

# Strengthening Agricultural Business Resilience: Credit Risk Awareness and Financial Literacy for Livestock and Mixed-Farming Enterprises

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**Abstract:** Emerging threats to agriculture, including climate change, market volatility, and structural constraints that exacerbate income instability, are increasingly evident across many countries. Sound financial decision-making by farmers is critical to sustaining output and reducing sectoral destabilization. This paper, drawing on resilience theory and a review of literature, examines barriers to financial inclusion, such as gender discrimination, low literacy levels, and inadequate rural infrastructure, that limit farmers' access to credit and other financial services. It analyzes the role of credit risk awareness and financial management skills in strengthening the resilience of livestock and mixed-farming enterprises. Emerging approaches, including peer-led financial education, integrating credit knowledge into agricultural extension services, and leveraging digital and mobile platforms for inclusive training, are also discussed. Findings show that financial literacy and responsible borrowing reduce vulnerability, enabling investment in income diversification and yield-enhancing technologies. The study contributes to ongoing discussions on agricultural resilience by identifying financial literacy as a critical foundation for building just and sustainable agro-industry systems.

**Keywords:** Agribusiness, Credit Risk Awareness, Financial Literacy, Agribusiness Resilience, Diversification, Financial Management.

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## I. INTRODUCTION

### ➤ Importance of Livestock and Mixed-Farming in Rural Economies

Livestock plays a crucial role in rural communities, particularly in developing countries, by providing food, income, and employment across the value chain (Ali, 2007; BIRTHAL *et al.*, 2014). For smallholder and marginal families, livestock serves as an economic cushion, reducing poverty risks and acting as a form of insurance in difficult times (Chandrasekhar & Mehrotra, 2016; Saxena & Khan, 2017; Singh *et al.*, 2013). Beyond household benefits, livestock production enhances national economic resilience, supports food security, and strengthens rural livelihoods (Waters-Bayer & Bayer, 1992; Sharma *et al.*, 2010).

However, the resilience of livestock and mixed-farming systems is increasingly challenged by climate change, disease outbreaks, and price volatility (Bett *et al.*, 2017; Forman *et al.*, 2008). While the adaptive role of livestock in rural systems is well recognized, less attention has been paid to farmers' financial enablement—specifically, how credit risk

awareness and financial literacy support their capacity to withstand shocks and maintain productivity. Current resilience theory emphasizes institutional sustainability, adaptability, and transformability (Holling *et al.*, 2002), but the role of financial literacy and credit awareness within resilience frameworks remains underexplored.

This paper addresses that gap by examining how farmers' financial literacy, smart borrowing, risk management, and financial planning can strengthen resilience. Situating livestock enterprises within the broader context of financial inclusion and farm risk, the paper highlights how blending financial literacy with credit risk management is critical to rural economic resilience.

### ➤ Challenges Facing These Enterprises

Livestock and mixed-farming enterprises face growing pressures from climate change, market volatility, and structural limitations that threaten their sustainability. Rising temperatures, shifting rainfall patterns, and expanding disease vectors increase production costs, reduce feed availability, and compromise animal health (Bett *et al.*, 2017; Forman *et*

*al.*, 2008; Wilson & Mellor, 2009; Das *et al.*, 2016; Kimaro & Chibinga, 2013). These physical challenges are compounded by institutional and market obstacles. Poor rural infrastructure, high transaction costs, and volatile prices expose farmers to additional vulnerabilities (Pinto *et al.*, 2008). Displacement due to droughts or floods can isolate communities from veterinary and credit services, deepening both animal and financial risks (Bett *et al.*, 2017).

Technical solutions (such as improved breeds, veterinary care, and climate-resilient technologies) are necessary but insufficient. Equally vital is the financial capacity of farmers to plan, borrow responsibly, and build buffers against volatility. Without adequate financial literacy and credit awareness, households' risk unviable debt, inability to adapt, or slow recovery from crises. This underscores the urgent need to embed financial resilience, savings, informed borrowing, and risk management, within broader strategies to sustain livestock and mixed-farming systems.

