Analysis on Digital Management Status of Small and Medium-Sized Enterprises in Guangdong Province

Yunfei Meng

Guangdong University of Science and Technology, Dongguan, China

Abstract: This study aims to analyze the current status and challenges of digital management in small and medium-sized enterprises (SMEs) across Guangdong Province, while proposing corresponding countermeasures. The research first defines the core concepts of SMEs and digital management, then conducts an in-depth analysis of current digital application levels across four key modules: production manufacturing, operational management, marketing services, and financial/human resources. It further reveals four major internal constraints hindering their development: lack of awareness and strategic planning, heavy financial investment pressures, technological and talent shortages, as well as data silos and outdated management processes. To address these issues, the study systematically proposes countermeasures from four dimensions: awareness and strategy, funding and costs, technology and talent, and data and management. It emphasizes the need to establish a "government-guided, enterprise-driven, service provider-supported, and society-coordinated" multi-stakeholder governance ecosystem. This approach aims to help SMEs in Guangdong transition from "instrumental" digital applications to "strategic" digital transformation, ultimately enhancing their core competitiveness.

Keywords: Small and Medium-Sized Enterprises; Digital Management; Digital Commerce; Enterprise Management

1. Core Concepts and Theories

1.1 Definition of SMEs

The current classification method uses indicators such as the number of employees, operating revenue, and total assets, along with alternative metrics, to establish specific criteria tailored to industry characteristics. This system categorizes legal entities or organizations legally established within China into five categories: large, medium, small, and micro enterprises. Individual businesses are classified according to this framework as well.

The current regulations apply to 15 major industry categories and the social work sector. These include: agriculture, forestry, animal husbandry, and fishery; mining; manufacturing; power, heat, gas, and water production and supply; construction; wholesale and retail trade; transportation, warehousing, and postal services; accommodation and catering services; information transmission, software and information technology services; real estate; leasing and business services; scientific research and technical services; water conservancy, environmental and public facility management; resident services, repair and other services; culture, sports, and entertainment industries.

Compared to the provisional regulations established by China's Bureau of Statistics in 2003, the current measures not only introduce "micro-enterprises" to refine industry classification, but also expand sector coverage, optimize indicator selection, and establish thresholds that better align with contemporary realities. The implementation of these updated regulations lays the foundation for enterprise-scale statistics and comprehensive support for SMEs (particularly micro-enterprises) across multiple dimensions, including fiscal incentives, financing facilitation, entrepreneurial assistance, innovation promotion, market expansion, service mechanisms, and rights protection.

Industry Name	Indicator Name	Unit of Measurement	Large	Medium	Small	Micro
Industry	Practitioner(X)	Person	$X \geq 1000$	$300 \leq x < 1000$	$20 \leq x < 300$	$x < 20$
	Operating Revenue(Y)	Ten thousand yuan	$Y \geq 40000$	$2000 \leq Y < 40000$	$300 \leq Y < 2000$	$Y < 300$

Source: Bureau of Statistics "Statistical Classification of Large, Medium, Small and

Micro Enterprises (2017)"[1]

1.2 Digital Management

Digital management refers to the use of computer, communication, and network technologies to quantify management objects and behaviors through statistical methods, enabling comprehensive oversight of functions across R&D, planning, production, and sales processes. At its core, it converts operational elements into analyzable data via information systems, allowing real-time monitoring and decision-making support. This approach emphasizes data authenticity and a closed-loop management system that engages all employees. This management model has evolved alongside information technology advancements. Initially focused on enhancing R&D and cost control through PLM and ERP systems, it later expanded into quality assurance and supply chain management, establishing a comprehensive data ecosystem throughout product lifecycles. With the application of big data and blockchain technologies, enterprises can now implement dynamic risk prediction models and build tamper-proof digital credit systems. Currently, its applications span manufacturing, logistics, and public facility management sectors, where IoT identification and smart diagnostics optimize resource allocation and operational efficiency.

Figure 1. Overview of Enterprise Digital Management
Source: compiled by the author

2. Digital Management Status of SMEs in Guangdong Province

2.1 Initial Manufacturing Transition from "Automation" to "Digitalization"

A significant number of small and medium-sized manufacturing enterprises in the Pearl River Delta region have widely adopted automated equipment such as CNC (Computer Numerical Control) machines and industrial robots. However, these systems primarily aim to replace repetitive labor and improve processing accuracy, representing "single-machine automation". The low data collection rate leaves most equipment in a "dumb device" state, lacking network connectivity for data flow. Moreover, there are notable regional and industrial disparities: industries like electronics, home appliances, and hardware molds in Dongguan and Foshan maintain higher automation rates, while traditional processing plants in eastern, western, and northern Guangdong regions still predominantly rely on semi-automatic or manual equipment.

