1. Accuracy

Factor	Impact
Single ultrasonic sensor	Adequate accuracy for fill level estimation
Sensor averaging & filtering	Improves accuracy without extra hardware
Multiple sensors	Higher accuracy but increased cost and power

2. Cost

Design Choice	Cost Impact
Single sensor per bin	Low
Star topology	Low (fewer radios, simpler nodes)
Mesh networking	High (complex firmware, higher power needs)

3. Scalability

Approach	Scalability
Star topology with LoRa	Excellent (100–1000 nodes per gateway)
Mesh topology	Limited by routing complexity
Direct Wi-Fi	Limited by coverage and power