ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 17, Issue, 09, pp.34645-34649, September, 2025
DOI: https://doi.org/10.24941/ijcr.49544.09.2025

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

THE MECHANISM AND DEVELOPMENT PATH STRATEGIES OF THE DIGITAL ECONOMY IN BOOSTING FARMERS' AND HERDERS' ENGAGEMENT IN ANIMAL HUSBANDRY

***Shengwen Yan**

Beijing Academy of Social Sciences, China

ARTICLE INFO

Article History:
Received 20th June, 2025
Received in revised form
24st July, 2025
Accepted 29th August, 2025
Published online 30th September, 2025

Keywords:

Digital Economy; Livestock Farming Among Farmers and Herders; Employment Quality; Mechanism of Action

***Corresponding author:**
Shengwen Yan

ABSTRACT

Digital transformation serves as a vital means to empower local livestock development, enhance production efficiency, improve quality control, strengthen regulatory capabilities, and promote sustainable development. Currently, the livestock industry in Tibet exhibits a pronounced trend toward digital transformation, yet significant contradictions persist between economic growth and environmental pollution control. Local farmers are reluctant to engage in frontline livestock farming, while small and medium-sized individual farmers lack competitive awareness; livestock and poultry products harbor multiple quality and safety risks, making oversight challenging; increased operational uncertainties have dampened farmers' investment willingness. Digital transformation offers new pathways to effectively address industry challenges and boost farmers' incomes. Recommendations include: -Creating digital application scenarios and new business models to expand agglomeration capacity; Promoting digital transformation in the livestock sector and clustering digital herders; Building a digital ecosystem for the healthy development of digital herders.

Citation: Shengwen Yan. 2025. *"*The Mechanism and Development Path Strategies of the Digital Economy in Boosting Farmers' and Herders' Engagement in Animal Husbandry*". International Journal of Current Research, 17, (09), 34645-34649.*

INTRODUCTION

This paper is a phase-specific outcome of the 2025 General Research Project "Research on the Mechanisms and Key Pathways for the Digital Economy to Promote High-Quality Employment Development in Beijing"(Project KY2025C0334) conducted by the Beijing Academy of Social Sciences. A strong nation must first strengthen its agriculture. General Secretary Xi Jinping emphasized: "When it comes to agricultural and rural work, no matter how much we discuss it, increasing farmers' income is the key." "We must persist in making increasing farmers' income the central task of work concerning agriculture, rural areas, and farmers, and spare no effort to broaden the channels for farmers to increase their income and achieve prosperity." The Third Plenary Session of the 20th CPC Central Committee proposed improving the agricultural management system and linking support policies for new agricultural management entities to their ability to boost farmers' incomes. It also called for establishing systems to promote deep integration between the real economy and the digital economy, accelerating the development of mechanisms to foster digital economic growth, and refining policy frameworks for digital industrialization and industrial digitalization. Increasing the income of farmers and herders is not only a vital pathway to rural economic development and improved living standards but also the central task of implementing the rural revitalization strategy. Digital transformation serves as a vital means to empower the development of Tibet's local animal husbandry, enhance production efficiency, improve quality control, strengthen regulatory capabilities, and promote sustainable development. It is recommended to focus on creating digital application scenarios and new business models to expand agglomeration capacity; advance the digital transformation of the animal husbandry sector and foster the gathering of digital herders; and build a digital ecosystem conducive to the healthy development of digital herders. By leveraging the digital economy to empower the growth of animal husbandry, we can effectively boost the income of farmers and herders.

Development Status of Digital Agriculture and Farmers' Income in Tibet: In recent years, the Party Committee and Government of the Autonomous Region have comprehensively implemented the guiding principles of the 20th CPC National Congress, the Second Plenary Session of the 20th CPC Central Committee, and the Central Economic Work Conference. Following the arrangements of the 10th Party Congress of the

Autonomous Region and the Regional Party Committee's Economic Work Conference, they have focused on the "Four Major Tasks" and concentrated efforts on the "Four Creations." Despite overcoming objective challenges such as weak supporting infrastructure and resource constraints, they have advanced the development of smart agriculture as a whole. Significant achievements have been made in the digital transformation of agriculture and animal husbandry, with farmers' income continuing to rise.

