of issues concerning their needs.	communities and organisation with alike causes. - Technical capacity to the IP and grows the IPs ability to disseminate knowledge and information
	KSST4	Wider coverage and access to different communities and organisation with alike causes	
	KSST5	Brings technical capacity to the IP and grows the IPs ability to disseminate knowledge and information	
Entry points	KSE1	Guide and align the activities of the IP towards the goals and objectives, e.g. there are constant review of the of the IPs project proposals in order to prioritise the production and multiplication of bean seed varieties e.g. the main entry point was beans production and seed multiplication which in the long run improves incomes and general food security status	- Guide and align the activities of the IP towards the goals and objectives - Beans production and seed multiplication which in the long run improves incomes and general food security status- However the IPs entry were not clear to the farmers on which one exactly was the key entry point - Facilitating the planning, programming and implementation of IPs goals and vision, the main entry point was facilitating adoption and diffusion among resource poor farmers - Services to farmers was key to the IP entry point, guide the platform on progress and facilitates the recruitment of farmers into the IP - Increasing bean production and extending extension services to farmers was key to the IP entry point, - Siffusion through bean seed multiplication and capacity building and strengthening of local seed businesses - Designing programmes and projects of the IP for grants or loans, the IPs entry points were diffusion, adoption, increase in income and production
	KSE2	Element of focus into the IP facilitating the planning, programming and implementation of IPs goals and vision, the main entry point was facilitating adoption and diffusion among resource poor farmers	
	KSE3	Increasing bean production and extending extension services to farmers was key to the IP entry point, guide the platform on progress and facilitates the recruitment of farmers into the IP	
	KSE4	Entry point guides the mobilisation and recruitment, coverage and extension of the IPs activities but also guides the IP in delivering its products and services in case the IP focused on adoption and diffusion through bean seed multiplication and capacity building and strengthening of local seed businesses	
	KSE5	Key to designing programmes and projects of the IP for grants or loans, the IPs entry points were diffusion, adoption, increase in income and production	

7.2 ANNEX 3: APPENDICES

Appendix 1: Sex

	Frequency	Percent	Valid Percent
Valid	Male	11	44.0
	Female	14	56.0
	Total	25	100.0

Appendix 2: Age Group

		Frequency	Percent	Valid Percent
Valid	16-26	9	36.0	36.0
	27-37	7	28.0	28.0
	38-48	5	20.0	20.0
	49-59	3	12.0	12.0
	60+	1	4.0	4.0
	Total	25	100.0	100.0

Appendix 3: Level of Education

		Frequency	Percent	Valid Percent
Valid	No education	9	36.0	36.0
	Primary	6	24.0	24.0
	Secondary	4	16.0	16.0
	Tertiary	3	12.0	12.0
	University	3	12.0	12.0
	Total	25	100.0	100.0

Appendix 4: Profession

		Frequency	Percent	Valid Percent
Valid	Farmer	18	72.0	72.0
	Researcher	1	4.0	4.0
	Extensionist	2	8.0	8.0
	Banker	1	4.0	4.0
	Trader	1	4.0	4.0
	Input dealer	1	4.0	4.0
	Project Consultant	1	4.0	4.0
	Total	25	100.0	100.0

Appendix 5: Stakeholder Representation

		Frequency	Percent	Valid Percent
Valid	Crop and livestock sector	18	72.0	72.0

	Financial sector	1	4.0	4.0
	Private(Business) sector	2	8.0	8.0
	NGO sector	3	12.0	12.0
	Government	1	4.0	4.0
	Total	25	100.0	100.0

Appendix 6: Assert Ownership

		Frequency	Percent	Valid Percent
Valid	Land	7	28.0	28.0
	Rented Land	8	32.0	32.0
	Land and building	4	16.0	16.0
	Land, building and motorcycle	6	24.0	24.0
	Total	25	100.0	100.0

Appendix 7: Entry Point of IPs

		Frequency	Percent	Valid Percent
Valid	Deliver research and extension	3	12.0	12.0
	Adoption and diffusion of improved seed technologies	12	48.0	48.0
	Improve agronomical practices	2	8.0	8.0
	Increase production of beans	4	16.0	16.0
	Increase income	4	16.0	16.0
	Total	25	100.0	100.0

Appendix 8: Products Accessed

		Frequency	Percent	Valid Percent
Valid	Educational information and knowledge resources (Booklets,Magazines,documentaries)	5	20.0	20.0
	Inputs(Seeds,pestcides,ferterlizers,farm tools, spray pumps)	17	68.0	68.0
	Loans and credit	3	12.0	12.0
	Total	25	100.0	100.0

