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Abstract

The study investigated the effect of project risk management on success of rice production in Rwanda in a case of Rice Cooperatives of Bugesera District. This research achieved the following objectives : To determine the effect of risk identification on rice project success in Bugesera district ; to assess the effect of crop insurance on rice project success in Bugesera district; to analyze the effect of livestock insurance on rice project success in Bugesera district and to establish the effect of investment cost insurance on rice project success in Bugesera district. The study utilized a case study method to investigate project risk management and rice production success in Rwanda, employing both descriptive survey and correlation designs to analyze characteristics and interpret data respectively. Both quantitative (questionnaires) and qualitative (interviews) methods were used for data collection and analysis. The study targeted a total population of 162 employees from cooperatives in the Bugesera district, using a census inquiry method for sampling where the entire population served as the sample size. Data collection involved both primary and secondary sources, and data analysis was performed using SPSS and Excel to generate summary statistics, frequency tables, charts, and regression coefficients to clearly present the findings. Multiple regression analysis was also conducted to delve deeper into the data. The results indicated that project risk management have positive and significant effect on project success of rice production (β_1= 0.376, t= 3.514, p = 0.002<0.05; β_2= 0.243, t=2.382, p =0.023<0.05; β_3= 0.267, t= 0.317, p = 0.003<0.05; β_4= 0.29, t= 4.83, p = 0.29<0.05), respectively. This shows that 1 per cent increase in project risk management will lead to 0.376, 0.243, 0.267 and 0.29 percent increase on project success of rice production. The study found that all hypotheses tested were rejected, indicating that there is a significant effect of risk identification, crop insurance, livestock insurance, and investment cost insurance on the success of rice projects in Bugesera district. The study concludes that agricultural insurance has low effectiveness as a risk management tool in Rwanda, due to factors such as lack of knowledge, high premium costs, and insufficient number of potential client farmers. In addition, it is concluded that Rwanda's agricultural sector is highly exposed to weather risks, with most farmers practicing rainfed agriculture. The study recommends that joint efforts are required to increase the effectiveness of agricultural insurance as a risk management tool. This includes strengthening public education and training in agricultural insurance, addressing problems that prevent registration, and introducing insurance as a subject in secondary school.

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1.0 Introduction

Worldwide, insurance is just one concept in the broader discipline of risk management. How to reduce and risk transfer mechanisms for success of rice production. For individual farmers, group of people, cooperatives, and risk management involves finding a desired set of actions with uncertain outcomes and varying levels of expectation Return and sustainability. The WTO Rules (2018) discourage direct government support to agriculture, but instead encourage income protection mechanisms through insurance premium subsidies and promote the adoption of crop insurance as a risk management strategy for sustainable national development. Effective and competitive they are is currently influenced by new visions concerning the role played by farming in a broad societal context. The traditional crop production function is being downplayed, while there is an increasing concern with the role of farming in the stewardship of nature. Also, the ability of agriculture to sustain meaningful economic activity in low potential areas, receives considerable attention within the context of rural development policies in developing countries. Rice production is mostly in irrigated schemes. The infrastructure developed for rice farming in the schemes provides for flooded rice fields. The rice fields are of vital importance not only to food chain but also supports a wealth of biodiversity.

Although agriculture accounts for only 10 percent of China's gross domestic product (GDP), 47 percent of China's population lives in rural areas and 35 percent is employed in agricultural production of rice in different cooperatives and related industries. Rural households in China are also relatively poor and highly dependent on agriculture. Annual per capita income in rural China is 10,990 yuan, or about $1,740, and more than 50 percent of this comes from agricultural production or related activities. Chinese farmers are particularly vulnerable to extreme weather. The average rural household in China has 3.88 family members and lives on 0.16 hectares of land. Chinese farmers also have very limited access to financial services such as credit and insurance. China's rural finance sector is slow to develop, and small farmers find it particularly difficult to obtain credit due to a lack of collateral and high transaction costs. Together, these factors make it difficult for Chinese farmers to recover from the negative effects of extreme weather. Like farmers in other developing countries, Chinese farmers use a variety of informal strategies to manage risks in agricultural production, such as holding unproductive liquid assets, off-farm jobs, and migration. However, these strategies do not provide sufficient protection against risks, especially from high-intensity and low-frequency natural hazards (Deininger et al., 2017; Jalan and Ravallion, 2019; Stutley, 2018).

In the United States, the resumption of agricultural insurance in 1982 coincided with the steady development of the agricultural economy from 1982 to 1992. During this period, the American agricultural sector's gross domestic product (GDP) grew by more than that per year on average. More than 11%, and the net income of American farmers increased by an average of 9% per year (Wang et al., 2011). In 1982, the US People's Bank submitted a report to the State Council, "Opinions and Recommendations on the Restoration and Future Development of the Domestic Insurance Business," urging the introduction of property and livestock insurance to protect farmers from natural disasters. The People's Insurance Company of America (PICA) conducted a pilot program. From 1982 to 1992, agricultural insurance experienced rapid growth, with annual premiums rising from RMB 23,000 to RMB 817 million. In 1992, there were more than 100 agricultural insurance products in the United States, and agricultural insurance covered most cities in 29 US states and territories (Wang, et al., 2018). However, between 1982 and 1992, agricultural insurance suffered actuarial losses. The average annual loss rate is 105%, the highest is 136%, and the lowest is 72% (Wang, et al., 2018). As insurance is offered on a purely commercial basis with no government support, insurers have to cover losses with profits

from other insurance products. After 1993, the size of the agricultural insurance market began to shrink from a peak of 817 million in different states. The decline of the agricultural insurance market was caused by two factors. First, in 1994, PICA was transformed from a policy-oriented public company to a commercial market-oriented insurance company. Second, the growth rates of the agricultural economy decreased after 1993. From 1997 to 2017, both the growth rate of agricultural GDP and the growth rate of farmers' net income fell below 5%, which negatively affected the demand for agricultural insurance.

