

Challenges and Countermeasures in Accounting Informatization for Small and Medium-Sized Enterprises

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Abstract: With the rapid advancement of information technology, accounting informatization has emerged as a crucial strategy for small and medium-sized enterprises (SMEs) to enhance managerial capabilities, optimize resource allocation, and strengthen market competitiveness. Despite its potential, SMEs continue to encounter numerous challenges in implementing and applying accounting informatization, including weak technical infrastructure, limited financial investment, low system integration, data security vulnerabilities, and insufficient professional talent. This study employs a combination of literature review, case analysis, and questionnaire survey to provide a comprehensive assessment of the current state of accounting informatization among SMEs, systematically identifying existing issues and examining their root causes. Based on these insights, the paper proposes a series of innovative countermeasures, such as designing a tiered informatization development strategy, integrating cloud accounting and artificial intelligence technologies, enhancing data security frameworks, streamlining accounting business processes, and establishing cross-departmental information-sharing mechanisms. The findings suggest that through strategic technological investments and optimized application models, SMEs can not only significantly reduce operational costs but also achieve deep integration between business operations and financial management via data-driven approaches, ultimately securing sustainable competitive advantages in the digital economy era.

Keywords: small and medium-sized enterprises (SMEs); accounting informatization; digital transformation; artificial intelligence; countermeasure study

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1. Introduction

Against the backdrop of global economic integration and the rapid advancement of information technology, accounting informatization has become an essential approach for enterprises to enhance management capabilities and strengthen competitiveness [1]. It leverages technologies such as computing, networking, databases, and artificial intelligence to facilitate the automated collection, processing, storage, and analysis of accounting data. For small and medium-sized enterprises (SMEs), accounting informatization not only improves the efficiency and accuracy of financial operations but also acts as a core driver for digital transformation, resource optimization, and informed decision-making [2]. With the adoption of emerging technologies such as cloud computing, big data, and blockchain, the functionalities and operational models of accounting informatization are continuously evolving, and its strategic significance in enterprise management is becoming increasingly prominent [3].

However, SMEs typically face several challenges in the implementation of accounting informatization, including limited financial investment, inadequate technical reserves, poor system compatibility, data security vulnerabilities, and a shortage of

qualified personnel. Some enterprises regard informatization merely as a means to replace manual bookkeeping, overlooking its potential to optimize business processes and support strategic decision-making, which leads to suboptimal utilization and outcomes [4]. Furthermore, due to their relatively small scale and highly flexible operational processes, SMEs often encounter mismatches in system functionalities, inconsistent data standards, and other obstacles during system adaptation and deployment, which constrains the full potential of accounting informatization [5].

International experience indicates that SMEs in developed economies often adopt cloud-based financial systems integrated with big data analytics to achieve real-time forecasting and risk warning, supported by mature industry standards and close alignment between informatization and corporate strategy [6]. In contrast, although accounting informatization among Chinese SMEs has grown rapidly, there remains a lack of mature practices in institutional frameworks, system selection, and implementation management, highlighting the need for more targeted and practical solutions. In the context of a rapidly expanding digital economy and accelerating intelligent technologies, designing a low-cost, efficient, and sustainable path for accounting informatization tailored to the resource conditions and operational characteristics of SMEs has become an urgent research priority [7].

This study integrates literature review, case analysis, and questionnaire surveys to assess the current status, diagnose problems, and explore the underlying causes of accounting informatization in SMEs. Based on this analysis, it proposes a phased and tiered development roadmap that incorporates advanced areas such as artificial intelligence, cloud accounting, and data security, aiming to explore models of integrated financial and business informatization. The study's innovation lies in linking accounting informatization with broader digital transformation strategies, considering multiple dimensions including technology, management, human resources, and the external environment, and emphasizing feasible pathways that balance cost efficiency with high returns. This approach is intended to provide both theoretical guidance and practical reference for SMEs.

In summary, under the dual context of continuous technological innovation and the deepening digital economy, accounting informatization in SMEs has evolved beyond a technical tool for improving financial processing efficiency, becoming a pivotal driver for strategic upgrading and sustainable development. Conducting an in-depth study of the challenges and countermeasures in SME accounting informatization will not only enhance internal management and market competitiveness but also facilitate the broader digital transformation of China's SMEs, enabling them to secure expanded opportunities in global competition. Consequently, this research possesses significant theoretical value and practical relevance.

