

Digital management can significantly improve coordination among seedling supply, machinery dispatch, harvesting schedules, drying queues, service records, and grain traceability systems. Recent studies on digital agricultural service systems show that digital tools can increase farmers' willingness to adopt modern agricultural technologies by improving information accessibility, strengthening technical understanding, and reducing communication barriers (Gong et al., 2024). Smart-farming research in rice systems likewise demonstrates that digital technologies are becoming increasingly important for crop monitoring, yield estimation, classification management, and production decision support (Hashim et al., 2024).

For Mashan, digital transformation does not necessarily need to begin with highly complex artificial intelligence systems. A more practical approach would be to begin with relatively simple but operationally useful digital tools, including online booking systems for transplanting and harvesting, machinery scheduling records, drying-batch monitoring, grain traceability systems, and farmer service databases. Once these systems become stable and widely accepted, the center could gradually expand toward more advanced digital support systems for quality management, emergency coordination, and regional agricultural decision-making. In high-quality rice production systems, traceability itself has already become an important source of product value.

8 Conclusion

This study used Mashan Agricultural Service Center in Shangyu District as a practical case to examine how full-process mechanization can support the green and efficient production of high-quality rice. The case shows that the real strength of full-process mechanization does not lie in any single machine or single operation. Its strength lies in coordination. When centralized seedling cultivation, machine transplanting, organized field management, plant protection, combine harvesting, grain drying, storage, and simple processing are linked into one service system, rice production becomes more timely, more stable, and better able to protect both yield and quality.

The Mashan experience also shows that regional agricultural service centers have become important institutions in the modernization of rice production. They reduce barriers facing small farmers, expand access to modern technology, improve emergency response during extreme weather, and create the practical conditions for branded high-quality rice development. The center's case is especially valuable because it connects policy goals with operational reality: it demonstrates how a local service platform can turn broad ideas such as green production, socialized service, and agricultural modernization into concrete field practices.

At the same time, the case makes clear that further progress will depend on solving several structural problems, including high capital costs, shortage of professional technicians, unequal service uptake among farmers, and weather-related risk. For that reason, the future direction of Mashan and similar centers should emphasize stronger regional service networks, training-oriented talent cultivation, useful intelligent equipment, digital management, and deeper integration of the rice industry chain. If these directions are pursued steadily, full-process mechanization can continue to serve not only as a labor-saving production model, but also as a realistic pathway toward higher quality, lower loss, greener operation, and more resilient rice agriculture.

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