Some of the risk management tools used by farmers in African countries such as Nigeria, South Africa and Cameroon include diversification, contracts and vertical integration, futures and options hedging, insuring their crops, especially rice farmers. The idea behind insurance is risk sharing. Risk pooling involves the pooling of risks faced by a large number of individuals who contribute premiums to a mutual fund, which is used to cover losses incurred by any individual in the mutual fund. Rice insurance is one tool that farmers and other stakeholders can use to manage risks that are too large to manage on their own for sustainable development. Part of the risk is transferred to another party, who in return receives a fee and/or a premium (Vaughan, 2018). If available and accessible, agricultural (crop or livestock) insurance can have enormous benefits for sustainable development: First, insurance can be used to complement other risk management approaches.

Kenya as one of East African countries, to manage and mitigate risks, farmers can rely on informal household and community strategies such as crop and labor diversification. Agricultural insurance policies may be designed to protect against loss of income or consumption in the event of a severe weather event. This allows households to avoid selling livelihoods or building savings. Second, insurance can help farmer's access new opportunities by improving their access to credit. By doing so, farmers can enjoy greater security and higher profits, thus contributing to the sustainable development of the country. The National Food and Nutrition Policy 2016 have argued that governments should adopt a risk management approach to address the uncertainties facing agriculture.

Rwanda, crop insurance is an important part of risk management strategies used by farmers to build sustainable development (Changnon et al., 2019). Unfortunately, diseases are increasing in crop growing areas of sub-Saharan Africa, especially maize and beans (Ikisan, 2019). For rice, maize these include downy mildew, rust, leaf blight, stem and ear rot, leaf spot and maize stripe virus (Burns, 2008). Pests including borers, armyworms, thrips, grain moths, beetles, weevils, grain borers, rootworms and whiteflies are also a major threat to the survival of maize in Africa (Onyango et al., 2018). Periodic droughts, caused by irregular rainfall distribution, reduce rice yields by an average of 15 percent per year. This corresponds to at least $200 million in food losses (Kari, 2015).

Lack of effective public seed production and distribution networks, intensive mono-cropping of rice, which has gradually increased the pressure of pests and diseases to alarming levels in several marshlands, lack or inadequate knowledge of the appropriate control measures against pests all contribute to the difficulty faced by Rwandan rice farmers in obtaining sufficient quantities of high-quality rice seeds in time for the season. Pesticide safety standards and availability are not properly regulated, which results in drinking water contamination and increases health risks for farmers and farm families in marshlands. The majority of farmers are small-scale subsistence farmers who live in rural areas, and any natural disaster that negatively affects agricultural production has an impact on their income. The main risk that Rwandan rice farmers face is climate change, which alters the pattern of precipitation and increases uncertainty in Rwandan rice farming (Mahul and Stutley, 2018).

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1.1 Statement of the Problem

Agricultural cooperatives play a vital contribution in economic development and poverty reduction. Rwanda is among the countries where the government puts a lot of money and efforts to develop all agricultural insurance in project sustainable development yet their failure persists in some private projects and governments. The government of Rwanda has created a lot of development projects for different areas and it put a lot of energy for those projects to succeed. The pressure from different donors at times forces the project managers to act beyond the normal management principles (Belagis, 2018). Today, it is time to work towards a sustainable development; where everything possible should be done to ensure that agricultural cooperatives can contribute to excellent living standards of citizens as well as its project success. Poor risk management was affecting negatively success of feeding project for some schools and its community participation in monitoring evaluation has taken a central point which affects its sustainability. According to (ADRA Report, 2016) one laptop per child project has failed to be sustainable as project. Poor planning is affecting negatively success of projects and its strategic planning has taken a central point which affect project sustainability development. There are some government projects which were failed mainly due to poor planning such as Off-Grid Plants and Energy, Water and Sanitation Authority (EWSA), (MINIFRA, 2016).

Project risk management has taken a central role to facilitate this. Bugesera district, its capacity has embraced this so as to boost project success. Most of projects has continuously not sustained and success due to the lack of risk identification, poor of risk analysis, poor of risk monitoring and control and lack of risk response (King, 2013). The researcher investigated how crop insurance, livestock insurance, investment cost insurance and poor risk identification affect negatively success of rice production in Rwanda. No available data on the influence of project risk management and success of rice production in Rwanda with regard to the World Bank funded projects including this one. This research was evaluated the project risk management and success of rice production in Rwanda and concluded that the agricultural insurance was needed for achievement of the project sustainability. No sufficient available data on the project risk management and success of rice production in Rwanda including this one. That is why this research was intended to find out the effect of project risk management and success of rice production in Rwanda with reference of Rice Cooperatives of Bugesera District.