The digital foundation continues to strengthen, and application scenarios are increasingly diverse. The Implementation Plan for Digital Agriculture Development in the Tibet Autonomous Region (2022-2026) was promulgated, proposing a "one hub, three zones, multiple clusters, and multiple points" framework for digital agriculture. This initiative established the Agriculture and Animal Husbandry Cloud Platform and a unified regional database for agriculture and animal husbandry, developed the "Tibet Agriculture and Animal Husbandry" mobile app, and created a comprehensive "single map" of agricultural and animal husbandry data covering administrative departments across 7 prefectures (cities) and 74 counties (districts). Monitoring systems and IoT applications were expanded for barley cultivation, facility agriculture production, and agricultural machinery operations. Digital management was implemented across over 30,000 mu (approximately 2,000 hectares) of seed production bases, and a smart agricultural product quality and safety supervision platform was established covering 692 townships throughout the region. Expand smart agriculture pilot projects. Establish pilot initiatives including Lhasa's facility vegetables, Shigatse's barley, Shannan's Tibetan chickens, Nyingchi's Tibetan pigs, Mangkong's grapes, and Nagqu's yaks. Advance the Gongbu Jiangda Digital Agriculture (Tibetan Pig) Innovation Application Base project to create national and regional-level digital agriculture innovation hubs.[1]

Agricultural production has steadily consolidated, with product output continuing to rise. In 2023, the added value of agriculture, forestry, animal husbandry, and fisheries across the region reached 22.021 billion yuan, marking a 14.7% increase over the previous year. The total area of crops sown for the year was 281,390 hectares, an increase of 4,150 hectares compared to the previous year. Total grain output reached 1.0887 million tons, up 1.4% year-on-year, maintaining above 1 million tons for nine consecutive years. The total livestock inventory at year-end stood at 17.2139 million head (including cattle, sheep, goats, and horses), an increase of 424,700 head compared to the previous year-end. Among these, cattle numbered 7.1041 million head, up by 474,300 head; sheep: 9.4018 million, an increase of 13,000. Annual pork, beef, and mutton production reached 309,900 tons, up 9.7% from the previous year. Raw milk production amounted to 593,300 tons, an increase of 11.2%.[2] Ecological poverty alleviation has transitioned to ecological prosperity for the people, with agricultural and pastoral industries becoming the primary drivers of income growth. From 2016 to 2022, an average of 537,700 ecological conservation jobs were provided annually, with cumulative ecological compensation funds totaling 12.637 billion yuan. Vigorously developing ecological industries and carbon sink economies has driven green employment and entrepreneurship among the public. By the end of 2022, 64,000 farmers and herders had directly or indirectly participated in rural tourism employment, with per capita income increasing by over 4,500 yuan.[3] The "16 Measures for Increasing Residents' Income" were introduced, namely the Notice of the General Office of the People's Government of the Tibet Autonomous Region on Several Measures to Promote Income Growth for Urban and Rural Residents in Our Region (Tibet Government Office Document [2023] No. 21). This facilitated the transfer employment of 647,000 farmers and herders, generating labor income of 6.56 billion yuan. A record 3,605 recent college graduates secured employment outside the region.[4] Per capita disposable income for all residents reached 28,983 yuan, an 8.7% increase from the previous year. Urban residents' per capita disposable income was 51,900 yuan, up 6.5%; rural residents' per capita disposable income was 19,924 yuan, up 9.4%. The growth rate of rural residents' per capita disposable income ranked first among all provinces (autonomous regions and municipalities) nationwide. Operating income derived primarily from plateau-specific agricultural and pastoral industries became the main driver of overall income growth for farmers and herders, contributing 35% to the increase.

II. Challenges Facing Income Growth for Tibet's Farmers and Herders. Local livestock farming in Tibet holds dual significance: it not only boosts farmers' incomes and drives rural economic development but also provides vital supplies to the market, safeguarding stable food availability for urban residents and ensuring basic livelihood needs. In recent years, however, Tibet's livestock and aquaculture sectors have faced constraints including environmental pressures, designated restricted breeding zones, policy instability, and excessive clearance efforts. Consequently, production volumes of major livestock, poultry, and aquatic products have not seen substantial growth. By the end of 2023, the total livestock inventory reached 17.2139 million head (including cattle, sheep, and horses), an increase of 424,700 head compared to the previous year-end. This included 7.1041 million head of cattle, up by 474,300 head, and 9.4018 million head of sheep, up by 1,300 head. Annual pork, beef, and mutton production reached 309,900 tons, up 9.7% year-on-year. Raw milk output totaled 593,300 tons, increasing by 11.2%.[5] Digital transformation in local livestock farming can drive innovation, enhance production efficiency, expand markets, and thereby stimulate growth in the livestock economy. At the current stage, local livestock farming in Tibet still requires further optimization and advancement in the digital domain.

