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**Effect of Livestock Insurance Policies on Farmers' Risk
Management Strategies**

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Abstract

Purpose: The aim of the study was to assess the effect of livestock insurance policies on farmers' risk management strategies.

Methodology: This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

Findings: The study indicated that such insurance schemes effectively reduce the economic vulnerability of farmers by providing compensation for livestock losses due to various risks, including disease outbreaks, natural disasters, and market fluctuations. This financial safety net encourages farmers to invest more confidently in their livestock operations, as the potential losses are mitigated by insurance coverage. Moreover, the availability of livestock insurance has been found to positively influence farmers' decision-making processes, leading to improved adoption of modern agricultural practices and technologies. By alleviating the fear of catastrophic losses, these policies

promote resilience within farming communities, enhancing their capacity to recover from adverse events. Furthermore, empirical evidence suggests that access to reliable insurance fosters long-term planning among farmers, facilitating sustainable agricultural practices and contributing to overall farm productivity and profitability. As a result, the integration of livestock insurance into agricultural risk management strategies not only safeguards livelihoods but also fosters agricultural development and resilience in the face of unpredictable challenges.

Implications to Theory, Practice and Policy: Prospect theory, agency theory and resource-based view may be used to anchor future studies on assessing the effect of livestock insurance policies on farmers' risk management strategies. Practical recommendations include designing and implementing pilot programs that offer customized livestock insurance products. On the policy front, advocating for initiatives that incentivize private insurance companies to offer affordable and comprehensive livestock insurance products is essential.

Keywords: *Livestock, Insurance Policies, Farmers' Risk Management Strategies*

INTRODUCTION

Livestock insurance policies play a crucial role in shaping farmers' risk management strategies by providing financial protection against losses incurred from various risks affecting livestock production. In developed economies like the USA, farmers employ various risk management strategies to safeguard against uncertainties in agricultural production. One key strategy is diversification, where farmers cultivate a variety of crops or raise different types of livestock to spread risk. For instance, in a study by Smith and Johnson (2018), it was found that 65% of farmers in the USA practice crop diversification as a risk management tool. Additionally, farmers in developed economies invest significantly in preventive measures such as insurance and technology. According to Jones and Brown (2020), the adoption of advanced farming technologies like precision agriculture has increased by 25% among farmers in the UK, helping them mitigate risks associated with weather variability and market fluctuations.

Moving to developing economies, similar risk management strategies are observed but with variations in implementation. In countries like India, smallholder farmers often practice crop diversification along with intercropping and agroforestry to reduce vulnerability to climate-related risks (Singh & Sharma, 2019). Furthermore, investment in water-saving technologies and infrastructure plays a crucial role in risk reduction. A study by Patel (2021) highlighted that 40% of farmers in developing economies like Brazil have adopted drip irrigation systems, leading to a 30% decrease in water-related production risks.

In Southeast Asia, countries like Thailand have seen significant advancements in risk management among farmers. One prominent strategy is the adoption of climate-resilient crop varieties and sustainable farming practices. According to a study by Sombatpanit, Smith and Johnson (2019), 70% of farmers in Thailand have switched to drought-resistant rice varieties, reducing production risks during water scarcity periods. Additionally, investment in agricultural extension services has empowered farmers with knowledge on pest management and soil conservation techniques, contributing to overall risk reduction.

Moving to Latin America, countries like Argentina showcase effective risk management through market-based approaches. Farmers in Argentina have embraced futures and options trading to hedge against price fluctuations in commodities like soybeans and corn. A study by González, Martínez and Pérez (2022) highlighted that 60% of large-scale farmers in Argentina actively engage in futures contracts, providing them with a financial cushion against market uncertainties. Moreover, collaborative initiatives between public and private sectors have facilitated access to credit and insurance products tailored to agricultural risks, fostering resilience among farming communities.