2. The Current State of Accounting Informatization in SMEs

2.1. Overall Level of Informatization Development

In recent years, with the continuous advancement of information technology and the rapid growth of the digital economy, the level of accounting informatization among small and medium-sized enterprises (SMEs) in China has steadily improved [8]. An increasing number of enterprises have adopted financial software, cloud accounting platforms, and mobile applications to enable electronic processing and online management of accounting data. Accounting informatization in SMEs can generally be categorized into three developmental stages: the basic stage, characterized by the use of stand-alone accounting software or spreadsheets to perform fundamental bookkeeping and report generation; the integrated stage, in which financial data are shared across departments via local area networks or cloud platforms to support collaborative work; and the intelligent stage, where artificial intelligence and big data analytics are applied to achieve integration of financial and business processes and enable predictive analysis [9]. At present, most SMEs

remain in the basic or integrated stages. While electronic data processing and partial data sharing have been achieved, the adoption of intelligent applications remains relatively low.

2.2. Characteristics of System Application

Regarding system selection, traditional financial software such as UFIDA and Kingdee continues to dominate the market, being favored for its stable functionality, compliance with domestic accounting standards, and ease of use [10]. With the proliferation of cloud computing and mobile internet, cloud accounting systems, including Kingdee Cloud and Chanjet, have gradually emerged, offering advantages such as lower costs, cross-platform compatibility, and real-time updates, thereby providing SMEs with more flexible financial management solutions. Additionally, some enterprises have attempted to integrate their financial systems with e-commerce platforms and enterprise resource planning (ERP) systems to achieve automatic linkage of sales, inventory, and financial data, improving both data integrity and timeliness. Nevertheless, widespread adoption of such integrated systems is hindered by inconsistent data standards, insufficient interface compatibility, and persistent information silos, which constrain the overall effectiveness of informatization.

2.3. Industry and Regional Differences

Industry characteristics significantly influence the level of accounting informatization. Sectors with complex business processes and high data volumes, such as manufacturing and wholesale/retail, tend to exhibit stronger reliance on accounting informatization and higher investment willingness [11]. By contrast, traditional service industries and small-scale manufacturing enterprises, due to simpler operational models and lower accounting demands, generally show weaker motivation for such investment. From a regional perspective, SMEs in economically developed eastern coastal areas demonstrate considerably higher levels of informatization than those in central and western regions [12]. This disparity is largely attributable to more advanced network infrastructure, richer technical service availability, and stronger market competition in eastern areas, resulting in uneven development across the country.

2.4. Penetration of Emerging Technologies

The rapid development of emerging information technologies offers new opportunities for accounting informatization in SMEs. Cloud computing reduces deployment and maintenance costs, enabling enterprises to access fully functional accounting services via subscription models. Big data technology allows multidimensional analysis of financial and operational data, enhancing the scientific and forward-looking nature of decision-making. Artificial intelligence has been applied to tasks such as invoice recognition, automatic classification, and anomaly detection, effectively improving automation and accuracy in financial processing. However, the adoption of these advanced technologies among SMEs remains constrained by weak technical foundations, limited professional talent, and insufficient data security measures, resulting in relatively low penetration rates.

2.5. Development Trends and Challenges

Overall, accounting informatization in SMEs is evolving from being merely a tool for efficiency enhancement to becoming an integral part of enterprise digital transformation. Some enterprises have begun constructing integrated financial-business management platforms with standardized data protocols and cross-departmental information flows, enabling real-time updates of financial data and dynamic monitoring of business operations. Meanwhile, government policies supporting SME digital empowerment, such as electronic tax filing and the widespread adoption of electronic invoices, have

encouraged accelerated informatization [13]. Nonetheless, most SMEs have yet to establish data-driven decision-making as the core of their informatization systems, and the strategic role of informatization remains underutilized. Moving forward, sustained efforts in system selection, talent cultivation, data security, and management philosophy are essential to achieve a transition from informatization to intelligentization.

To more accurately reflect practical implementation, this study conducted a questionnaire survey covering 200 SMEs from diverse industries and regions across the country, yielding 186 valid responses. The results indicate that approximately 62% of enterprises use traditional financial software, 28% have deployed cloud accounting systems, and 10% still rely primarily on manual bookkeeping or spreadsheets. Regarding investment, 74% of enterprises reported annual accounting informatization expenditures below RMB 100,000, highlighting widespread underinvestment. In terms of technology adoption, only 15% of enterprises have experimented with artificial intelligence or big data analytics, indicating that penetration of emerging technologies remains relatively low.