Environmental Policies Constrain Development, Increasing Pressure on Urban Supply Security: On one hand, in accordance with the requirements of laws and regulations such as the Environmental Protection Law, Water Pollution Prevention and Control Law, Animal Husbandry Law, Regulations on Nature Reserves, Regulations on Pollution Prevention and Control in Large-Scale Livestock and Poultry Farming, and corresponding implementation measures of the Tibet Autonomous Region, the strict implementation of livestock and poultry breeding prohibition zones, along with water, soil, and pollution prevention measures, has imposed stricter standards on breeding scale to varying degrees. This requires farmers to enhance manure treatment and resource utilization levels, forcing breeders to invest heavily in constructing manure treatment facilities. However, the lack of mature, low-cost treatment methods, coupled with weak integration between agriculture and animal husbandry and between crop cultivation and animal breeding, has increased production and operational costs while reducing income. On the other hand, environmental policies have increased

operational costs for numerous farms, reduced production capacity, and impacted Tibet's meat supply and urban functions. Poultry farming has also been affected by environmental inspections, illegal structure removals for green space preservation, and market downturns, causing farmers' enthusiasm for breeding to plummet and driving many out of the industry.

Declining farming motivation and overall lack of competitive awareness: According to the 2023 China Beef Cattle Industry Analysis Report, since 2013, China's cattle inventory, slaughter volume, and beef production have shown steady annual growth. With 386,000 beef cattle enterprises, China ranks third globally in both cattle inventory and beef output. In the first half of 2023, the region's livestock inventory reached 19.0319 million head (including sheep and goats), a year-on-year increase of 3.17%. Slaughter volume reached 550,100 head, a year-on-year increase of 2.9%. Meat, egg, and milk production totaled 193,200 tons, a year-on-year increase of 16.5%. The livestock production situation remained stable with positive trends, laying a solid foundation for the full-year livestock production. Since 2018, Tibet's beef production has fluctuated around 210,000 tons for five consecutive years, showing slow growth.[6] Extensive farming practices and labor shortages have driven up costs while reducing profitability. Small and medium-sized farmers, constrained by entrenched farming mindsets, have failed to pursue technological advancement, hindering production improvements.

Product Safety Faces Multiple Challenges, Exit Incentives Gain Momentum: Tibet has consistently led the nation in livestock and poultry product safety oversight, yet objective quality risks persist. Key reasons include: first, most farms self-formulate feed without quality testing, leading to disease outbreaks and excessive medication; second, to control diseases and boost profits, farms improperly use feed additives and antibiotics. Third, the supply chain involves multiple participants. The livestock industry spans feed production, veterinary drugs, farming, procurement and transportation, slaughter, and other segments, with limited integration. The presence of numerous production and operation entities, varying management standards, inadequate oversight of input procurement, and insufficient enforcement of compliance protocols make effective supervision of purchasing, sales, and transportation challenging, creating risks for disease prevention and quality safety. Fourth, not all slaughter and processing enterprises have established or strictly implemented HACCP (Hazard Analysis Critical Control Point) systems. The premium pricing for high-quality products in the terminal market is insufficiently reflected, making it difficult to positively incentivize pig farms to adopt safe and standardized farming practices.

Significantly increased uncertainties and gradually declining investment willingness: As market demand continues to grow, expanding the breeding and promoting the farming of Tibetan pigs has become a key pathway for increasing income among Tibet's farmers and herders. Currently, Tibet has 23 large enterprises specializing in Tibetan pig farming, including 2 enterprises with annual output exceeding 10,000 pigs. There are 7 Tibetan pig product processing enterprises, while farming cooperatives and village-collective farming operations are primarily concentrated in Nyingchi City, with 94 existing entities. Gongbu Jiangda County is China's sole national-level Tibetan pig conservation area and the region with the highest concentration of Tibetan pig breeding, earning it the title “Hometown of Chinese Tibetan Pigs.” [7] Since 2018, African swine fever outbreaks have impacted the breeding industry. Pig farmers in production areas have suffered losses or been forced out of business, leading to workers switching industries or occupations. Policy implementation issues have led to insufficient information, unstable expectations, and uncertain survival prospects. The difficulty in treating African Swine Fever, along with the ongoing battle against diseases like Small Ruminant Pox, Bovine Nodular Dermatitis, and key zoonotic diseases, has increased survival pressures and social burdens on farms. Prevention and control require enhanced biosecurity and breeding management, which small and medium-sized farmers struggle to meet. Small and medium-sized breeding enterprises in Tibet survive under breeding bans, with relatively outdated facilities and equipment, and policies that discourage investment.