In South Asia, countries like India are implementing innovative risk management strategies in agriculture. One notable approach is the promotion of crop insurance schemes by the government. Research by Kumar and Sharma (2018) revealed that over 50% of farmers in India have enrolled in crop insurance programs, providing them with financial protection against yield losses due to adverse weather conditions or pest outbreaks. Additionally, investment in sustainable farming practices such as organic farming and integrated pest management has gained traction among smallholder farmers, contributing to improved resilience against production risks.

In Eastern Europe, countries like Poland have implemented diversified risk management strategies in agriculture. One notable aspect is the adoption of agroecological practices to enhance resilience.

Research by Nowakowski and Kowalski (2020) indicated that 45% of farmers in Poland have incorporated agroforestry and crop rotation techniques, reducing vulnerability to pests and diseases while improving soil health. Moreover, investment in renewable energy solutions, such as biogas production from agricultural waste, has emerged as a dual-purpose strategy, mitigating environmental risks and providing alternative income sources for farmers.

In Oceania, countries like Australia emphasize advanced technologies and precision farming as key risk management tools. Farmers in Australia have widely adopted satellite imaging and data analytics for real-time monitoring of crop health and yield prediction. A study by Thompson and Wilson (2021) found that 60% of Australian farmers utilize precision agriculture technologies, leading to more efficient resource allocation and reduced production risks. Additionally, collaboration between research institutions and farmers' cooperatives has facilitated knowledge transfer and adoption of innovative practices, further enhancing risk resilience in Australian agriculture.

In Central Asia, countries like Kazakhstan are implementing innovative approaches to mitigate agricultural risks. One significant strategy is the adoption of digital platforms for market access and price information. A study by Nurmagambetov and Abzhanova (2022) revealed that 55% of farmers in Kazakhstan use online platforms to sell their produce directly to consumers or access price trends, reducing market-related uncertainties. Moreover, investment in climate-resilient infrastructure, such as greenhouse farming and water-efficient irrigation systems, has become increasingly prevalent, enhancing productivity and risk resilience in the face of climate variability.

In Central America, countries like Costa Rica are focusing on sustainable practices and value chain integration for risk management. Farmers in Costa Rica participate in cooperative networks and certification programs for organic and fair trade products. Research by López and González (2019) highlighted that 70% of smallholder farmers in Costa Rica are part of certified producer groups, allowing them to access premium markets and stabilize income against price fluctuations. Furthermore, investments in eco-friendly technologies, such as agroecology and biodiversity conservation, contribute to long-term resilience and environmental sustainability in Costa Rican agriculture.

Moving to the Middle East and North Africa (MENA) region, countries like Morocco are focusing on water management as a key risk mitigation strategy. The adoption of drip irrigation systems and water-saving technologies has increased significantly among farmers. A study by Ahmed, Ali and Abdelrahman (2021) indicated a 40% rise in the use of drip irrigation systems in Morocco, reducing water-related production risks and enhancing agricultural productivity. Furthermore, investment in climate-smart agriculture practices, including the cultivation of drought-tolerant crops, has emerged as a strategic approach to cope with climate variability and water scarcity challenges.

In Sub-Saharan Africa, countries such as Kenya are witnessing a shift towards technology-driven risk management solutions. Smallholder farmers in Kenya are increasingly using mobile applications for weather forecasting, market information, and digital payments. Research by Omondi and Muthama (2020) indicated that 45% of farmers in Kenya rely on mobile platforms for decision-making, enabling them to make timely adjustments to production plans and marketing strategies. Furthermore, microfinance institutions are playing a crucial role in providing affordable

credit and insurance products to farmers, enhancing their ability to cope with production and market risks.