In the face of financial constraints, farming businesses' financial resiliency hinges on disciplined cash-flow management, nimble budgeting, conservative loan refinancing, and rainy-day savings. Investments are made in cost-saving technologies that not only enhance the operational stability, but also reduce potential exposure of the cash flow to external shocks. Both serve to cushion income fluctuations and provide a base for more general-purpose financial literacy and credit awareness (discussed in the subsequent sections).

#### ➤ *How Credit Risk Awareness and Financial Literacy Build Resilience*

##### • *Credit Risk Awareness*

Understanding credit risk fosters compliance, sustains lender confidence, and aligns borrowing with regulatory frameworks, thereby enhancing resilience. Informed decisions about market diversification, investment, and loan management reduce vulnerability during downturns. Responsible borrowing, in turn, builds reputation and stability, allowing enterprises to weather volatility with balanced portfolios and sustainable practices.

##### • *Financial Literacy*

Despite growing awareness of borrowing, major gaps in financial literacy persist, particularly in risk management and insurance, areas critical during crises. According to the 2020 Personal Finance (P-Fin) Index, women, youth, and low-income households remain especially vulnerable due to persistently low financial literacy levels. Strengthening financial literacy is thus essential to equip households and enterprises with the skills to mitigate risks, access credit responsibly, and enhance long-term resilience.

## II. UNDERSTANDING BUSINESS RESILIENCE IN AGRICULTURE

### ➤ *Definition of Resilience in the Agricultural Context*

Resilience theory describes resilience as an agricultural system's capacity to continue operating in the face of institutional, social, economic, and environmental shocks and stresses, thanks to its robustness, adaptability, and transformative potential (Holling *et al.*, 2002). A key component of adaptability is financial planning, which entails;

#### • *Cash-Flow Management:*

Farmers often face volatile income cycles tied to harvest seasons. Proper planning prevents shortages during off-peak periods. Savings and investment buffers created in prosperous years can cushion lean periods.

#### • *Operational Management:*

Effective financial planning covers people, machinery maintenance, and inputs like seeds and fertilizers while projecting revenues (USDA ERS, 2022). Good planning reduces debt burdens and lowers costs (OECD, 2020).

#### • *Funding Options:*

Access to government loans, cooperatives, and microfinance expands capital availability (IFC, 2012). Investments in irrigation or precision farming can enhance profitability and reduce vulnerability to climate shocks (Ali & Erenstein, 2017).

#### • *Regulatory and Tax Considerations:*

Farmers benefit from tax breaks, subsidies, and legal protections such as insurance contracts, land deeds, and rental agreements (FAO, 2019; World Bank, 2021).

### ➤ *Risk and Risk Management in Agriculture*

#### • *Climate Risks:*

Farmers are highly vulnerable to droughts, floods, and other weather extremes. Climate-resilient crops, forecasting tools, and crop insurance are essential (FAO, 2019; USAID, 2013).

#### • *Market Risks:*

Trade laws, currency shifts, and international supply chains affect prices. Contract farming, diversification, and commodity hedging reduce exposure (OECD, 2020).

#### • *Biological Risks:*

Pests and diseases can cause significant losses. Integrated pest management, crop rotation, and biological controls build resilience (Gatzweiler & von Braun, 2016).

#### • *Technological Risks:*

While technology boosts productivity, premature adoption can create financial strain. Phased implementation mitigates these risks (IFC, 2012).

- *Labour Risks:*

Labour shortages continue to disrupt farming. Mechanization and flexible work arrangements offer alternatives but require long-term planning (OECD, 2020).

- *Policy and Regulatory Risks:*

Shifts in subsidies or environmental policies can disrupt operations, requiring contingency planning and continuous policy monitoring (FAO, 2019; World Bank, 2021).

- *The Role of Credit Risk Awareness*

Knowledge of fund cost loss during the process of their repayment by a borrower is a form of credit risk awareness. Essentially, credit risk is the probability that a lender will not receive the principal and interest due on an investment (or loan), which will, in turn, lead to cash flow problems and additional collection expenses. Lenders are able to review and manage this risk in advance, knowing it exists. Understanding the critical areas of Credit risk can be reduced by lenders evaluating several crucial elements to determine a borrower's suitability for lending requirements, such as their recent debt commitments, income stability, and payback history.