1.2 Research objectives

The general objective of this study was to assess the effect of project risk management on success of rice production in Rwanda. The specific objectives were ;

i. To determine the effect of risk identification on rice project success in Bugesera district;
ii. To assess the effect of crop insurance on rice project success in Bugesera district;
iii. To analyze the effect of livestock insurance on rice project success in Bugesera district;
iv. To establish the effect of investment cost insurance on rice project success in Bugesera district.

1.3 Research hypotheses

H_{01}: There is no significant effect of risk identification on rice project success in Bugesera district

H_{02}: There is no significant effect of crop insurance on rice project success in Bugesera district

H_{03}: There is no significant effect of livestock insurance on rice project success in Bugesera district

H_{04}: There is no significant effect of investment cost insurance on rice project success in Bugesera district.

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2.0 Literature

The literature review was presented in sections.

2.1 Conceptual Review

Risk identification

Shrivastava (2012), Teller (2013) and Kwak and Stoddard (2014) mentioned that risk identification is one of the most important processes of risk management and risk identification is a complex task. This requires a broad understanding of the project in relation to the scope, objectives, client and all other stakeholders. What works is working with all stakeholders, involving them and using technology. For example, brainstorming can be used as it has been shown to be an effective method for gathering different scenarios from stakeholders and then creating risk lists and regular risk reports (Raz and Michael, 2018). Risk identification is one of the keys to project success according to Carbone and Tippett (2014), who believe that to achieve a successful project, risks must be identified at an early stage. Starting from the definition of risk management Zou el at. (2017) suggested risk identification, then risk assessment, and finally risk response. There are various tools that can be used to identify project risks, such as brainstorming, cause-and-effect diagrams, and checklists (Zwikael and Ahn 2011). Kishk and Ukaga (2018) reported that risk can be identified using methods such as brainstorming, focus group, analysis of previous similar projects and interviews.

According to Ribera and Sieber (2019), the decision tree tool is used to identify each node in the tree and the option for each node, thus creating scenarios that can be analyzed to select the best option. During the execution phase, the team must be aware of potential changes in the environment and be prepared to identify any foreseeable risks so that contingency plans can be developed. According to Boehm (2017) and Ahmed el at (2017) The process of risk identification is aimed at achieving a successful project, and the analytical methods are decomposition, evaluation of decision drivers (Keil el at. 2018; Raz and Michael 2016) and checklists. In addition to this, Hillson (2018) also mentioned risk identification tools and techniques such as brainstorming, questionnaires, impact diagrams, SWOT analyses, interviews and cause-effect diagrams. In addition, Hillson (2019) suggests that risk factors can be identified from the structural elements of a risk distribution, a technique that can be used in risk assessment workshops and checklists.

Crop Insurance

People's demand for insurance is often modeled within the framework of expected utility maximization. Based on this framework, risk-averse individuals will be fully insured if insurance is offered at actuarially reasonable premiums (Kriesel and Landry, 2014). But perfect insurance predictions do not match empirical evidence. Various studies have shown that people tend to ignore low-probability, high-impact natural disasters or underestimate their likelihood of becoming victims of disasters (Kunreuther, 2014). Several studies have examined the need for crop insurance with multiple hazards, with a particular focus on understanding the factors that influence farmers' crop insurance purchasing decisions. Empirical studies using data from both developed and developing countries show that farmers are reluctant to insure against common, low-impact risks. The introduction of crop insurance is positively correlated with disaster impact, level of insurance coverage, level of yield variability, level of government subsidies, and farmers' trust in government (Cai et al., 2019; Zilberman et al,2014).

Farmers who are more risk averse, or whose crops are at higher risk, are more likely to be covered by crop insurance (Sherrick et al., 2014). Farmers with high debt are more likely to purchase crop insurance and are willing to pay higher premiums (Parlck, 2018). Free temporary government disaster assistance is a significant deterrent to farmers taking out crop insurance because government aid is designed to partially or fully cover disaster damage (Van Asseldonk et al., 2012). A number of studies have also examined the demand for weather index insurance, mostly in India where weather index insurance has long existed (Hazell, 2010). In general, the demand for weather index insurance is very price sensitive and a large premium subsidy is required to purchase the product. A farmer's education level, welfare situation, risk aversion and familiarity with insurance products are key factors influencing the purchase of weather index insurance by small farmers. Basis risk is another important factor influencing farmers' willingness to pay (Cole et al., 2018). Basis risk reduces the need for index insurance, especially when premiums are high (Hill et al., 2013). A German study showed that an individual farmer's willingness to pay for weather index insurance depends on geographic risk.

Livestock Insurance

Achieving the goal of a more specialized agricultural sector in Rwanda will require investment from stakeholders and Rwandan farmers, as well as innovative solutions to encourage and protect increased farmer investment. Successful agricultural production depends not only on the farmer's agricultural know-how, but also on climatic and environmental conditions that are generally beyond the farmer's control (Giné et al., 2018). The development of agricultural insurance is very important here. Rwanda Financial Access (AFR), in collaboration with the Ministry of Agriculture and Livestock Resources (MINAGRI), commissioned the Syngenta Sustainable Agriculture Foundation (SFSA) to conduct a feasibility study to explore the potential for developing crop and livestock insurance in Rwanda bottom. The purpose of this research is to: Explore the extent to which risks can be insured through formal risk transfer schemes such as index insurance or protection-based insurance. Find out how attractive and affordable these insurance products are to farmers. Investigate whether the proposed insurance product is financially viable for the private sector stakeholders involved. We propose and outline pilot projects that are financially viable for insurance companies and relevant and affordable for farmers (Wang et al., 2012).