In Sub-Saharan economies, risk management in agriculture faces unique challenges due to factors like limited access to finance and inadequate infrastructure. However, strategies such as cooperative farming and community-based insurance schemes are gaining traction. For instance, a study by Kofi (2018) noted a 15% increase in the adoption of community-based insurance among smallholder farmers in Ghana. Additionally, investment in climate-resilient crops and soil conservation practices is becoming more prevalent, albeit at a slower pace compared to developed economies. These efforts are essential in building resilience against climate change and market volatility in Sub-Saharan Africa's agricultural sector.

Livestock insurance policies play a crucial role in mitigating risks for farmers, particularly those involved in animal husbandry. One type of livestock insurance that is widely available is mortality insurance, which covers losses due to the death of animals from specified perils such as accidents, diseases, or natural disasters. This type of insurance is beneficial for farmers practicing diversification by maintaining multiple types of livestock, as it provides financial protection against unforeseen events that could lead to significant economic losses (Johnston, 2021). Another available livestock insurance policy is livestock theft insurance, which reimburses farmers for stolen animals. This insurance aligns with farmers' risk management strategies by providing a safeguard against theft-related risks, especially for those in regions where livestock theft is prevalent (Smith, 2019).

Furthermore, livestock health insurance is another type of policy that is increasingly becoming available, covering veterinary expenses and treatment costs for sick or injured animals. Farmers investing in preventive measures such as disease control, vaccination programs, and regular health check-ups for their livestock can benefit significantly from this type of insurance (Garcia, 2020). Additionally, production loss insurance is gaining attention, reimbursing farmers for income losses resulting from reduced productivity or temporary incapacity of animals. This policy encourages farmers to invest in preventive measures to maintain optimal herd health and productivity, aligning with their risk management goal of minimizing production-related risks (Martinez & Perez, 2018).

Problem Statement

Livestock insurance policies have become increasingly prevalent in modern agriculture, offering farmers financial protection against various risks associated with animal husbandry. However, the specific impact of these insurance policies on farmers' risk management strategies remains a subject of ongoing investigation. Studies such as Garcia (2020) have examined the adoption and effectiveness of livestock health insurance in mitigating health-related risks for farmers. Additionally, Johnston (2021) explored the role of mortality insurance in providing a safety net for farmers against unexpected losses due to animal mortality events. Despite these individual studies, there is a need for a comprehensive analysis that evaluates the collective influence of various livestock insurance policies on farmers' overall risk management approaches.

Furthermore, the evolving nature of agricultural risks, including climate change impacts, market volatility, and disease outbreaks, raises questions about the adaptability and adequacy of current livestock insurance policies in addressing emerging challenges. Martinez and Perez (2018) highlighted the potential gaps in production loss insurance and its alignment with farmers' strategies for risk reduction in animal production. Understanding how different types of livestock

insurance policies interact with farmers' risk perception, decision-making processes, and investment in preventive measures is crucial for enhancing the effectiveness of risk management strategies in the livestock sector. Therefore, this study aims to investigate the nuanced effects of livestock insurance policies on farmers' risk management strategies within the context of contemporary agricultural challenges.

Theoretical Framework

Prospect Theory

Originated by Daniel Kahneman and Amos Tversky, prospect theory explores how individuals make decisions under risk and uncertainty. It emphasizes the psychological aspects of decision-making, suggesting that people evaluate potential gains and losses relative to a reference point and exhibit risk aversion when facing potential losses. In the context of livestock insurance policies and farmers' risk management strategies, prospect theory would help understand how farmers perceive and respond to risks associated with livestock production. For instance, farmers may be more inclined to invest in insurance policies that protect against significant financial losses (such as mortality or production loss) due to their aversion to potential negative outcomes (Kahneman & Tversky, 2018).

Agency Theory

Proposed by Jensen and Meckling, agency theory focuses on the relationship between principals (such as farmers) and agents (such as insurance providers) in decision-making contexts. It examines issues of asymmetric information, conflicts of interest, and risk-sharing arrangements between the principal and agent. In the context of livestock insurance policies, agency theory would help analyze the dynamics between farmers seeking risk management solutions and insurance companies offering policies. It would explore how incentives, monitoring mechanisms, and contract designs influence the adoption and effectiveness of livestock insurance in mitigating farmers' risks (Jensen & Meckling, 2018).

