What Drives or Hinders Digital Agriculture? Regional Insights from Livestock and Vegetable Farms in Western France

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Digital technologies are increasingly recognized as essential for enhancing productivity, sustainability, and competitiveness in agriculture. However, their adoption remains limited and uneven across regions, with the reasons behind adoption or non-adoption still not fully understood, particularly in certain production systems.

This study focuses on cattle breeding, pig farming, and vegetable farming systems, which have received relatively little attention, with a specific emphasis on the Grand-Ouest of France (Brittany, Pays de la Loire, and Normandy). This region, a major hub for livestock and vegetable production, presents a unique context where both large-scale and small family-run farms coexist, leading to varied adoption patterns of digital technologies. The objective is to analyze the factors influencing the adoption of digital technologies, distinguishing between farmers' motivations and the structural determinants shaping their decisions, while considering regional specificities. A mixed-methods approach was employed, combining a multinomial regression model applied to data from the 2020 French agricultural census with qualitative analysis from 49 semi-structured interviews conducted in the Grand-Ouest.

The results highlight three main motivations: improving productivity and management, reducing labor intensity, and enhancing environmental sustainability. These motivations are influenced by structural and demographic factors, such as farm size, legal status, and the farmer's educational level. Larger farms, particularly in the Grand-Ouest, are better equipped to adopt digital tools, often facilitated by strong cooperative networks and access to training programs.

However, significant barriers persist. High costs, limited internet access in rural areas, and tool complexity hinder adoption, especially for smaller farms and those engaged in short supply chains or organic farming—common in the Grand-Ouest. This regional disparity underscores the need for targeted public policies to reduce financial barriers, improve digital infrastructure, and strengthen local training and cooperative networks.

By highlighting these regional dynamics, this study contributes to a more nuanced understanding of digital technology adoption in agriculture and provides actionable insights for policymakers and stakeholders seeking to promote sustainable and inclusive agricultural innovation in France.

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