As shown in Figure 1, the majority of SMEs (62%) continue to rely on traditional accounting software, suggesting that while informatization adoption is widespread, its depth remains limited. A smaller proportion (28%) have transitioned to cloud-based accounting systems, reflecting a gradual trend toward digital transformation and flexible deployment models. Meanwhile, 10% of enterprises still depend on manual bookkeeping or spreadsheets, underscoring the persistence of outdated practices that restrict efficiency and scalability. This figure highlights the uneven development of accounting informatization among SMEs, illustrating both the progress achieved and the substantial gaps that remain in advancing toward intelligent financial management.

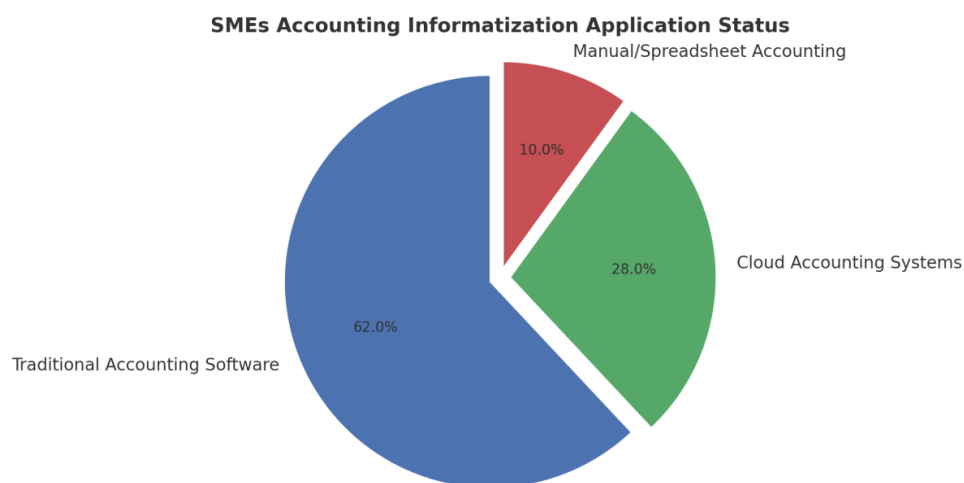


Figure 1. SMEs Accounting Informatization Application Status.

3. Major Problems in the Accounting Informatization of SMEs

3.1. Insufficient Technical Infrastructure and System Compatibility

At the initial stage of informatization, most SMEs make limited investments, resulting in outdated hardware and network environments that are insufficient for operating large-scale or high-performance accounting information systems. Furthermore, many enterprises lack unified standards when selecting systems, often choosing low-cost, functionally limited software with poor scalability due to short-term budget constraints. This limits future business expansion and technological upgrades. In addition, some enterprises fail to assess the compatibility of new platforms with existing business systems,

leading to issues such as poor data interface connectivity and repeated data entry, which increase operational costs and compromise data integrity and accuracy.

3.2. Insufficient Financial Investment and Long Payback Periods

SMEs generally face financial constraints, and the proportion of their budgets allocated to accounting informatization is limited. Some enterprises perceive informatization as a cost rather than a long-term investment, resulting in insufficient spending on system procurement, technical maintenance, and upgrades. Moreover, the return on investment (ROI) for accounting informatization typically has a long cycle and is difficult to quantify, meaning that tangible improvements in financial performance are not immediately apparent in the early stages [14]. This perception weakens management's willingness to sustain long-term investment.

According to survey results, over 70% of enterprises invest less than RMB 100,000 annually in accounting informatization, with 40% under RMB 50,000 and 34% between RMB 50,000 and RMB 100,000. Approximately 18% of enterprises spend RMB 100,000-300,000, while fewer than 10% invest more than RMB 300,000 per year.

As shown in Figure 2, the largest group of SMEs allocates less than RMB 50,000 per year to accounting informatization, followed by 34% that spend between RMB 50,000 and RMB 100,000. Only 18% invest between RMB 100,000 and RMB 300,000, while a very small fraction, merely 8%, allocate more than RMB 300,000 annually. This distribution highlights the overall low level of investment, reflecting a cautious and short-term orientation toward informatization spending. While cost-saving strategies reduce immediate financial burdens, they may hinder long-term system scalability and modernization.