Resource-Based View (RBV)

RBV, initially proposed by Wernerfelt and further developed by Barney, focuses on how firms (or in this case, farmers as economic units) leverage their resources and capabilities to achieve competitive advantage. It suggests that valuable, rare, inimitable, and non-substitutable resources can lead to sustainable competitive advantages. Applied to the context of livestock insurance and risk management strategies, RBV would help assess how farmers' access to financial resources, information, and strategic capabilities influence their ability to effectively utilize livestock insurance policies as part of their risk management arsenal (Barney, 2021).

Empirical Review

Johnson (2019) delved into the impact of livestock mortality insurance on smallholder farmers, aiming to assess its effectiveness in mitigating financial risks within this specific farming context. The study employed a quantitative approach, analyzing insurance claim data and conducting farmer surveys over a three-year period. The findings revealed that farmers who had mortality insurance experienced significantly reduced financial losses during animal mortality events, ultimately leading to improved risk management outcomes. This study's recommendation emphasized the importance of expanding access to mortality insurance among smallholder farmers to enhance their resilience against livestock-related risks, particularly those related to unexpected

mortality events. It suggested that governments and insurance providers should collaborate to develop tailored insurance products that are affordable and meet the specific needs of smallholder farmers. Moreover, the study highlighted the need for educational programs to increase awareness about the benefits of insurance and to address any misconceptions or barriers that may hinder farmers from adopting such risk management tools effectively. Overall, the study provided valuable insights into the tangible benefits of mortality insurance for smallholder farmers and underscored the importance of inclusive risk management strategies in agriculture.

Garcia (2020) focused on investigating farmers' perceptions of livestock health insurance and its impact on their risk management strategies. The methodology employed qualitative interviews and surveys with farmers to gain insights into their attitudes towards health insurance and related risk management practices. The findings indicated that farmers generally held positive perceptions of health insurance, citing improved peace of mind and financial security during animal health crises. Farmers who had experienced the benefits of health insurance were more likely to recommend it to their peers, highlighting the potential for positive word-of-mouth promotion and increased adoption rates. The study recommended implementing educational programs to increase awareness and uptake of livestock health insurance among farmers, thereby enhancing their ability to manage health-related risks effectively. Additionally, the findings emphasized the importance of transparent communication between insurance providers and farmers to build trust and ensure that insurance products align with farmers' needs and expectations. Overall, the study shed light on the role of perceptions and attitudes in driving the adoption of livestock insurance among farmers and underscored the importance of effective communication strategies in promoting risk management tools.

Martinez and Perez (2018) conducted a comparative analysis of livestock insurance schemes in diverse agricultural contexts, aiming to assess their effectiveness and impact on farmers' risk management strategies. The methodology involved a cross-sectional analysis of insurance claims data and farmer interviews across multiple regions. The study's findings highlighted that insurance schemes with flexible coverage options and timely payouts were more effective in supporting farmers' risk management efforts. Farmers expressed greater satisfaction with insurance schemes that offered comprehensive coverage for a range of risks and provided prompt compensation for losses. The study recommended policymakers to tailor insurance schemes to specific regional needs to enhance their relevance and impact in assisting farmers with risk management in livestock production. Furthermore, the findings emphasized the importance of regulatory frameworks that promote transparency, fairness, and accessibility in the insurance market to ensure that farmers can make informed decisions and access suitable risk management tools. Overall, the study provided valuable insights into the factors that contribute to the effectiveness of livestock insurance schemes and highlighted the importance of customized solutions for diverse agricultural contexts.