Appendix 9: Services within the IP

		Frequency	Percent	Valid Percent
Valid	Advisory(Agronomy,financial,technical)	1	4.0	4.0
	Vertical and horizontal brokering	1	4.0	4.0
	Training and capacity building	4	16.0	16.0
	Post harvest handling, collection and storage	3	12.0	12.0

	Research and Extension(crop management,soilmanagement,demostrations)	2	8.0	8.0
	Filed tours and learning trips	1	4.0	4.0
	Knowledge and information dissemination	4	16.0	16.0
	Linking and networking to partnerships	1	4.0	4.0
	Monitoring and tracking	1	4.0	4.0
	Marketing	2	8.0	8.0
	Inputs sourcing and supply	5	20.0	20.0
	Total	25	100.0	100.0

Appendix 10: Access to Products and Services

		Frequency	Percent	Valid Percent
Valid	Brokers(line managers, Village agents	12	48.0	48.0
	Direct training	5	20.0	20.0
	Media (Radio,flyers,posters,books,documentaries)	2	8.0	8.0
	Research and Extension services(field days,exchangevisits,communityoutreach,demostrations)	4	16.0	16.0
	Links,partnerships and networks	2	8.0	8.0
	Total	25	100.0	100.0

Appendix 11: Relevancy of IP services to Farmers

		Frequency	Percent	Valid Percent
Valid	Acess to inputs	6	24.0	24.0
	Acess to knowledge and information	6	24.0	24.0
	Acess to links,netwoks and partnerships	1	4.0	4.0
	Demand articulation	1	4.0	4.0
	Develop and agronomical practices	2	8.0	8.0
	Adoption and diffusion of improved seed varieties	8	32.0	32.0
	Research and extension services	1	4.0	4.0
	Total	25	100.0	100.0

Appendix 12: Systems used by IPs

		Frequency	Percent	Valid Percent
Valid	Feedback and Improvement	10	40.0	40.0
	Finance and administration	1	4.0	4.0
	Mobilisation and recruitment	8	32.0	32.0
	Monitoring and evaluation	3	12.0	12.0

	Coordination and communication	3	12.0	12.0
	Total	25	100.0	100.0

Appendix 13: Communication Channels and Methods

		Frequency	Percent	Valid Percent
Valid	Documentation and media (Radio,Mobiletext,posters,flyers, Videos/documentaries, Photographs&Magazines)	2	8.0	8.0
	Engaments and dialogue(Meetings, field exchange visits and tours,Networking events)	13	52.0	52.0
	Participatory learning and outreach(Village meetings,workshops,seminars, market fairs)	10	40.0	40.0
	Total	25	100.0	100.0

Appendix 14: Relevancy of Communication

		Frequency	Percent	Valid Percent
Valid	Bridged trust between farmers/IP members	2	8.0	8.0
	created links,Networks, alliances,partnerships and coalitions	5	20.0	20.0
	Fostered representation and participation	2	8.0	8.0
	Facilitated generation and flow of knowledge and infomation	9	36.0	36.0
	Demand articulation of needs and interests	6	24.0	24.0
	Fosters quality of interaction	1	4.0	4.0
	Total	25	100.0	100.0

Appendix 15: Coordinators of IP

		Frequency	Percent	Valid Percent
Valid	Committees(budgeting Committees,communicationCommittees,mobilisation Committees)	6	24.0	24.0
	IP Brokers-Line managers PELIDO ,Staff of ISSD	16	64.0	64.0

	IP champions (Village agents, chairpersons of farmer groups and coalition, exemplary members)	3	12.0	12.0
	Total	25	100.0	100.0

Appendix 16: Trust and Distrust of the IP

		Frequency	Percent	Valid Percent
Valid	Trust	18	72.0	72.0
	Distrust	7	28.0	28.0
	Total	25	100.0	100.0

Appendix 17: Reasons for Trusting the IP

		Frequency	Percent	Valid Percent
Valid	Participatory engagement	9	36.0	36.0
	Diversity of membership	8	32.0	32.0
	Neutral space for agreement and disagreement	2	8.0	8.0
	Motivation for co-ownership	2	8.0	8.0
	Cross learning-bottom to up (encouraging weaker actors)	2	8.0	8.0
	Respect and discipline amongst actors	2	8.0	8.0
	Total	25	100.0	100.0