It is difficult to predict who may default, but by raising awareness and properly managing credit risk, potential losses can be significantly reduced. In exchange for taking on this risk, the lender or investor receives interest payments from the borrower or issuer of a debt obligation (Board of Governors of the Federal Reserve System, Credit Risk Management).

- *Common Credit-Related Challenges for Farmers*

The following are the main credit-related issues that farmers confront, according to Arasomwan (2019), Okoro and Nwali (2017), Oluwamayokun (2018), Fadeyi (2018), and Lemessa and Gemechu (2016):

- ✓ *Restricted Access to Banking Services in Rural Areas:*

Formal banking infrastructure is frequently inaccessible to rural farmers. In order to discourage rural investment, commercial banks point to a number of obstacles, including low household income and savings capacity, high operating expenses brought on by dispersed settlements and inadequate infrastructure, and the idea that agricultural lending carries a high risk. Due to these issues, there are fewer financial institutions in rural areas, which makes it very hard for many farmers to obtain credit.

- ✓ *Absence of Acceptable Collateral:*

Many farmers in rural areas lack the acknowledged collateral needed to obtain official loans. Land, which is sometimes the only asset, is not appropriate as security for loans under weak land tenure systems. Rural women are particularly disadvantaged since they rarely possess land titles.

- ✓ *High Perceived Agriculture Risk:*

Farming is often perceived as the greatest risk undertaking due to unpredictable weather patterns, disease and bug outbreaks, volatile prices caused by seasonal supply

and demand, and a lack of adequate infrastructure for processing and storage. Banks utilize this image to deter farmers from applying for loans by increasing interest rates or tightening their lending criteria.

- ✓ *Lack of Credit Information:*

Many rural farmers, especially women, are unaware of the available financial options because of illiteracy, low educational attainment, and an inability to understand or access government publications and scheme criteria. This misinformation results in the underutilization of agricultural finance programs financed by the government and donors.

- ✓ *High Cost of Credit Administration:*

It is costly to offer loans in rural regions due to inadequate transportation and communication systems, increased monitoring and recovery costs, and high default rates caused by farm-related hazards.

- ✓ *Market Support:*

Only in remote areas with limited market access, regular profitability, and consequential repayment risks for farming communities due to obscured or compatriate (urban/export) market denial. As part of the standard credit process, banks also evaluate market-related risks, and these increase with bad roads and lower mobility everywhere that loan applications come from.

- ✓ *Reliance on Informal Credit Sources:*

As small farmers are unable to get access to formal credit, many of them stand in line with moneylenders or one of the microcredit agencies for a short-term loan at exorbitant interest rates. This eventually makes farmers more financially vulnerable because these loans tend to be informal and not sustainable.

- *Importance of Understanding Loan Terms, Interest Rates, and Repayment Responsibilities*

- ✓ *Customized Financial Solutions:*

Realization that agricultural loans are required for farmers to buy machinery, fertilizers, or seeds. This step is a great deal where the requirement will be fulfilled by issuing, say, financing for crop production with land as collateral, and so on. A farmer will always have access to financial resources that suit their needs.

- ✓ *Competitive Interest Rates:*

By and large, agricultural loans offer lower interest rates than commercial standard interest fees, enabling farmers to keep more of their earnings for long-term financial security or potential reinvestment.

- ✓ *Supporting Innovation and Growth:*

Agricultural loans for a farm that will grow the farm size, as well as invest in more advanced farming practices. Direct payments help ensure farmers can compete and remain productive in a changing agricultural market.

✓ *Local Support and Expertise:*

Lenders who are familiar with the agricultural marketplace in the state can offer knowledgeable advice, assisting farmers in selecting appropriate loan options and understanding their financial responsibilities.

