

Research from Jiangsu indicates that the benefits of service-scale and land-scale coordination are real, but they also depend on governance conditions and local operating context (Fu and Yang, 2025). Studies from Jiangxi further show that the benefits of agricultural socialized services vary across farmer type, fragmentation level, region, and digital ability (Liao et al., 2025). That means a service package that works well for one village or household group may be less suitable elsewhere.

For Mashan, which serves both a core nearby area and a wider multi-township region, this problem is very relevant. Intensive “nanny-style” service near the center is easier to deliver than the same depth of service at the outer edge of the service radius. Some households may only want harvesting; others may want bundled operations; still others may care mainly about drying. Coordinating these different needs without overcomplicating management is a difficult but central task.

#### **7.4 Limited digital management capacity in rural areas**

Digital management is increasingly important, but many service centers still operate with relatively traditional management routines. This creates a gap between the complexity of the service chain and the tools available to manage it. A center must handle operation orders, machine schedules, seedling supply, drying queues, repair records, service billing, quality tracking, and sometimes subsidy-related reporting. Without stronger digital management, coordination becomes more difficult as service scale grows.

The recent literature on digital agricultural technology services shows that information channels, technology cognition, and practical accessibility strongly affect technology adoption and service effectiveness (Gong et al., 2024). Yet rural digitalization is uneven. Some farmers adapt quickly to online ordering or digital traceability; others do not. Some service staff can maintain digital records well; others remain more comfortable with phone calls and handwritten lists. As a result, digital capacity often develops more slowly than physical infrastructure.

For centers like Mashan, this is an operational constraint rather than a fashionable concern. Limited digital capacity can increase scheduling errors, reduce traceability, weaken service evaluation, and make regional coordination during peak periods more difficult than it needs to be. The problem is not the absence of advanced artificial intelligence. It is often the absence of stable, usable basic digital management.

#### **7.5 Increasing risks from extreme weather and climate change**

The final major problem is the increasing influence of extreme weather and climate change. Rice production is strongly exposed to heat stress, extreme rainfall, typhoons, and unstable harvesting periods. Modern service centers improve resilience, but they do not remove exposure. In fact, severe weather can test the limits of even a well-equipped center by creating simultaneous spikes in harvesting demand, drying demand, and temporary storage demand.

Recent climate research focused on Chinese rice production regions points toward intensifying extreme climate challenges under future scenarios, especially in relation to heat stress and changing risk patterns across growth stages (Chen et al., 2025). Broader review work on greenhouse gas and climate interactions in rice agriculture also reminds us that climate change is not only a long-term background issue; it is becoming a direct operational concern for rice systems (Qian et al., 2023).

Mashan’s emergency harvest case shows strong response capacity, but it also reveals how dependent regional rice security can become on rapid coordinated intervention. This means future service-center design must treat resilience as a normal design goal, not as an occasional extra function.

### **8 Optimization Strategies and Future Development Directions**

#### **8.1 Improving regional agricultural service coordination mechanisms**

The first improvement direction is stronger regional coordination. A service center is most effective when it is embedded in a stable service network rather than operating as an isolated provider reacting case by case. For Mashan, this means moving further toward a layered regional model: highly intensive nearby service, scheduled support across surrounding towns, and a clearly organized emergency-response layer for abnormal weather and compressed harvest periods.