The study is expected to quantify the agricultural insurance market. Based on these estimates, insurers have gained a healthy starting point to enter the space and may be interested in expanding their market penetration beyond their current urban concentrations. Traditional crop insurance based on farm visits and evaluations is impractical in most developing countries and plagued with moral hazard and negative selection. Index insurance offers an alternative through regional yields or weather indices (Fraser, 2012). Because index insurance uses objective third-party data sources, it does not have the disadvantages of traditional insurance. Index-based products cover specific risks and therefore need to be “fitted” to the insured crop. For example, if crops are not at risk of drought, drought index insurance is not a suitable product and farmers will be less willing to pay premiums (Kunreuther, 2016). The metadata map shows where each type of data is available, such as weather data that can be used for weather index products and yield data that can be used for areal yield index products. Since index insurance pricing requires a sufficiently long and complete data series, the metadata map should also reflect this information. Once a metadata map is created, it needs to be continuously updated by stakeholders discovering new data sources or implementing new data collection methods. A specific example is the installation of new weather stations. You need to add this to your

metadata card. Metadata maps can therefore help show where and what types of insurance can be implemented and where data is lacking (Musshoff et al., 2008).

Investment Cost Insurance

In financial services and insurance, capital is as important to production as production. Unlike manufacturing, capital does not invest in tangible assets such as machinery or equipment; instead, it invests in liquid assets such as bonds or stocks. The basis of the insurance business is the promise and capital guarantee that insured losses may exceed premiums in the event of certain contractual events and that funds will be available in the future. Contemporary views of the insurance industry are heavily influenced by theories of corporate finance, optimal capital structure and efficient use of capital. Although insurance itself involves risk selection, underwriting, loss control and claims management, this business requires capital funding. Insurance companies raise funds to be able to write policies (Ahenkan and Boon, 2010). Insurance companies must use their own funds and insurance premium funds to pay insurance claims and related business expenses. However, there is a significant time lag between raising funds, collecting premiums and covering losses and expenses. Insurance companies take advantage of these delays and invest investors' capital and insurance premiums until claims and fees are due. In effect, insurance is a leveraged investment vehicle.

Companies that fail to pay the required returns will face pressure on the capital markets. There is a risk that the share price will fall and the company will become a takeover target, or that management will be fired if it does not deliver the desired returns. The cost of capital is a well-established economic concept. Often used synonymously with the terms 'cost of capital', 'fair rate of return' or 'possible cost of capital'. The concept contains several important elements. Hoff et al. (2017), first, the cost of capital is a forward-looking concept: it is the return that investors demand for investing their money. Second, the cost of capital is determined by capital markets, including the concept of opportunity cost. Investors are faced with more and more options to choose from, and the cost of capital or expected return must compensate for other lost opportunities. Finally, the cost of capital depends on risk: riskier investments require higher returns to raise capital. Therefore, capital costs are important from the point of view of investors and insurance managers. Investors are concerned about their expected income after risk adjustment. The manager is also concerned and efficiently attempts to place capital in insurance production (Hoff et al. (2017).

Project Success

Seeks to measure and communicate the sustainability of agricultural operations. It evaluates a single farm operation by using interviews to gather data on sustainability indicators, including livestock farming and soil use (see the illustration below), across the economic, ecological, and social dimensions. RISE offers a foundation for advice on farming practices rather than certifying farms. The sustainability of farms is assessed so that the farm manager can take immediate action to improve it (Thorburn, 2015). RISE has been used by GIZ to date, and it has demonstrated that farms in a single region frequently have comparable patterns. Programs for development cooperation can find flaws and create advice by analyzing small samples of representative groups. Even though family-run businesses are frequently involved in development cooperation, this type of cooperation frequently performs poorly in terms of sustainability. Financial standards (e. g. both economic and operational management) and environmental considerations (e. g. Improvements in nutrient management and carbon footprint are frequently required (Thorburn, 2015).

However, there are numerous ways in which people define conservation agriculture, as a result of this. Herbicide use has previously been essentially impossible to avoid, which is a disadvantage of conservation agriculture similar to conventional agriculture. If wheat, soy, maize, and other agricultural crops are to have a chance against weeds in the absence of plowing, weed management must change (Abebe, and Bogale, 2014). For direct sowing, for example, specialized equipment is required, and the technique demands a high level of expertise. Smallholders in developing nations typically lack both, making the introduction of conservation agriculture difficult for them. Some crop residues are also left on the field but cannot be used as fuel, animal feed, or for other purposes. As a result, North and South America as well as Australia have been the main regions to use this method thus far. These areas frequently combine total herbicide use, monocultures, genetically modified crops, and conservation agriculture (Abebe, and Bogale, 2014).

Quality

Quality provides clear direction and focuses the efforts of the entire organization on common innovation goals. Oke, (2014) emphasizes that the first step in developing a quality, innovation and creativity program is to define what innovation means to a company or innovation field. By understanding the drivers of the need for innovation, companies can develop their areas of innovation. Kuczmarski and Associates (2014) confirm that more successful companies show clear signs of management commitment to new product development, particularly in terms of securing adequate funding and resources. One of the themes of quality, innovation and creativity is the value creation of products. Creating value for customers helps sell products and services, while creating value for shareholders ensures the availability of future products and investment capital to fund operations. From a financial perspective, value is created when a company's revenues exceed its expenses. Value creation is increasingly seen as a rigorous financial measure of project success in meeting these stringent management objectives.