✓ *Market Volatility:*

Planning and achieving financial stability requires an understanding of the risks related to fluctuations in market prices and agro-environmental conditions, which can directly affect farm revenue and the ability to repay loans.

✓ *Responsible Debt Management:*

Borrowing should be limited to amounts that can be repaid within agreed terms. Excessive debt is a major threat to the survival of a farm. True success demands that you budget, plan, and act prudently with your financing.

✓ *Collateral:*

In a few cases, land or equipment needs to be submitted as security to avail agricultural loans. Farmers need to consider the risks of offering real property as collateral and establish a payment plan in writing in order to mitigate potential losses.

➤ *The Importance of Financial Literacy*

Public knowledge and awareness of formal financial institutions, related benefits, features, costs, risks, rights, and obligations connected with the use of financial products and services is called financial literacy. Financially literate individuals have a well-developed understanding of fundamental financial concepts, have the skill to apply that knowledge, and have the self-esteem to make decisions. It is a financial benefitting instrument of its own and also aids individuals and the country, providing easier entry into the economy.

Financial literacy is defined by Remund (2010) as the ability to understand basic financial concepts and their application to personal money management: achieving basic short-term and long-term financial goals; and an understanding of how economic events affect the well-being of a person. Similarly, Huston continues to say that financial literacy entails being aware of and comprehending the different financial instruments available for use in business as well as in daily lives (Huston, 2010). Carpena & Zia (2011) identify that financial literacy “consists of an understanding of three key sets of concepts: basic numeracy skills, an understanding of basic concepts related to equipment, and a large number of attitudes toward debt decisions.” In a broad sense, financial literacy means that you have both the conceptual knowledge and are also well-informed in matters of bankruptcy, which actually should be how much they know about banking, deposits, pensions, credit insurance, and taxes.

• *Scope of Financial Literacy*

✓ *Budgeting:*

Budgeting is a process of creating a plan to spend money to adequately track and control where it goes. And as for the financial aspect: a financially literate person monitors

spending, sets reasonable limits, and allocates money to savings or debt repayment. A good budget allows workers to stay within their means, without going into excess debt.

✓ *Saving Money:*

Saving is the art of setting aside something, usually money, for future needs or emergencies. Financial literacy is simply the awareness to save money, which would be put in an emergency fund and legacy savings accounts that are going to help you grow that little bit of wealth.

✓ *Investing:*

Investing is the bedrock of financial literacy. This involves knowledge of the various types of investments (stocks, bonds, mutual funds, etc.), gauging risk tolerance, and selecting a strategy that fits individual goals and stages in life. Financially knowledgeable people understand the importance of long-term investing in accumulating wealth.

➤ *Benefits for Farm Decision-Making and Planning*

• *Make Informed Decisions:*

Financial literacy enables farmers to make effective and informed decisions. Knowing financial transactions aids in deciding what steps to take and what the company can afford, as most business decisions have a financial component. To maintain profitability, farmers must figure out a fair markup and understand the costs of selling agricultural products and services, such as operations and sales expenditures. Accurate financial records and cost analysis enable wise pricing decisions. By examining financial data, farmers may ascertain whether their business can afford a loan. Additional advantages of financial literacy include the ability to compare loan possibilities and select lenders with reasonable interest rates. Financially literate farmers are better able to prioritize important tasks and identify areas where expenses may be reduced in hard times. The business will be able to continue running without the requirement for reserves if this is done. Additionally, it promotes the creation and upkeep of emergency funds.

• *Reduce Risks:*

Farmers who possess financial literacy abilities can reduce, manage, and control risks. It is wise to keep cash on hand to help the company through tough times when there are hazards related to manufacturing, the market, institutions, the environment, or money. Insurance is another essential tool for risk management, particularly for environmental hazards such as disease outbreaks or weather-related incidents. Financial literacy is essential for comprehending, accepting, and selecting suitable insurance providers that complement the organization's objectives. Farms can be endangered by financial risks like inflation and shifting input or sales prices. An examination of agricultural financial aspects can help reduce these hazards. Farmers may anticipate such dangers and take proactive measures, such as modifying product prices to protect revenue, with the use of pertinent data, analysis, and precise forecasts. Adherence to laws, rules, and corporate regulations is guaranteed by financial literacy. This involves being aware of the taxes and levies that the company is required to pay. Noncompliance

may lead to severe financial penalties or possibly the firm's dissolution. When business owners are financially literate, they can recognize these obligations and carry them out correctly, avoiding legal and financial risks.