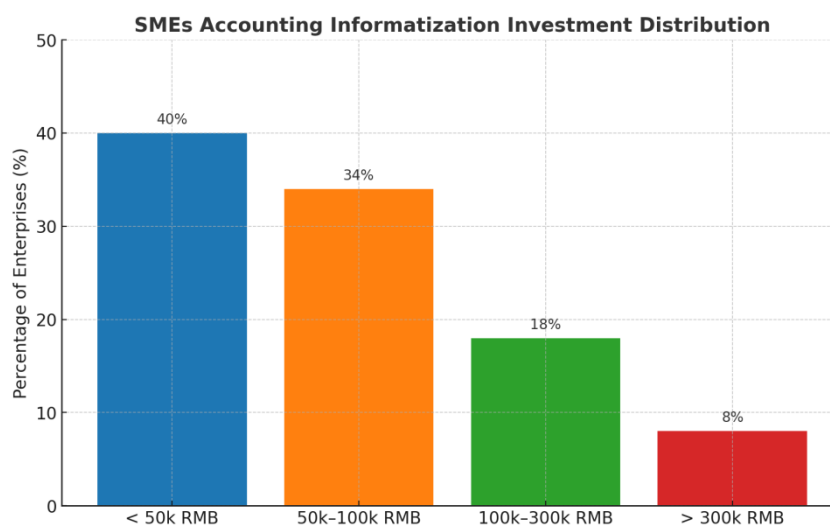


Figure 2. SMEs Accounting Informatization Investment Distribution.

3.3. Deficiencies in Data Security and Privacy Protection

During informatization implementation, most SMEs lack a comprehensive data security management framework. Basic security measures such as firewalls, data encryption, and access control are often absent, leaving enterprises vulnerable to data breaches, tampering, or loss. The use of cloud accounting and online platforms further increases external risks associated with data transmission and storage. Many enterprises have insufficient awareness regarding supplier qualification assessment, contractual safeguards, and contingency planning, making it difficult to detect and address security vulnerabilities in a timely manner. Additionally, the absence of well-defined policies for protecting personal information exposes enterprises to potential compliance risks.

3.4. Inadequate Informatization Skills Among Accounting Personnel

Accounting personnel are central to operating and optimizing accounting information systems, yet many accountants in SMEs lack the necessary informatization-related knowledge and skills [15]. They often rely on traditional manual accounting methods, which limits their ability to fully utilize the advanced functions of information systems. This not only reduces system effectiveness but also increases the likelihood of operational errors and data delays. Informatization also demands higher cross-functional competence from accounting personnel, including data analysis, information system management, and interdepartmental communication. However, SMEs often lack sufficient training programs and incentive mechanisms, resulting in high turnover and skill gaps.

3.5. Insufficient Strategic Awareness of Informatization Among Management

Some SME executives lack a systematic understanding of the strategic value of accounting informatization, viewing it merely as a technical tool rather than a component of corporate strategy. During implementation, they often fail to develop clear plans or long-term objectives, relying instead on ad hoc, reactive decision-making. This results in system selection and application processes that lack foresight and coordination. Insufficient managerial involvement in the informatization process further hinders cross-departmental collaboration and business process optimization, preventing accounting informatization from aligning with and supporting overall corporate strategy.

3.6. Interdepartmental Information Silos and Process Disconnection

The value of accounting informatization lies in integrating and sharing financial and business data. However, in SMEs, information silos between finance departments and business units such as production, sales, and procurement remain widespread. The absence of unified data standards and sharing mechanisms often results in financial and business data being stored separately, causing delays in updates and reconciliation challenges. Moreover, many enterprises continue to rely on linear, segmented workflows that have not been redesigned to exploit informatization fully. Consequently, inefficiencies such as repeated data entry and manual verification persist during data transmission, undermining both efficiency and accuracy.

4. Deep-Rooted Factors Affecting the Level of Accounting Informatization in SMEs

4.1. Intrinsic Constraints of Enterprise Scale and Resource Limitations

SMEs are generally disadvantaged in terms of capital, personnel, and technological reserves, which makes large-scale investment in accounting informatization difficult. Limited funds are often prioritized for daily operations and market expansion, while informatization projects, due to their lack of immediate short-term returns, are postponed or downsized. Additionally, the relatively small scale of SMEs often precludes the establishment of a dedicated internal informatization management department, resulting in technical operations and system maintenance being outsourced to third parties. This arrangement increases the passivity and uncertainty associated with system upkeep and long-term operational reliability.