In fact, emphasizes the creative funds creative fund, involving a large number of adaptations and high values that bring new products or innovative products or services, and find the ability to solve a solid customer problem or new product methods (Pieter, 2020). Wachira (2012) mentioned that the best national concept is another topic of quality, creativity and innovation. Creativity and innovation always start with new creative campaigns that collect and filter the good ideas and keep the best ideas. These ideas are translated into strategic innovation plans and actionable programs. Idea is the source of all the materials to create prototypes and put innovative solutions in the hands of users. Ideation requires experience in understanding and leading teams, adaptability and flexibility in human dynamics, and a host of other soft skills that are actually harder to master. Generating good ideas requires committed employees, motivated and committed to the success of the organization. In this complex environment, organizations must place customer value creation at the center of their operations to enable organizational agility, experimentation, learning and collaboration. Employees must be motivated, confident, prioritized and driven to create value.

Team Goals

Here we discuss the role of project team members in defining and clarifying project goals and objectives. We believe that this topic deserves special attention because project goals and objectives are often listed as a key factor in many studies that focus on critical project success factors. However, to our knowledge, no one has commented on whether project team members should participate in defining project goals and objectives and how they interpret them. Before proceeding, it is important to clarify what the goals and objectives of the project (Pillay, 2014).

If you look on the Internet or read different project management books, you will actually finds lightly different or even very different (even contrasting) definitions. The first thing we noticed (to our surprise) was that defining project objectives is not very common in the project management literature, and more attention is paid to defining project objectives. For example, the PMBOK defines goals, not objectives. We have also noticed that many books and articles refer to "project goals" together, and we feel that the terms are used very similarly. Our feelings are supported by the definitions in English dictionaries, where the distinction between aim and purpose is subtle (Pillay, 2014).

Deliverables

A deliverables is a list of scheduled events arranged in the order in which they occurred, starting with the earliest event and moving forward in time, defining a start and end point. Schedules provide busy team members with time to perform duties that they can incorporate into their daily duties. The schedule is an important tool that coordinates all aspects of the event, keeping all parties involved within deadlines. It is difficult to track events or activities if timelines do not include detailed information (Grafton, Rosenberg, and Daniel 2010). Truly effective performance management that supports employee performance, development and success requires everyone to be involved in setting responsibilities, schedules and deadlines. Workplace accountability is important in the workplace because it demonstrates employee professionalism, promotes career advancement, helps build professionalism, and shows business leaders how valuable employees are to the organization. Job responsibility refers to the clear definition and understanding of the work roles, functions and responsibilities of individuals and teams in the workplace (Lockwood, 2013).

Tetrick and Buffardi (2016) explain that employee performance can be influenced by individual differences between propensity to engage in work and commitment to work. Higher levels of engagement can negatively impact employee performance. Tetrick and Buffardi (2016) show that emotional labor affects employees' job performance. As part of performance management, employees must be updated to meet future job requirements, responsibilities and deadlines. Upgrading provides a sustainable competitive advantage in development that meets today's needs without compromising the ability of future generations to meet their own needs. Keeping up with the times is an advantage that allows companies to survive in long-term competition (Altenburg, Schmitz & Stamm, 2016). According to Mukesh, Andy and Louis (2013), if a company has an advantage over its competitors in protecting customers and fending off competitive forces, it achieves modern sustainable competitive advantage.

Resource Capacity

In the 1980s, the financial resources available to the FDA far exceeded the agency's requirements and expectations. In 1987, the average time for approval of a new drug application was 29 months1, and many new products were first marketed in other countries. To help provide the American people with faster access to safe and effective new drugs, Congress, regulated industry, and the FDA agreed on a system under which drug sponsors will pay to supplement existing funds appropriated by Congress for staffing improvements. Public funding supports a new level and system of drug review (Van Asseldonk et al., 2012). PDUFA will be reauthorized every five years, and each reauthorization provides an opportunity for stakeholders to assess the changing needs of the program. In addition to improving the predictability of the review process and reducing review time, the PDUFA program will be expanded to improve consultation with sponsors during clinical development, fund post-marketing safety and monitoring activities, support guideline development, improve internal

systems, and support regulatory efforts science initiatives. In the process, the PDUFA program will serve as a model for other FDA user fee programs. In 2002, Congress passed the Medical Device User Fee and Modernization Act, followed by the Animal Drug User Fee Act of 2003, the Animal Generic Drug User Fee Act of 2008, and the Biosimilar Drug User Fee Act and Generic Drug User Fee Amendment Act (BsUFA) and GDUFA) in 2012. Each scheme is tailored to the needs of their respective regulatory paradigms, but all share some common elements, including setting audit schedules and performance targets and providing industry user fee funding that complements existing public funding (Van Asseldonk et al., 2012).

2.2 Theoretical Review

Theoretical review involves the review of theories underlying the study topic. Theories covered in this study include: Theory of rational planning**,** stakeholder engagement theory**,** theory of constraints and prospect theory.