- *Handle Financial Resources:*

To successfully and efficiently handle the company's financial resources, farmers must possess financial literacy abilities. This entails managing revenue and spending appropriately to guarantee long-term viability and expansion. Farmers who possess sound financial management abilities are able to control their revenue, debt, income, and net profit. This procedure, referred to as financial resource allocation, guarantees the proper and efficient use of company cash. Since money is spent sensibly, effective financial resource management also increases return on investment and encourages wealth building. To plan, carry out, and track financial goals, these procedures need a minimum level of financial literacy.

- *Link to Improved Productivity and Sustainability*

Low financial literacy increases sensitivity to shocks, debt loads, and the incapacity to invest in inputs. This hardship affects agriculture, lowering productivity and fueling societal unrest. Giving farmers financial literacy, however, might lessen their susceptibility and enhance their quality of life. The potential economic benefits of financial empowerment are highlighted by studies that indicate a 3% increase in agricultural income can result from a 10% increase in financial literacy.

According to the UN's 2015 2030 Agenda, financial literacy is a crucial component of sustainable development (Swiecka, Terefenko, Wisniewski, & Xiao, 2021). Therefore, farmers, as farm entrepreneurs, require financial literacy to effectively manage their farm businesses (Paltasingh & Goyari, 2018; Safitri, 2021). For example, a farmer who intends to apply for a loan from a formal financial institution to increase productivity and performance is expected to understand the terms and conditions of the loan and also possess adequate financial management skills to utilize the loan to avoid running into a debt burden (Twumasi, Jiang, Adhikari, *et al.*, 2022).

### III. CASE STUDIES' FINDINGS

- *Outcomes for Credit-Aware Farmers During Crises*

This illustrates how farmers who have access to credit and are generally knowledgeable about financial tools benefit from a variety of problems. According to IFAD (2007), for example, low-income rural households might improve their income status by having access to financing during off-farming seasons or following poor harvests. This suggests that farmers who are concerned about credit are more tolerant of crop failures and fluctuations in seasonal revenue.

Similarly, Ahma (2010) emphasizes how financing enables poor rural farmers to not only access new markets but also manage unforeseen shocks and pressures. According to this, financially knowledgeable farmers are better able to diversify their sources of income and use credit to deal with

unanticipated challenges like pest outbreaks, droughts, or drops in market prices. It also points out that financing could be a means of closing the poverty gap when smallholder and large-scale farmers' incomes diverge (IFAD, 2007). This supports the notion that, in contrast to their colleagues who lack financial access or literacy, credit-aware farmers can become more resilient and competitive.

The need for financial support in helping impoverished farmers recover from low production cycles is further highlighted by Oyateye (1980), who adds that when farmers are given access to credit facilities, persistently low productivity and low income can be compensated. Furthermore, according to Akwai-Sakyi (2013), having access to finance enables farmers to buy equipment, better seeds, fertilizer, and other essential input resources that are vital in periods of diminishing productivity or increasing input costs. In addition to increasing income and productivity, loan availability helps rural households improve their well-being in areas like health and education, which are frequently pressured during economic downturns.