4.2. Deficiencies in Technology Selection and Implementation Strategies

The selection and implementation of accounting informatization systems must align with an enterprise's business characteristics and long-term development plans. However, many SMEs lack systematic demand analysis and feasibility assessments, instead prioritizing low cost and short implementation cycles while neglecting system scalability, compatibility, and potential for future upgrades. During the implementation phase, the

absence of phased rollout plans and pilot testing often leads to significant adaptability issues after system launch, undermining user experience and operational efficiency.

Survey data indicate that only 25% of enterprises believe their chosen accounting information system is fully aligned with their business needs, 45% report partial alignment, 15% indicate system overcapacity, and another 15% report insufficient functionality. This mismatch between system capabilities and enterprise requirements directly reduces the return on informatization investment and increases the costs of subsequent upgrades and modifications.

As illustrated in Figure 3, the majority of SMEs fall into the "partial alignment" category, reflecting that while some system functions meet operational requirements, gaps remain in scalability and adaptability. A smaller proportion of enterprises experience either system overcapacity, where excessive and unused functions increase complexity, or insufficient functionality, which fails to support basic business processes. Only a minority report full alignment, highlighting the widespread challenge of matching system design with actual business needs. This distribution underscores the importance of conducting thorough demand analysis and phased implementation to maximize the value of accounting informatization.

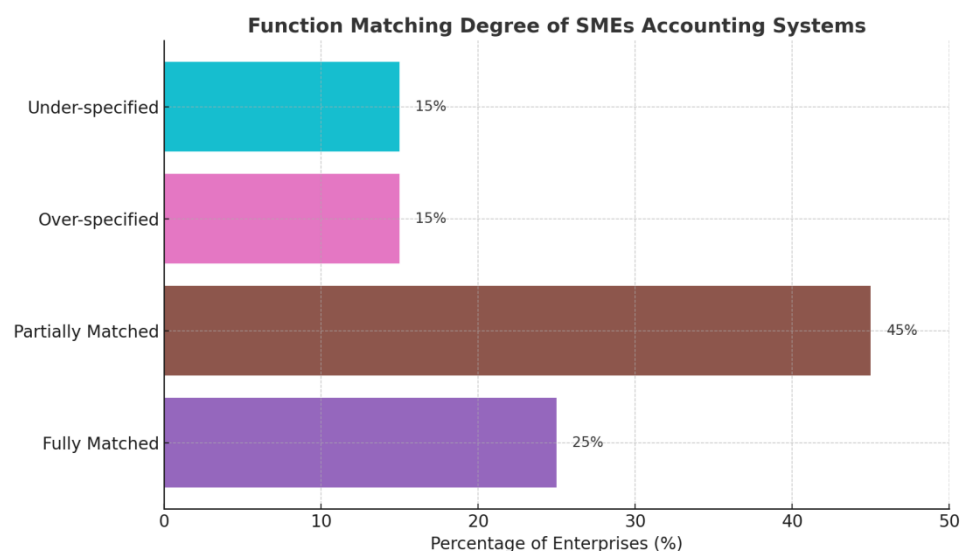


Figure 3. Function Matching Degree of SMEs Accounting Systems.

4.3. Investment Risks and Uncertainty in Informatization

Accounting informatization requires substantial investment, has a long project cycle, and involves multiple operational areas. The inherent instability of the SME business environment exposes such projects to higher investment risks. Market volatility or shifts in business strategy may force informatization initiatives to be suspended or scaled back, leading to wasted resources. Furthermore, the economic benefits of accounting informatization are difficult to quantify in the short term, and the absence of clear performance evaluation indicators increases uncertainty in investment returns, thereby weakening management's confidence in committing resources.

4.4. Corporate Culture and Resistance to Organizational Change

Accounting informatization is not merely a technological upgrade; it also entails a fundamental restructuring of management philosophy and business processes. Many SMEs still adhere to traditional management models and work practices, adopting a cautious or resistant attitude toward new systems, which creates obstacles to implementation. Tensions between finance departments and business units often arise

due to a lack of communication, coordination, and mechanisms for balancing interests, resulting in poor data sharing and inefficient collaboration. Moreover, informatization projects frequently involve changes in job responsibilities and performance evaluation systems, which may cause employees to fear technological substitution and job loss, reducing their willingness to cooperate.