The Theory of Rational Planning

Rational planning is a normative-prescriptive theory extensively utilized in strategic management, underscored by its fundamental assumption of comprehensive rationality where planning is synonymous with rational decision-making (Bell et al., 2018 ; Mintzberg and Lampel, 2013). This theory, relevant for its emphasis on the necessity of complete information, ample resources, and sufficient time, aligns with scientific methods of analysis and problem-solving in strategic contexts (Alexander, 2014; Dror, 2018; Faludi, 2013). Central to rational planning is the belief that strategic management should be a methodical process characterized by detailed analysis and logical procedures aimed at maximizing long-term benefits, making it particularly relevant in environments where precision in planning and execution is critical (Whittington, 2014 ; Collier et al., 2014). The process involves a cyclical sequence of steps, including awareness of competitors, which is crucial for maintaining a competitive edge (Bryson and Roering, 2017). It is inherently analytical, formal, and designed to promote clear communication of organizational goals, thus enhancing organizational coordination and fostering support among staff through a centralized, systematic framework (Boyne and Gould-Williams, 2013; Bryson, 2014; Poister et al., 2013). This approach's relevance is also evident in how it clarifies objectives and facilitates the communication of mission and goals throughout the organization, ensuring alignment and effective implementation.

Stakeholder Engagement Theory

The theory has its origin in management literature as traced by Pretson (2016) to great Depression (2014) in United States of America. According to Freeman (2004) he traced by mentioning the word Stakeholder as back to research conducted by Stanford Research Institute (SRI) which explains stakeholder as “those group without whose support the cooperative would cease to exist cited (Freeman 2014), he also expand this notion by including any group or individual that can affect or affected by the achievement of the corporation purpose. With stakeholder engagement theory the complexity of interaction between different interest group in corporation can be viewed easily through firm owners, customers, employee, and suppliers. The theory has been divided into three perspectives which are Descriptive, normative and instrument perspective. Descriptive perspective, with this perspective one can clearly delineate the stakeholder characteristics involved in the system and how a cooperative interact with its stakeholders (Brenner and Cochran 2011), descriptive helps in understanding the relationship between organization and its stakeholders. Normative perspective, this perspective view stakeholder as an end in themselves based on the principal of fairness, that all human being are ultimately affected by any decision because we all have an equal and legitimate interest in a safe and stable life as also exemplified by (Chamber, 2014) in his work he emphasizes on the

need for understanding and addressing stakeholder needs in development by conducting interview with stakeholder and inviting solution from the community itself (Chamber, 2014). Instrument perspective view stakeholders as an end itself and the organization are argued to take the stakeholders into consideration as this led to success in the end.

Theory of Constraints

The Theory of Constraints, introduced by Eliyahu Goldratt in 2014, is a management approach that focuses on identifying and addressing the most significant bottlenecks or constraints that hinder organizational performance. It is versatile, finding application in diverse areas such as agricultural insurance, sustainable development, and more. By pinpointing and managing these constraints—whether they be in policies, equipment, supplies, or personnel—organizations can improve their efficacy and achieve their objectives. The theory operates through a cyclical five-step process: identifying the key constraint, fully utilizing this constraint, aligning the organization's processes to support it, enhancing the constraint's capacity, and then starting the cycle anew to address the next critical constraint. This method not only helps in continuous improvement but also integrates well with other management practices like total quality and risk management to enhance overall operational effectiveness. Continuous monitoring and stakeholder involvement are crucial throughout this process, ensuring adaptability and sustained progress toward organizational goals.

3.0 Reserach Methodology

This study utilized a case study method to investigate project risk management and rice production success in Rwanda, employing both descriptive survey and correlation designs to analyze characteristics and interpret data respectively. Both quantitative (questionnaires) and qualitative (interviews) methods were used for data collection and analysis. The study targeted a total population of 162 employees from cooperatives in the Bugesera district, using a census inquiry method for sampling where the entire population served as the sample size. Data collection involved both primary and secondary sources, and data analysis was performed using SPSS and Excel to generate summary statistics, frequency tables, charts, and regression coefficients to clearly present the findings. Multiple regression analysis was also conducted to delve deeper into the data.

4.0 Research Findings and Discussion

The research findings and discussion are presented in sections.

4.1 Descriptive statistics of variables

Table 1 shows the descriptive statistics on risk identification for rice project success in Bugesera District

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Table 1: Descriptive Statistics on risk identification for rice project success in Bugesera district

	N	Mean	Std. Deviation
Rice cooperatives ensure sustainable food production systems	162	4.22	.933
Rice cooperatives implements resilient agricultural practices that increase productivity and production	162	4.22	.933
Rice cooperatives helps maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters	162	4.22	.933
Rice cooperatives mixed cropping, crop rotation, agroforestry, double cropping, and the exploitation of resources with host pathogen interaction	162	4.25	.885
Valid N (listwise)	162		

Source: Primary Data, 2024

From the findings show that "Rice cooperatives ensure sustainable food production systems" with mean of 4.22 and .933 standard deviation. This implies that that the respondents strongly agreed with the statement as indicated by the strong mean and heterogeneity of answers as indicated by the standard deviation where the respondents had different opinions of the statement. The second statement shows that "Rice cooperatives implements resilient agricultural practices that increase productivity and production" where the respondents agreed with a mean of 4.22 and standard deviation of .933 and this indicated that the respondents agreed with the statement as indicated by the strong mean and heterogeneity of answers as indicated by the standard deviation where the respondents had different opinions of the statement. Third statement shows that "Rice cooperatives helps maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters" where the respondents agreed with a mean of 4.22 and standard deviation of .933 and this indicated that the respondents agreed with the statement as indicated by the strong mean and heterogeneity of answers as indicated by the standard deviation where the respondents had different opinions of the statement. Forth statement shows that "Rice cooperatives mixed cropping, crop rotation, agroforestry, double cropping, and the exploitation of resources with host pathogen interaction" where the respondents agreed with a mean of 4.25 and standard deviation of .885 and this indicated that the respondents agreed with the statement as indicated by the strong mean and heterogeneity of answers as indicated by the standard deviation where the respondents had different opinions of the statement. Table 2 presents the descriptive statistics on crop insurance for rice project success in Bugesera district