Smith (2021) focused on conducting an economic analysis of livestock insurance premiums and their contribution to risk reduction for farmers. The methodology included a cost-benefit analysis, comparing insurance premiums with potential losses and risk mitigation benefits. The findings indicated that farmers who invested in livestock insurance experienced lower overall risk exposure and financial volatility, leading to improved long-term profitability. The study recommended exploring innovative premium structures and risk-sharing mechanisms to make insurance more accessible and beneficial to farmers in managing risks associated with livestock production. It also

highlighted the importance of considering the broader economic impacts of insurance, such as improved creditworthiness and investment opportunities for farmers, in assessing its value as a risk management tool. The findings underscored the potential for livestock insurance to contribute to sustainable agricultural practices by providing a safety net for farmers and encouraging prudent risk management strategies. Overall, the study provided a comprehensive economic perspective on the benefits of livestock insurance and offered practical recommendations for enhancing its effectiveness in supporting farmers' risk management efforts.

Lopez and Gonzales (2018) examined how livestock insurance contributes to sustainable agricultural practices and resilience against environmental risks. Their study employed a combination of qualitative interviews with farmers and quantitative analysis of insurance claims and environmental data. The findings highlighted that livestock insurance played a vital role in encouraging sustainable farming practices and reducing environmental risks associated with livestock production. Farmers who had insurance were more likely to invest in technologies and practices that enhance resource efficiency, reduce pollution, and conserve biodiversity, thus contributing to the long-term sustainability of their farming operations. The study recommended integrating insurance incentives with environmental stewardship programs to enhance both agricultural sustainability and risk management practices. It also emphasized the importance of public-private partnerships and policy support to promote sustainable agriculture and ensure that insurance incentives align with broader environmental goals. Overall, the study provided valuable insights into the synergies between livestock insurance, sustainable farming practices, and environmental resilience, highlighting the potential for insurance to play a proactive role in addressing pressing environmental challenges in agriculture.

Khan (2023) investigated the relationship between livestock insurance adoption and farmers' adoption of technological innovations for risk management. The methodology utilized survey data and regression analysis to explore correlations between insurance uptake, technology adoption, and risk outcomes. The findings suggested that farmers with livestock insurance were more likely to invest in technologies such as precision farming, leading to improved productivity and risk mitigation. The study recommended policymakers promote synergies between insurance programs and technology adoption initiatives to enhance agricultural resilience effectively. It also highlighted the importance of targeted extension services and capacity-building programs to support farmers in adopting and leveraging technological solutions for risk management. The findings underscored the potential for livestock insurance to serve as a catalyst for technological innovation and modernization in agriculture, driving positive outcomes for farmers, the environment, and the broader agricultural sector.

Ahmed (2019) assessed the socioeconomic effects of livestock insurance on rural livelihoods, community resilience, and income stability. Their study utilized a mixed-methods approach, combining surveys, focus groups, and economic modeling techniques. The findings indicated that livestock insurance contributed to improved household incomes, reduced vulnerability to shocks, and enhanced community cohesion in rural areas. Farmers who had insurance reported higher levels of financial security, enabling them to invest in productive assets, education, and healthcare, thus improving overall well-being and economic opportunities within rural communities. The study recommended expanding access to insurance and complementary support services to amplify the positive socioeconomic impacts of livestock insurance on rural communities. It also emphasized the need for targeted interventions to address barriers to insurance access, such as

affordability, awareness, and trust, to ensure that all members of rural communities can benefit from risk management tools effectively. Overall, the study provided compelling evidence of the transformative potential of livestock insurance in empowering rural communities, reducing poverty, and fostering sustainable development.

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

RESULTS

Conceptual Gap: While studies such as Johnson (2019) and Garcia (2020) have explored the impact and perceptions of livestock insurance among smallholder farmers, there is a gap in understanding the specific mechanisms through which insurance influences farmers' risk management strategies. Future research could delve deeper into the behavioral economics aspects, such as risk aversion, decision-making processes, and information asymmetry, to provide a more nuanced understanding of how farmers perceive and engage with insurance products in managing various risks associated with livestock production.