4.5. Inadequate Policy Support and Industry Standards

Although government policies in recent years have promoted the digital transformation of SMEs, the field of accounting informatization still lacks comprehensive industry standards, technical specifications, and supporting regulations. Differences in data interfaces, information security protocols, and functional modules among accounting information systems hinder cross-system integration and data sharing. SMEs often face information asymmetry when accessing policy details, applying for funding subsidies, or obtaining technical support, preventing them from fully benefiting from policy incentives. Furthermore, the absence of an authoritative third-party evaluation and certification system leaves enterprises without reliable references when selecting software and service providers, thereby increasing the risks associated with technology choices.

4.6. External Environment and Market Competition Pressures

The market environment in which SMEs operate is highly dynamic, with frequent changes in customer demand, supply chain structures, and industry competition patterns, all of which influence the pace and direction of informatization initiatives. Under intensified competitive pressure, enterprises tend to prioritize resource allocation to areas that directly drive sales growth, often at the expense of investment in informatization. Additionally, SMEs with lower levels of informatization are disadvantaged in partnerships with upstream and downstream business partners, as poor data interface connectivity and delays in information transmission create a "digital divide" that further constrains improvements in informatization capabilities.

5. Optimization Strategies and Path Selection for Accounting Informatization in SMEs

5.1. Developing a Phased and Tiered Informatization Roadmap

SMEs should formulate clear informatization development plans that align with their available resources and business growth stages. At the initial stage, priority should be given to achieving electronic financial accounting and centralized data management. At the intermediate stage, enterprises can introduce cross-departmental data-sharing platforms and process automation. At the advanced stage, intelligent applications such as artificial intelligence (AI) and big data analytics should be explored. Adopting a phased approach helps reduce the pressure of one-time investments while ensuring that technological upgrades proceed in step with business development. The roadmap should clearly define goals, key tasks, timelines, and evaluation mechanisms to ensure both feasibility and sustainability of informatization initiatives.

5.2. Promoting Cloud Accounting, Mobile Accounting, and AI Applications

Cloud accounting, with advantages of low cost, scalability, and ease of maintenance, is particularly suitable for SMEs to deploy on demand, thereby reducing hardware investment and maintenance burdens. Mobile accounting enables management and finance personnel to access financial information anytime and anywhere, improving the timeliness of decision-making. AI applications can enhance efficiency and accuracy in areas such as invoice recognition, automated bookkeeping, anomaly detection, and predictive analytics. SMEs should actively evaluate and adopt these emerging technologies, prioritizing mature products with robust security and compatibility, and gradually increase the technological sophistication of their accounting systems.

5.3. Strengthening Data Security and Compliance Management Systems

To mitigate risks of data breaches and system failures, SMEs should establish a tiered data access control system, ensuring employees can only access information necessary for their roles. Security measures such as encrypted storage, two-factor authentication, and firewalls should be implemented to prevent external attacks and internal misconduct. When using cloud services, enterprises should select reputable, certified providers and clearly define data ownership, storage security, and emergency response mechanisms in service agreements. Regular data backups and disaster recovery plans should also be established to ensure rapid system restoration in the event of unforeseen incidents.

5.4. Enhancing the Training of Accounting-IT Hybrid Talent

The effective operation of accounting informatization depends on professionals who possess both financial expertise and information technology skills. SMEs should improve the informatization capabilities of accounting staff through internal training, external courses, and job rotation, covering competencies such as financial software operation, data analytics, and information security management. Incentive mechanisms linked to informatization performance can encourage staff to actively learn and apply new technologies. For projects with high technical complexity, SMEs may collaborate with external professional organizations or temporarily engage specialized technical support teams to ensure smooth system implementation and transition.

5.5. Establishing an Integrated Financial-Business Information-Sharing Platform

To overcome cross-departmental information silos, SMEs should develop unified data standards and sharing mechanisms that enable real-time integration of financial and business data. By leveraging ERP systems or data middle platforms, sales, procurement, inventory, and production operations can be interconnected with financial accounting, achieving automated processing from business occurrence to financial confirmation.

The core of building an integrated financial-business platform lies in real-time data interconnection and automated process alignment. Through ERP systems or data middle platforms, sales, procurement, inventory, and production processes can be seamlessly linked with financial accounting, enabling end-to-end integration from transaction initiation to financial confirmation. This model not only reduces duplicate data entry and manual reconciliation but also provides enterprises with real-time, comprehensive operational data, significantly improving the timeliness and accuracy of management decision-making.