The low adoption rate of Manufacturing Execution Systems (MES) remains a critical weakness in digital management. Only a small number of large, well-managed medium-sized enterprises have implemented MES systems. Most small businesses still rely on Excel spreadsheets, whiteboards, or paper documents for production scheduling, time tracking, and progress monitoring, resulting in delayed information flow and opaque workflows. The high implementation costs, lengthy timelines, and integration requirements with existing ERP systems-coupled with stringent demands for standardized management processes-have made MES systems a daunting barrier for many SMEs.[2]

2.2 The highest Penetration Rate, but the Depth of Operation Management Varies

The OA (Collaborative Office) system has achieved remarkable adoption rates, serving as the "first choice for digital transformation" among SMEs. Cloud-based SaaS platforms like DingTalk, WeCom, and Feishu have become standard tools for enterprises, primarily used for process approvals, daily communication, attendance management, and document sharing. These tools, driven by consumer internet trends, offer quick setup and low costs while enabling mobile office solutions. However, their functionalities remain largely limited to basic collaboration capabilities.

ERP (Enterprise Resource Planning) systems are widely adopted yet demonstrate significant performance disparities. Most medium-sized enterprises have implemented ERP solutions

such as Yonyou, Kingdee, and SAP Business One, but their application modules primarily focus on basic functions like finance, procurement, sales, and inventory management. Many companies experience a "two separate entities" phenomenon- where system processes are disconnected from actual business workflows, with delayed or inaccurate data entry rendering the systems ineffective for decision-making support and failing to realize ERP's core value of resource optimization. Meanwhile, small and micro enterprises still rely on single-function financial software or basic inventory management systems.

2.3 Marketing Services with the Highest Degree of Digitization and the Most Active Innovation

The adoption of CRM systems has surged, with SaaS-based lightweight solutions like Fenxiang XiaoKe and SalesEasy gaining particular popularity. Companies primarily use these platforms to manage sales leads, track customer progress, and handle contracts-effectively replacing traditional Excel spreadsheets for client management. However, most implementations remain at the "telesales management" level, with limited exploration of advanced features such as customer data mining, full lifecycle management, and marketing automation.

E-commerce platforms and social media marketing are the most mature and proactive fields for digital applications among small and medium-sized enterprises in Guangdong, particularly in the consumer goods industry. Enterprises generally rely on platforms such as Alibaba (1688), Taobao, Tmall, JD.com, and Pinduoduo for sales, while leveraging social media platforms like WeChat (official accounts, mini-programs, video channels), TikTok, and Xiaohongshu for content marketing, live-streaming sales, and private traffic operations. Small and medium-sized enterprises in Guangdong demonstrate acute sensitivity to new online marketing models and rapid response capabilities, enabling them to swiftly capture traffic dividends. However, they also face challenges such as rapidly changing platform regulations, increasingly high traffic costs, and intense homogenized competition.

2.4 From "Computerization" to "Intelligent" Finance and Human Resource Management

The financial module was the first to embrace digital transformation, with core accounting tasks (bookkeeping and reporting) having largely transitioned to computerized systems. Current development trends are shifting from "accounting" to "management", featuring intelligent functions like cloud-based expense reimbursement, automated reconciliation, tax risk alerts, and data visualization. Policies such as the Golden Tax Phase IV initiative have driven compliance requirements for financial digitization. However, smart financial analytics (including budget forecasting and precise cost accounting) remain critical weaknesses for most small and medium-sized enterprises[6].

The adoption of digital HR systems remains relatively slow. Current implementations primarily focus on digitizing basic personnel information, online attendance tracking, and payroll processing. Core HR modules such as recruitment, performance management, training programs, and employee engagement still lack sufficient digital transformation. However, small and medium-sized enterprises (SMEs) often perceive HR digitalization as having low ROI and lower priority. Yet its potential value in enhancing recruitment efficiency, boosting organizational vitality, and retaining talent remains underutilized.

3. Analysis of Existing Problems in Digital Management of SMEs in Guangdong Province

3.1 Cognitive Superficiality and Strategic Absence

Many business owners and managers still view digitalization as merely a tool for "buying software and implementing systems," perceiving it as an optional "nice-to-have" feature rather than a "must-have" for corporate survival and growth. They fail to recognize digitalization's strategic importance in driving business model innovation and reshaping core competitiveness. Their decision-making often relies on short-term cost-benefit calculations, with enthusiasm for investment plummeting when immediate returns become unclear.

Corporate digital transformation often starts with hasty shifts, blindly chasing trends without strategic alignment. The absence of a unified digital roadmap that matches the company's overall strategy results in fragmented initiatives across departments and modules. These isolated

efforts create disconnected "information silos," creating significant risks for future system integration and data interoperability. Without clear implementation blueprints, the transition process becomes a series of back-and-forth adjustments, wasting resources along the way.