Contextual Gap: Martinez and Perez (2018) conducted a comparative analysis of livestock insurance schemes across diverse agricultural contexts. However, there is a need for further research focusing on the contextual factors that influence the effectiveness of insurance schemes in different regions. Factors such as market structures, regulatory environments, institutional support, and socio-economic conditions can significantly impact the adoption and outcomes of livestock insurance. Investigating these contextual nuances can help tailor insurance policies and risk management interventions to specific regional needs, thus enhancing their relevance and impact on farmers' risk management strategies.

Geographical Gap: The study reviewed primarily focused on agricultural contexts in developed or middle-income economies. There is a notable gap in research concerning the effectiveness and challenges of livestock insurance policies in low-income or resource-constrained settings, particularly in sub-Saharan Africa or Southeast Asia. Understanding the unique challenges faced by farmers in these regions, such as limited access to financial services, climate variability, and inadequate infrastructure, is crucial for designing targeted interventions and policy recommendations to improve risk management outcomes and agricultural resilience in these vulnerable contexts (Garcia, 2020).

CONCLUSION AND RECOMMENDATIONS

Conclusion

The conclusion regarding the effect of livestock insurance policies on farmers' risk management strategies is multifaceted. Firstly, these policies offer a safety net against unforeseen losses due to various risks such as disease outbreaks, natural disasters, or market fluctuations. This assurance can encourage farmers to invest more confidently in their livestock operations, knowing they have a buffer against significant financial setbacks.

Moreover, livestock insurance can contribute to the overall stability of agricultural communities by mitigating the impact of disasters on farmers' livelihoods. It can also promote sustainable farming practices by incentivizing risk-reducing behaviors, such as improved animal husbandry or investing in preventive measures.

However, the effectiveness of these policies depends on various factors such as the coverage offered, premiums, accessibility to small-scale farmers, and the responsiveness of insurance mechanisms to farmers' needs. Therefore, while livestock insurance can be a valuable tool in farmers' risk management toolbox, policymakers and insurers must continuously evaluate and improve these policies to ensure they genuinely benefit farmers and enhance agricultural resilience in the long term.

Recommendations

The following are the recommendations based on theory, practice and policy:

Theory

A deeper exploration into the psychological aspects of risk perception among farmers would enrich our understanding of how livestock insurance influences risk-taking behavior and investment decisions. Research in this area could uncover nuanced insights into the underlying motivations and hesitations that farmers experience when considering insurance options. Additionally, investigating the role of information asymmetry in insurance markets would shed light on the challenges farmers face in accessing and understanding insurance products. By integrating socio-economic factors into theoretical models, researchers can develop a more comprehensive framework that accounts for the diverse risk management needs of different farming communities.

Practice

Practical recommendations include designing and implementing pilot programs that offer customized livestock insurance products. These programs should be tailored to the specific risk profiles and needs of various farming communities, taking into account factors such as farm size, location, and production systems. Collaboration with agricultural extension services is also crucial to providing farmers with the necessary training and education on risk management strategies, including the benefits and limitations of livestock insurance. Leveraging digital technologies can further enhance the accessibility and efficiency of insurance services, particularly for smallholder farmers in remote areas who may face logistical challenges.

Policy

On the policy front, advocating for initiatives that incentivize private insurance companies to offer affordable and comprehensive livestock insurance products is essential. These initiatives should include measures to encourage innovation in product design and delivery, as well as flexible payment options and realistic coverage limits that align with farmers' financial capacities. Public-private partnerships can play a significant role in expanding the reach of livestock insurance programs, leveraging government subsidies or reinsurance mechanisms to reduce the financial burden on both farmers and insurers. Establishing robust regulatory frameworks is equally important to ensure transparency, fairness, and accountability in the administration of insurance policies, thereby building trust and confidence among farmers in these risk management tools.

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