As shown in Figure 4, the construction path of the integrated platform begins with establishing unified data standards, followed by interconnecting business modules such as sales, procurement, inventory, and production with financial processes. The figure illustrates how data flows from transaction initiation through ERP or data middle platforms, ultimately reaching automated financial confirmation. This visualization highlights the sequential and interconnected nature of the integration process, demonstrating how enterprises can achieve real-time synchronization between business and financial operations.

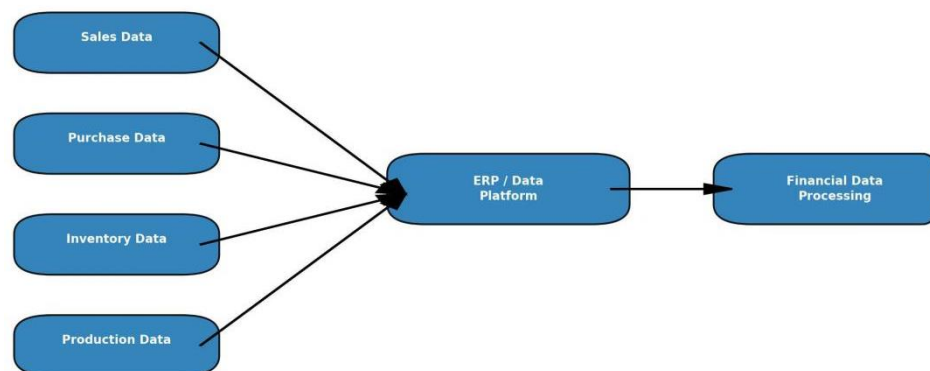


Figure 4. Path of Building a Business-Finance Integration Platform.

5.6. Extending the Value of Accounting Informatization through Industry Chain Collaboration

SMEs can leverage informatization platforms to connect data with upstream and downstream supply chain partners, sharing information such as inventory levels, purchase orders, and accounts receivable/payable to enhance supply chain coordination efficiency. By integrating systems with core enterprises and industry platforms, SMEs can improve operational efficiency and gain access to richer market intelligence and resource support. Under the guidance of industry associations, industrial parks, or business alliances, multiple SMEs can co-build and share industry-level accounting informatization platforms, thereby reducing technology costs and enhancing overall competitiveness.

6. Conclusion

This study systematically examined the current status, key challenges, underlying causes, and optimization strategies of accounting informatization in small and medium-sized enterprises (SMEs). The findings indicate that, despite notable progress in recent years, most SMEs remain at the preliminary or partially integrated stage, with a relatively low adoption rate of intelligent applications. Major obstacles include weak technical infrastructure, limited financial investment, vulnerabilities in data security, insufficient IT proficiency among accounting staff, limited strategic awareness among management, and persistent cross-departmental information barriers. These challenges arise from both internal constraints, such as resource limitations and the absence of specialized teams, and external factors, including inappropriate system selection, long investment return cycles, incomplete policy support, and a lack of unified industry standards. Consequently, accounting informatization in many SMEs is reduced to a basic bookkeeping function rather than serving as a strategic management tool.

To address these issues, this study proposes implementing phased and tiered development plans that align technology upgrades with business growth, promoting the adoption of cloud accounting, mobile accounting, and AI applications to enhance efficiency and accuracy, and strengthening data security frameworks through tiered access control, encryption, and certified service providers. It also emphasizes cultivating hybrid accounting-IT talent through targeted training and incentive mechanisms, building integrated financial-business platforms to standardize data and enable real-time information sharing, and leveraging supply chain collaboration to extend informatization value and reduce costs via shared platforms. These strategies combine practicality with cost control, offering SMEs adaptable pathways suited to different stages of development.

The study highlights that accounting informatization is not merely a technical upgrade but a critical driver of digital transformation, enabling data-driven decision-making, business model innovation, and enhanced competitiveness. While this research draws on literature review and industry surveys, it lacks large-scale quantitative

validation. Future studies should incorporate fieldwork and comparative analyses across industries and regions, and explore the potential of emerging technologies such as blockchain and robotic process automation in SME financial management.

In essence, SMEs must integrate informatization strategies into their broader development objectives, continuously improving technology, management practices, and talent systems. By doing so, they can overcome current bottlenecks and achieve sustainable, high-quality growth in the digital economy, securing both operational efficiency and strategic competitiveness.

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