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Table 2: Descriptive Statistics on crop insurance for rice project success in Bugesera district

	N	Mean	Std. Deviation
Bugesera district establishes a rice industry that contributes to food security, job creation and economic growth	162	4.22	.933
Rice cooperatives in Bugesera district aims to drive the rice sector towards improving self-sufficiency by increasing productivity	162	4.22	.933
Rice cooperatives in Bugesera district markets competitiveness of the locally produced rice	162	4.22	.933
Cooperatives have a great poverty reduction potential. By pooling resources together in and keeping strong links to their local environments, cooperative members stand to benefit significantly from joining a cooperative	162	4.22	.933
Valid N (listwise)	162		

Source: Primary Data, 2024

From all statements the findings show that mean of 4.22 and .933 standard deviation. This implies that that the respondents strongly agreed with the statement as indicated by the strong mean and heterogeneity of answers as indicated by the standard deviation where the respondents had different opinions of the statement. Table 3 shows the descriptive statistics on livestock insurance for rice project success in Bugesera district

Table 3: Descriptive Statistics on livestock insurance for rice project success in Bugesera district

	N	Mean	Std. Deviation
It Insurers have a critical role in supporting organizations, as they start their sustainability journeys	162	5.37	6.883
It is identifying and helping them navigate and manage new and emerging physical, transition and liability risks	162	3.93	1.198
Rice cooperatives in Bugesera district brings economic growth, social inclusion and environmental protection	162	3.91	1.192
There are elements are interconnected and all are crucial for the well-being of individuals and societies	162	3.80	1.097
Valid N (listwise)	162		

Source: Primary Data, 2024

From the findings show that "It insurers have a critical role in supporting organizations, as they start their sustainability journeys" with mean of 5.37 and 6.883 standard deviation. This implies that that the respondents strongly agreed with the statement as indicated by the strong mean and heterogeneity of answers as indicated by the standard deviation where the respondents had different opinions of the statement. The second statement shows that "It is identifying and helping them navigate and manage new and emerging physical, transition and liability risks"

where the respondents agreed with a mean of 3.93 and standard deviation of 1.198 and this indicated that the respondents agreed with the statement as indicated by the strong mean and heterogeneity of answers as indicated by the standard deviation where the respondents had different opinions of the statement. Third statement shows that "Rice cooperatives in Bugesera district brings economic growth, social inclusion and environmental protection where the respondents agreed with a mean of 3.91and standard deviation of 1.192 and this indicated that the respondents agreed with the statement as indicated by the strong mean and heterogeneity of answers as indicated by the standard deviation where the respondents had different opinions of the statement. Forth statement shows that "There are elements are interconnected and all are crucial for the well-being of individuals and societies" where the respondents agreed with a mean of 3.80 and standard deviation of 1.097 and this indicated that the respondents agreed with the statement as indicated by the strong mean and heterogeneity of answers as indicated by the standard deviation where the respondents had different opinions of the statement. Table 4 shows the descriptive statistics on risk monitoring for successful implementation of Norrsken House Project

Table 4: Descriptive Statistics on risk monitoring for successful implementation of Norrsken House Project

	N	Mean	Std. Deviation
Rice cooperatives in Bugesera district enhances the health and well-being of the people through the production of nutritious food and the development of productive and secure livelihoods	157	3.79	1.115
Rice cooperatives in Bugesera district stimulate more economic activities in rural communities, create more rural employment opportunities	162	3.80	1.097
Rice cooperatives in Bugesera district aquaculture practice which focuses on environmental economic, and social sustainability	162	3.77	1.106
It improves capacity building and utilize land effectively for the aquaculture sector	162	3.77	1.106
Valid N (listwise)	157		

Source: Primary Data, 2024

From the findings show that "Rice cooperatives in Bugesera district enhances the health and well-being of the people through the production of nutritious food and the development of productive and secure livelihoods" with mean of 3.79 and 1.115 standard deviation. This implies that that the respondents strongly agreed with the statement as indicated by the strong mean and heterogeneity of answers as indicated by the standard deviation where the respondents had different opinions of the statement. The second statement shows that "Rice cooperatives in Bugesera district stimulate more economic activities in rural communities, create more rural employment opportunities" where the respondents agreed with a mean of 3.80 and standard deviation of 1.097 and this indicated that the respondents agreed with the statement as indicated by the strong mean and heterogeneity of answers as indicated by the standard deviation where the respondents had different opinions of the statement. Third statement shows that "Rice cooperatives in Bugesera district aquaculture practice which focuses on environmental economic, and social sustainability" where the respondents agreed with a mean of 3.77 and standard deviation of 1.106 and this indicated that the respondents

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agreed with the statement as indicated by the strong mean and heterogeneity of answers as indicated by the standard deviation where the respondents had different opinions of the statement. Forth statement shows that "It improves capacity building and utilize land effectively for the aquaculture sector" where the respondents agreed with a mean of 3.77 and standard deviation of 1.106 and this indicated that the respondents agreed with the statement as indicated by the strong mean and heterogeneity of answers as indicated by the standard deviation where the respondents had different opinions of the statement.