Appendix 18: Reasoning for Distrusting the IP

		Frequency	Percent	Valid Percent
Valid	Inadequate accountability mechanisms	8	32.0	32.0
	Marginalisation of special interest groups	7	28.0	28.0
	Selective communication and participation	7	28.0	28.0

	Power struggles and conflict	2	8.0	8.0
	Corruption tendencies (for saking incentives)	1	4.0	4.0
	Total	25	100.0	100.0

Appendix 19: Level of Adoption

		Frequency	Percent	Valid Percent
Valid	Nabe 15	6	24.0	24.0
	Nabe 16	8	32.0	32.0
	Nabe 17	9	36.0	36.0
	NAROSnBe1 (J 12)	1	4.0	4.0
	NAROSnBe2 (SB 001)	1	4.0	4.0
	Total	25	100.0	100.0

Appendix 20: Reasons for Adoption

		Frequency	Percent	Valid Percent
Valid	Early maturity 60-80 days	4	16.0	16.0
	High market demand	11	44.0	44.0
	Ecologiccal benefit (Manure,adaptation to all conditions, maintain soil fertility)	2	8.0	8.0
	High yield	3	12.0	12.0
	Climate change adaptation-drought resistant	3	12.0	12.0
	Resistant to pests and diseases	2	8.0	8.0
	Total	25	100.0	100.0

Appendix 21: Incentives for Adoption

		Frequency	Percent	Valid Percent
Valid	Price incentives on products and Inputs	9	36.0	36.0
	Financial Incentives(loans, compesatory payments on transport and facilitations for trainings etc)	2	8.0	8.0
	Seed credit	9	36.0	36.0
	Marketing,collection and storage	1	4.0	4.0

	Agronomical monitoring,support and extension	2	8.0	8.0
	Packaging and distribution	2	8.0	8.0
	Total	25	100.0	100.0

Appendix 22: Activities of the IP

		Frequency	Percent	Valid Percent
Valid	Mobilisation of farmers and resources	11	44.0	44.0
	Reruitment,training and technical support	4	16.0	16.0
	Scaling up adoption and diffusion of technologies	2	8.0	8.0
	Lobbying and advocacy	1	4.0	4.0
	Monitoring, tracking and feedback	1	4.0	4.0
	Documentation and record keep keeping	2	8.0	8.0
	Knowledge and information generation and dissemination	4	16.0	16.0
	Total	25	100.0	100.0

Appendix 23: Relevancy of Activities to Farmers

		Frequency	Percent	Valid Percent
Valid	Access to quality inputs (seed, fertilizers,farm tools)	5	20.0	20.0
	Demand articulation	4	16.0	16.0
	Foster acess to strategic links partnerships and networks	1	4.0	4.0

	Facilitation of Adoption and difufusion of Innovations and agronomical practices	8	32.0	32.0
	Guidance of research and extesnion	1	4.0	4.0
	Advocacy for policy change and development	1	4.0	4.0
	Facilitation of information flow and Knowledge generation	1	4.0	4.0
	Acces to technical support, advisory and financial services	1	4.0	4.0
	Skilling and capacity building	2	8.0	8.0
	Mobilising resources, technical support and farmers	1	4.0	4.0
	Total	25	100.0	100.0

Appendix 24: Gender Inclusiveness within the IP

		Frequency	Percent	Valid Percent
Valid	Integrating capacity building, action and policy	11	44.0	44.0
	Gendered membership to IP (Both Husband and wife)	10	40.0	40.0
	Positions for gender focal persons	2	8.0	8.0
	Formation of Gender committees	2	8.0	8.0
	Total	25	100.0	100.0

Appendix 25: Understanding the Relevancy of Gender

		Frequency	Percent	Valid Percent
Valid	Joint planning between male and female	5	20.0	20.0

	Power balances within IP/household	2	8.0	8.0
	Interaction between Men and women in IP/household	3	12.0	12.0
	Inclusive household/IP decision making processes	8	32.0	32.0
	Inclusive idea and knowledge generation	3	12.0	12.0
	Access to resources	4	16.0	16.0
	Total	25	100.0	100.0

7.3 ANNEX 4: PHOTO GALLERY

Photo 1: IP Members of the Beans Cluster

Photo 2: IP Members during a SACCO Meeting

Photo 3: IP Members during a Farm Field Visit

Photo 4: PELIDO and ISSD stakeholders in a Meeting

	
Photo 5: The Researcher alongside an In-put Dealer of Pearl Seed Limited and member of PELIDO.	Photo 6: Enthem of Promotion of Enterprises and Livelihood Development [PELIDO]

Source: Researcher's data, 2018.

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