3.2 Huge input and Fuzzy Return

Digital transformation involves multiple costs including software/hardware procurement, system deployment, post-launch operations, and upgrade iterations. For small and medium-sized enterprises (SMEs) operating on thin profit margins, one-time investments of hundreds of thousands or even millions represent substantial sunk costs. Furthermore, recurring expenses such as SaaS subscription fees and cloud service charges create long-term financial pressures[4].

The benefits of digital management (such as improved process efficiency, enhanced customer satisfaction, and more scientific decision-making) are often indirect and long-term, making it difficult to directly reflect in financial statements. This uncertainty in ROI leads companies to hesitate when investing, especially during market fluctuations, where digital budgets are often the first to be cut.

3.3 Capability Deficiency and Selection Dilemma

The key to digital success lies in the deep integration of "business" and "technology". SMEs face a critical shortage of versatile professionals who understand both their operational processes and digital technologies. External recruitment proves costly, while internal training requires lengthy cycles and challenges, leading to project delays and system features that fail to meet actual needs. Faced with a market flooded with digital solutions and service providers of varying quality, SMEs lack the expertise to evaluate and select suitable options. They often fall into the trap of "more features are better" or "lower prices are better", ultimately choosing systems that don't align with their business characteristics and development stage, resulting in implementation failures due to "incompatibility issues"[8].

3.4 System Islands and Process Shackles

Due to the absence of top-level design, enterprises face inconsistent data standards and disconnected interfaces between various systems introduced during their development phases (such as ERP, CRM, MES, and OA), creating isolated data silos. This hinders effective data flow and sharing within organizations, resulting in inefficient interdepartmental collaboration and preventing management from obtaining a unified, holistic view for decision-making.

Many companies view digitalization as merely a technical initiative, overlooking the accompanying management reforms. This results in traditional management processes being applied to advanced digital systems, leading to underutilized system capabilities and even reduced efficiency due to rigid workflows (for example, online approvals being slower than offline signatures). Outdated management philosophies and organizational structures have become shackles hindering the maximization of digital value. Most enterprises only use data for basic queries and report statistics, lacking the ability to leverage data analysis for market forecasting, customer insights, risk warnings, and precise decision-making. Massive amounts of data remain dormant in systems, failing to transform into genuine assets and competitive advantages.

4. Suggestions on Promoting Digital Management of Small and Medium-sized Enterprises in Guangdong Province

4.1 Raise Awareness and Scientific Planning

Government and industry association initiatives: Launch the "Digital Transformation for Inclusive Education" program by organizing "Digital Entrepreneur Training Programs". These sessions feature case studies from experts, scholars, and successful digital transformation pioneers to dispel misconceptions and demonstrate real-world value. Establishing industry benchmarks: Conduct province-wide evaluations of "Best Practices in SME Digital Transformation", followed by field visits and experience-sharing events to create a "lighthouse effect" that provides tangible learning opportunities. Providing top-level design consulting services: Through government procurement or subsidies, encourage third-party consultants to offer low-cost or free digital transformation strategies and roadmap planning for SMEs[7].

In corporate development: Entrepreneurs must lead the charge in mindset transformation. Corporate decision-makers should proactively embrace digitalization as a "top-priority

initiative" at the strategic level, rather than merely delegating it to technical departments. Establish a digital roadmap aligned with corporate strategy: Define short-term, medium-term, and long-term objectives for digital transformation. Prioritize breakthrough areas that directly address business pain points and deliver immediate results, avoiding blind trend-chasing and ineffective investments.

4.2 Innovation Support, Lower the Threshold

In government and financial institutions, inclusive policies such as "digital vouchers" have been implemented: Drawing inspiration from the "technology innovation voucher" model, "digital service vouchers" have been introduced, enabling enterprises to purchase cloud services, management software, consulting services, and diagnostics to reduce initial costs. Innovative financial support tools include establishing "specialized digital loans for SMEs" with interest subsidies. Exploring data asset-backed pledge financing models transforms corporate data resources into assessable, collateralizable assets. A post-grant incentive mechanism ensures fiscal funds are "best used where they matter" by providing post-implementation rewards to enterprises that demonstrate verified benefits through digital transformation assessments.

In the enterprise and service provider sector: Enterprises adopt an "agile, rapid iteration" investment strategy, prioritizing the SaaS (Software as a Service) model with pay-as-you-go subscription and annual payments. This approach avoids large upfront investments while converting fixed asset expenditures into operational costs. Service providers implement flexible payment models by developing lightweight, modular products that allow purchasing by function modules and paying per usage, effectively lowering procurement barriers for businesses.