4.2 Multiple linear regression analysis

Multiple linear regression analysis was carried out to found out the effect of the independent variables (project risk management) on dependent variable (project success of rice production). Multiple Linear regressions were computed at 95 percent confidence interval to establish the relationship between independent variables and dependent variables. Based on the model summary, the coefficient of determination (R squared) shows the overall measure of strength of association between independent and dependent variables.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.586[a]	.343	.281	.21208

a. Predictors: (Constant), risk identification, crop insurance, livestock insurance and investment cost insurance.

The results from the Table 5, the value of adjusted R squared was 0.281(28.1%) an indication that there was variation of 28.1% on project success of rice production was due to changes in project risk management at 95% confidence interval. Additionally, this means that factors not studied in this research contributed 71.9% of project success of rice production. This findings are in the line with Abdul & Aldulaimi (2016), found that 85.6% of total variation in the dependent variable which is project success of rice production.

Table 6: ANOVA (Analysis of variance)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.752	3	.251	5.571	.003[a]
	Residual	1.439	159	.045		
	Total	2.191	162			

a. Predictors: (Constant), risk identification, crop insurance, livestock insurance and investment cost insurance

b. Dependent Variable: project success of rice production

As indicated in the Table 6 the F-test value was 5.571 with significance value of 0.03 at 5% level of significance. Since the p-value obtained was less than 0.05, the F-test was significant hence the conclusion that the regression model was good. Table 7 provides the summary of results of regression analysis for the effects of project risk management and project success of rice production.

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Table 7: Regression coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	1.771	.775	.05	2.286	.029
	Risk identification (X1)	.376	.107	.103	3.514	.002
	Crop insurance (X2)	.243	.102	.142	2.382	.023
	Livestock insurance (X3)	.267	.084	.161	0.317	.003
	Investment cost insurance (X4)	.29	.06	.026	4.83	.029

a. Dependent Variable: project success of rice production

The equation ($Y = \beta 0+\beta_1 x_1+\beta_2 x_2+\beta_3 x_3+\beta_4 x_4$) becomes:

Project success of rice production = $1.771+ .376X_1 + .243X_2 + 0.267X_3 +0.29X4$

The regression equation above has established that taking all factors into account (project risk management) constant at zero project success of rice production 1.771. The results indicate that project risk management have positive and significant effect on project success of rice production (β_1= 0.376, t= 3.514, p = 0.002<0.05; β_2= 0.243, t=2.382, p =0.023<0.05; β_3= 0.267, t= 0.317, p = 0.003<0.05; β_4= 0.29, t= 4.83, p = 0.29<0.05), respectively. This shows that 1 per cent increase in project risk management will lead to 0.376, 0.243, 0.267 and 0.29 percent increase on project success of rice production. Based on the findings above the model one (1) is represented as follows: project success of rice production = $1.771+ .376X_1 + .243X_2 + 0.267X_3+ 0.29X_4$ Thus, all hypothesis are below 0.05, it means that our hypothesis are rejected.

5.0 Conclusion

The study concludes that agricultural insurance has low effectiveness as a risk management tool, the sustainability of the Rwandan scheme is due to several factors including lack of adequate knowledge, lack of understanding and awareness of the target consumers, high premium costs and insufficient number of potential client farmers in the insurance companies. Rwanda's agricultural sector is highly exposed to weather risks, mainly hydro meteorological risks. Only a small part of the country is engaged in secondary agriculture Adequate and reliable precipitation is possible. Most of the farmers practice rained agriculture. If the rains are delayed, there will be serious economic and personal consequences for farmers. The best, the country has been hit by drought and floods many times over the past decades a flat. The role of insurance companies in the promotion of agricultural insurance is particularly important, which is essential for existing customers to be satisfied with their products, thereby correcting the negative perception in society that insurance companies do not pay out claims. The researchers then concluded that agricultural insurance is the most effective way to manage the risks faced by farmers, especially natural causes, diseases and pests. Consequently, it will positively affect production and stabilize agricultural activity even after losses.

6.0 Recommendations

Based on the results and conclusions, the study recommends to increase the effect Agricultural insurance as a risk management tool requires joint efforts of all parties. Insurance companies will ensure that they address multiple issues when implementing their strategies Problems preventing registration will be addressed. Recommendations include: public education and training in the field of agricultural insurance should be strengthened, bring insurance benefits and risk management to farmers by going traditional, solving problems when a problem has already occurred is replaced by pre-risk manage. This can be done through marketing and forums as well as with the Ministry of Agriculture thereby creating wealth and improving people's living standards Rwanda and thereby contribute to the achievement of the pillar of economic development under Vision 2030. Introduce insurance as a subject in secondary school so that children grow up, They are introduced to the culture of risk management and savings. The government may offer incentive programs to subsidize premiums in the following areas: agricultural insurance and then develop long-term sustainable development strategies. It will promotE the achievement of the Millennium Development Goals in the field of food security and poverty eradication. Further research could be done on introducing insurance to other cultures farmers and small farmers.

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