- *Impact on Business Continuity*

The influence of agricultural loans in Bangladesh was examined by Rahman, M. H., *et al.* (2020), who emphasized how it might increase productivity and improve livelihoods, especially for marginalized farmers. Concessional loans, like Bangladesh Bank's 4% interest plan, increased crop yields and the adoption of new technologies, according to the report. Benefits differed by wealth level and geography, though, favoring farmers with greater resources. Notwithstanding its achievements in increasing income levels, disparities in loan distribution and allocation still exist, requiring policy changes for long-term and just gains. According to an evaluation by Akhtaruzzaman M. *et al.* (2017), Bangladesh Bank's "Sharecroppers Refinance Scheme," which was executed through BRAC in FY16, considerably improved the socioeconomic circumstances of sharecroppers. The plan improved access to formal finance, raised productivity, and decreased dependency on non-institutional credit. Positive effects included women's empowerment, asset accumulation, and increased income. Fund diversion and repayment problems persisted, nevertheless, leading to suggestions for program modifications to improve financial inclusion and rural development. Rahman, M. W. (2011) evaluated agricultural lending programs, emphasizing the significance of new financial intermediaries such as PCBs and FCBs as well as legislative changes. The study highlighted the significance of credit disbursement in increasing output by finding a considerable positive link between it and farm productivity. Even with better credit performance, allocation issues still exist. Policymakers were able to improve the credit framework with the help of analytical models.

Deb, L., Sarkar, M. A. R., and Siddique (2021) assessed the agricultural loan program offered by Bangladesh Krishi Bank (BKB) for the production of Boro rice in Mymensingh. Although 46% of loans were misused, their study showed that BKB loans increased profitability by enhancing farming efficiency and input management. High

acquisition costs and administrative roadblocks were among the difficulties. Infrastructure and inexpensive mortgage rates were among its advantages. Simplifying loan procedures, cutting down on informal expenses, and enhancing credit distribution for smallholder farmers were the main goals of the recommendations.

Spio, K. (2006) studied agricultural financing systems in developing nations, emphasizing how they affect livelihoods and productivity. The study found that while agricultural loans, when utilized appropriately, boosted output, they also came with drawbacks, including high interest rates, bureaucratic red tape, and unequal access, especially for small farmers. Lowering lending rates, improving institutional infrastructure, and offering targeted support to smallholders were among the proposals made to encourage the use of credit, agricultural sustainability, and rural development.

#### ➤ *Challenges and Barriers*

##### • *Low Education Levels*

Low levels of financial knowledge remain a major barrier to resilience. Studies show that 66% of adults in the United States are not financially literate (Lusardi, Hasler, & Yakoboski, 2020), and the situation is even more severe in rural farming communities across Africa and Asia. Limited numeracy and weak record-keeping reduce farmers' ability to plan, borrow responsibly, and manage risks, increasing their vulnerability during shocks (Remund, 2010; Huston, 2010).

##### • *Limited Access to Financial Education Resources*

##### ✓ *Low Exposure to Financial Education:*

Many rural farmers, especially in Africa and developing regions, report little to no participation in financial management training. Studies show that in some areas, only about 45% of farmers have had any access to financial education, with even fewer having attended formal training or workshops (Klapper, Lusardi, & Oudheusden, 2015; Zhang & Posso, 2019). The primary source of financial literacy information is often the radio, followed by occasional trainings, cooperative societies, and informal networks like friends and family (OECD, 2020).

##### ✓ *Barriers to Financial Inclusion:*

Limited financial education constrains farmers' ability to access, use, and benefit from formal credit and financial services. This results in less opportunity to invest in productivity-boosting technology or practices, more susceptibility to unfavourable loan conditions, and reliance on unofficial funding sources (Demirgüç-Kunt *et al.*, 2018; Bongomin *et al.*, 2017).

##### ✓ *Knowledge Gaps in Financial Goods:*

Insufficient familiarity and understanding of the many financial goods and services that are accessible (such as digital banking, savings, and insurance) reduces the efficacy of risk management initiatives. Due to their lack of knowledge about credit conditions, repayment plans, and the consequences of loan default, farmers are more likely to

overborrow or use loans in an inefficient manner (Klapper *et al.*, 2015; FAO, 2016).

##### ✓ *Problems with Infrastructure and the Economy:*

In rural regions, banks and digital connectivity are scarce, which makes it more difficult to obtain financial services and educational opportunities. Other significant obstacles include limited programs tailored to their needs, language challenges, and ignorance of available resources (Demirgüç-Kunt *et al.*, 2018; FAO, 2016; OECD, 2020).