4.3 Cultivate Ecology, Break the Bottleneck

In terms of government and educational institutions: Establish a "Government-Industry-Academia-Research" empowerment platform by encouraging universities, vocational colleges, leading enterprises, and digital service providers to jointly build "Industry Colleges" and "Practical Training Bases", which aim to cultivate versatile talents proficient in both technical and business skills. Form a "Digital Expert Service Team" to organize technical experts and management consultants for one-on-one technical diagnosis and guidance in enterprises, addressing practical technical challenges. Publish a "Recommended Solution Directory": Regularly organize evaluations and release a "Directory of Outstanding Digital Solutions for SMEs" tailored to different industries and scales, providing authoritative references for enterprise technology selection.

In terms of corporate development: Combining internal cultivation with external recruitment, we prioritize digital skills training for existing key personnel (e.g., workshop supervisors and sales managers) while introducing a small number of critical digital technology talents as "seed initiators". Through "borrowing expertise" and "collaborative innovation": We actively partner with universities and service providers to leverage external professional resources in solving specific technical challenges, jointly developing tailored solutions that align with our organizational needs[5].

4.4 Breaking down Silos and Reshaping Processes

In collaboration with government agencies and standardization bodies, efforts will be made to establish industry standards for data interfaces. Within leading industrial clusters such as home appliances, furniture manufacturing, and electronic information technology, the initiative will spearhead the development of standardized formats and interfaces for critical data, creating a foundation for seamless cross-system data interoperability. Platform enterprises are encouraged to open their data interfaces, with support provided for industrial internet platforms to establish data access channels for upstream and downstream SMEs, thereby enhancing data coordination across the entire supply chain.

In enterprise operations: Embrace the "data-driven" philosophy to break down data silos. When implementing new systems, prioritize data integration capabilities as a core consideration, opting for products with open API interfaces. Gradually consolidate existing systems to establish a unified data platform or data warehouse. Simultaneously drive management transformation and business process reengineering (BPR): The key to successful digital transformation lies in "management transformation". Organizations

must optimize or even reshape outdated structures, approval processes, and performance evaluation systems that don't align with digital operations. This ensures management models synchronize with digital systems, maximizing data value realization[6].

5. Sum Up

Digital management applications among SMEs in Guangdong Province have been widely implemented, though their adoption varies significantly. The sector remains in its early transition phase from basic automation to comprehensive digitalization. The transformation path has evolved from external marketing-driven initiatives to gradually permeate internal and external operational management, yet digitalization in core manufacturing processes continues to be the weakest link. The challenges of digital transformation primarily originate from internal corporate factors. The prevalent sentiment of "reluctance to transition, fear of transformation, and inability to adapt" reflects widespread realities across enterprises. These issues stem from insufficient strategic awareness among managers, uncertainties regarding transformation costs and returns, shortages of versatile professionals, and systemic disconnects between legacy systems and modern management frameworks.

The solution to this challenge requires a coordinated multi-stakeholder system. Governments should act as strategic guides and safeguarders, while enterprises must take the lead by transforming mindsets, implementing scientific planning, prioritizing talent development, and advancing data-driven reforms alongside management innovation. Service providers and societal stakeholders should deliver streamlined, efficient solutions with precision, while industry associations serve as vital bridges to jointly cultivate a robust ecosystem for digital transformation.

Acknowledgments

References

[1] Bureau of Statistics "Measures for the Classification of Large, Medium, Small and Micro Enterprises in Statistics (2017)".

[2] Yang Lishan. Analysis of the Current Status and Countermeasures for Digital Transformation of SMEs in Guangdong Province [J]. Circulation Economy, 2024,(18):153-156..

[3] Wang Xinli. Research on the Current Status and Countermeasures of Digital Construction of Enterprise Internal Control [J]. China Collective Economy, 2025,(23):29-32.

[4] How digitalization can help enterprises to finance Qiche Cloud system provides a new solution. China Economic Development Network [Cited date: 2021-07-08]

[5] Guangdong Provincial People's Government Website. Notice of Guangdong Provincial People's Government on Issuing the Implementation Plan for Digital Transformation of Manufacturing Industry in Guangdong Province and Several Policy Measures [EB/OL]. (2021-07-06) [2023-12-15].

[6] Jia, Xiahong, and Xingqiao Yuan. "Research on the Development Status and Strategy of Cross-border E-commerce in Guangdong Province." Academic Journal of Business & Management 4.5 (2022): 101-107.

[7] Lian, Siting, and Wei Zhang. "Research on the Digital Transformation of the Whole Industry Chain of Guangdong Supply and Marketing Cooperative." Proceedings of Business and Economic Studies 7.1 (2024): 76-82.

[8] Guo, Bingnan, et al. "Impact of the digital economy on high-quality urban economic development: Evidence from Chinese cities." Economic Modelling 120 (2023): 106194.