Policy Recommendations: In the next phase, we must adhere to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era as our guiding principle. We should fully implement General Secretary Xi Jinping’s important directives on increasing farmers’ income and thoroughly carry out the decisions outlined in the Third Plenary Session of the 20th CPC Central Committee regarding further deepening reform and advancing Chinese modernization. This will promote the deep integration of the real economy and the digital economy, foster the digital industrialization and industrial digitalization, and ensure that support policies for new agricultural business entities are directly linked to boosting farmers’ incomes. We must continue consolidating and expanding the achievements of poverty alleviation, steadily increase the income of farmers and herders, and promote the comprehensive revitalization of rural areas. It is recommended to empower the development of animal husbandry through the digital economy, create digital application scenarios and new business models, expand agglomeration capacity, drive the digital transformation of the livestock industry and the gathering of digital herders, and build a digital ecosystem conducive to the healthy development of digital herders, thereby contributing to the long-term stability and high-quality development of Tibet.

Create digital application scenarios and new business models to expand agglomeration capacity:

Strengthen policy promotion and alignment to digitally support local livestock development: Strengthen digital infrastructure by building public platforms and applications for livestock farmers while enhancing policy promotion and alignment, with a focus on cultivating and strengthening leading industries. Actively shape Tibet's unique “Tibetan-branded products” by innovating working mechanisms—including standardized production processes, standardized brand-building procedures, and standardized certification—to drive industrial development. Simultaneously, guide consumers to better understand high-quality local livestock products, ultimately achieving a high-quality and competitively priced positioning for the “Tibetan Premium Livestock Products” brand.

Digital Livestock Innovation to Boost Rural Revitalization: Focusing on four digital application scenarios—production and

operations, industry supervision, public services, and rural governance—we will vigorously develop digital agriculture demonstration bases and digital village model towns through smart agriculture, digital greenhouses, smart homestays, live-streaming centers, logistics hubs, and rural digital cultural tourism. This will expand the capacity to support digital herders. Government investment in rural revitalization funds attracts participation from rural entrepreneurs, technical experts, and social capital. Leveraging specialty industries like "One District, One Product" and leisure agriculture, we enhance the development of beautiful leisure villages and agricultural parks, enabling farmers to participate in, experience, and share the benefits of digitalization.

Promoting Digital Transformation in Livestock Industries and Gathering Digital Herders

Cultivating Digital Herders to Lead New Trends in Local Livestock Farming: Encourage digital herders to become an active career choice, embodying new concepts, mastering new skills, and adapting to new trends. Prioritize training local livestock workers into digital herders by exploring external incentives and internal motivations for adopting digital technologies, while providing more personalized and diversified digital services. In 2023, 4,254 agricultural technicians were deployed to provide technical support for rural agricultural and pastoral development. Training was provided to 5,780 high-quality farmers, rural practical talent leaders, and college graduate village officials (village cadres). Our region achieved outstanding results in the inaugural National Farmers' Skills Competition. [8] Drawing on experiences from other provinces and municipalities, we have introduced projects like "Smart Planting," "Smart Management," and "Smart Industry" to propel crop cultivation, forestry, and animal husbandry onto the digital fast track. New technologies such as 5G, cloud computing, and the Internet of Things ensure the integrated combination of upstream, midstream, and downstream industrial chains. Building on this foundation, rural digital literacy training programs are actively launched to elevate cognitive levels, transform rural mindsets, and foster agricultural innovation. Initiatives such as farmsteads focused on animal husbandry and small animal farms are developed to continuously amplify the spillover effects of digital technologies.

Promote the aggregation of digital herders to jointly create the future of digital animal husbandry: Establish communication platforms for digital herders, expand their social networks, and enhance their organizational capabilities. Leverage the collaborative platform's strength and demonstration effect to guide stakeholders in forming rational benefit-sharing mechanisms. Encourage effective connections and cooperation between agricultural enterprises, digital herders, and corresponding production bases. Guide digital herders to partner with digital enterprises to achieve clustered development and high-quality growth.