##### ✓ *Effect on Business Resilience:*

Inadequate financial knowledge leads to subpar investment decisions, poor financial planning, and insufficient record-keeping. According to IFAD (2011) and Bongomin *et al.* (2017), this makes farmers less resilient to shocks (such as price drops or outbreaks of animal diseases) and more susceptible to business disruptions or losses during emergencies.

##### • *Gender Gaps*

Female farmers are considerably less likely to own land or other productive assets, access financial services, or receive education and extension support (Kasa *et al.*, 2015). Although up to 90% of women are engaged in horticulture and crop processing, they rarely own land in practice (Development Gateway *et al.*, 2022).

Despite the existence of legal frameworks such as the Agricultural Land Act and the Agricultural Orientation Law that set minimum criteria for women's land ownership, implementation remains weak. In reality, women often rely on land allocated by male farm managers (Development Gateway *et al.*, 2022). These legal provisions are undermined by traditional and customary laws, which continue to discriminate against women (USAID, 2011).

Moreover, the land available to women is typically smaller in size, less fertile, and cannot be optimally utilized due to barriers such as low literacy, limited access to credit, and restricted availability of improved agricultural inputs (Development Gateway *et al.*, 2022). Women in Mali also face income constraints and poor access to formal credit systems (IFAD, 2020).

In 2017, the gender gap in Mali for account ownership, whether in a financial institution or through mobile money, stood at 43.44%. The gap was even wider for ownership of accounts in formal financial institutions alone, reaching 63.28%. These figures highlight the persistent gender-based barriers women face in accessing financial services in Mali.

## IV. RECOMMENDATIONS

#### ➤ *Promote Targeted Financial Literacy Programs:*

Financial literacy remains uneven among smallholder farmers, particularly women, youth, and marginalized groups. Governments, NGOs, and financial institutions should design farmer-friendly programs that move beyond generic training to address specific needs such as budgeting, saving, insurance, and responsible borrowing. Tailored

approaches increase uptake and ensure financial education translates into practical resilience strategies.

➤ *Integrate Credit Risk Education into Agricultural Extension Services:*

Agricultural extension should include modules on credit management, repayment obligations, and risk awareness alongside technical advice. This integration ensures that farmers build both production and financial capacities simultaneously, reducing the risk of over-indebtedness and enabling more sustainable adoption of credit facilities.

➤ *Leverage Mobile and Digital Platforms for Inclusive Outreach:*

Mobile phones and digital applications can expand access to financial education and services in remote areas. Voice-assisted tools and peer-to-peer learning models are especially valuable for farmers with limited literacy. To reduce entry barriers, governments and development actors could subsidize basic devices, provide data support, and encourage local innovation in digital financial education.

➤ *Address Structural Barriers and Gender Gaps:*

Policy reforms should strengthen land rights, collateral frameworks, and access to financial services for women and marginalized farmers. Coupling financial literacy with legal empowerment and inclusive financial products ensures that interventions reach vulnerable groups who are disproportionately excluded from formal credit systems.

## V. CONCLUSION

Resilience in livestock and mixed-farming systems depends not only on climate adaptation and access to markets but also on farmers' ability to make informed financial decisions. This paper demonstrates that credit risk awareness and financial literacy reduce vulnerability, improve financial planning, and enhance long-term sustainability. Evidence shows that farmers who understand credit terms, repayment obligations, and risk management practices are better able to cope with crises, maintain business continuity, and adopt yield-enhancing innovations. However, systemic barriers, including limited education, gender disparities, and poor financial infrastructure, continue to hinder equitable access to credit and financial services. Addressing these gaps requires a multi-faceted approach: embedding financial and credit education into agricultural extension programs, leveraging mobile and digital platforms for rural outreach, and designing simplified, farmer-friendly loan products. By aligning policy, institutional frameworks, and technological innovations, stakeholders can create an enabling environment where smallholder farmers are empowered to manage risks and seize opportunities. The study underscores that strengthening financial capabilities is a cornerstone of agricultural resilience and that integrating financial literacy into development strategies is essential for inclusive and sustainable agribusiness growth.

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