Constructing a Digital Ecosystem for the Healthy Development of Digital Herders

Digital Public Service Platforms: Empowering Rural Revitalization for the Future

Deepening digital transformation and empowering rural revitalization through digital and information technologies represent the mission and responsibility of digital village construction and the exploration of distinctive rural revitalization pathways. Regions still in the exploratory phase should be guided to rapidly engage in the digital process. Simultaneously, public platforms should be established in regions with existing experience, introducing digital technologies to enhance the livestock industry and boost farmers' incomes. Furthermore, fiscal systems should be refined, supply models optimized, and "Internet+public services" leveraged to strengthen online service platforms. Extending Internet+community initiatives to rural areas and implementing online-offline governance models will accelerate the digital transformation of rural governance and support talent revitalization in rural communities.

Policy funding support propels innovation in digital animal husbandry: Sustained policy funding safeguards are implemented. Support is provided for livestock, poultry, and aquaculture in areas such as land use guarantees, fiscal funding, modern financial services, and primary product processing. Incentives including preferential credit, tax rebates, and startup subsidies are adopted to lower barriers for digital herders' innovation and entrepreneurship. By 2023, Tibet's new agricultural business entities had flourished, with leading agricultural and pastoral industrial enterprises reaching 165 and specialized farmer cooperatives reaching 12,740. while family farms surged from 15 in 2012 to 9,261—a 617.4-fold increase.[9] Since 2024, the Agricultural Bank of China Lhasa Branch has focused on farmers, herders, agricultural production, and service providers to comprehensively enhance the quality and efficiency of financial services. It has cumulatively issued 1.757 billion yuan in loans to farmers, with an average loan amount per household reaching 159,300 yuan [Liu Linlin, Agricultural Bank of China Lhasa Branch Strives to Improve Financial Service Quality and Efficiency in Rural Areas, July 5, 2024, Tibet Daily]. By strengthening information service infrastructure and digital upgrades, conditions are created for digital herders to utilize new technologies to innovate production and industrial models. Improving the supply of public services such as rural social security, education, and healthcare addresses the concerns of digital herders regarding innovation and entrepreneurship.

Integrating Digital Youth Power to Support Rural Revitalization and Youth Employment: In recent years, youth unemployment has remained persistently high. According to June 2023 data from the National Bureau of Statistics, the unemployment rate for those aged 16-24 reached 21.3%, setting a new record high. Meanwhile, digital technology is developing rapidly in rural Tibet, accelerating the pace of agricultural and rural modernization. Against this backdrop, attracting talented young digital professionals to contribute to rural Tibet is timely. This initiative not only alleviates youth employment pressures but also lays a talent foundation for agricultural and rural modernization.

.

REFERENCES

1. Department of Agriculture and Rural Affairs of the Tibet Autonomous Region, Digital Agriculture Aid to Tibet to Enter a New Phase, September 4, 2023
2. Statistical Bulletin on National Economic and Social Development of the Tibet Autonomous Region 2023, Bureau of Statistics of the Tibet Autonomous Region, National Bureau of Statistics Survey Team in Tibet, May 2024

3. State Council Information Office, The Practice and Historic Achievements of the Party's Strategy for Governing Tibet in the New Era, People's Publishing House, November 2023
4. Statistical Bulletin on National Economic and Social Development of Tibet Autonomous Region 2023, Bureau of Statistics of Tibet Autonomous Region, National Bureau of Statistics Survey Team in Tibet, May 2024
5. Nongxiaofeng Think Tank, Analysis of China's Beef Cattle Industry in 2023, September 7, 2023
6. Tibet's Tibetan Pig Industry Accelerates Development, Tibet Daily, March 27, 2024
7. Accelerating the Construction of an Agricultural Powerhouse to Advance Modernization of Tibet's Agriculture and Rural Areas (Interview with Vice Director Lin Mu), December 19, 2023
8. New Types of Agricultural Business Entities Flourish in Tibet, November 2, 2022, People's Daily Online
9. Liu Linlin, Agricultural Bank of China Lhasa Branch Strives to Enhance Quality and Efficiency of Financial Services in Rural Areas, July 5, 2024, Tibet Daily

****