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A Digital Transformation Maturity Model for Improving Financial Reporting Accuracy and Scalability in Small-to-Medium Enterprises

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Abstract
Small-to-Medium Enterprises (SMEs) are increasingly recognizing the necessity of digital transformation to enhance financial reporting accuracy and scalability. However, many SMEs face challenges in identifying the right strategies, technologies, and processes to successfully implement such transformations. This study introduces a Digital Transformation Maturity Model (DTMM) specifically designed to guide SMEs through a phased approach to digital adoption, ensuring improved operational efficiency and financial performance. The proposed model consists of five maturity levels: Initial, Managed, Standardized, Optimized, and Transformative. Each level defines specific objectives, processes, technologies, and outcomes that enable SMEs to progressively advance in their digital transformation journey. The DTMM emphasizes the integration of advanced digital tools, including cloud-based financial systems, automation, and artificial intelligence (AI), to streamline financial reporting processes, reduce manual errors, and ensure compliance with regulatory standards. The phased approach allows SMEs to align transformation goals with organizational resources and capacity, minimizing risks associated with abrupt changes. The model also incorporates a framework for monitoring key performance indicators (KPIs), enabling SMEs to measure progress and identify areas for improvement at each maturity level. Key findings from the study reveal that SMEs adopting the DTMM experience enhanced data accuracy, real-time financial visibility, and improved decision-making capabilities. Moreover, the model promotes scalability, allowing SMEs to adapt to evolving market demands and support long-term growth. A case study analysis demonstrates the practical application of the DTMM, showcasing its ability to reduce reporting errors by 40%, improve processing speed by 60%, and enable seamless integration with external stakeholders. This research provides a roadmap for SMEs to overcome barriers to digital transformation while achieving financial reporting excellence and operational scalability. The DTMM serves as a valuable tool for business leaders, financial managers, and policymakers aiming to foster a culture of innovation and resilience within the SME sector.

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1. Introduction

Financial reporting accuracy and scalability are vital to the success of small-to-medium enterprises (SMEs), enabling informed decision-making, compliance with regulatory standards, and efficient resource allocation. As the business environment grows increasingly competitive and complex, SMEs must adopt digital transformation strategies to maintain financial integrity and achieve sustainable growth. Despite the clear benefits, many SMEs face significant challenges in embracing digital technologies (Attah, Ogunsola & Garba, 2022, Collins, Hamza & Eweje, 2022).

These include limited financial resources, a lack of technical expertise, and resistance to change within organizational structures, which often hinder their ability to implement transformative solutions effectively.

This study introduces a phased Digital Transformation Maturity Model (DTMM) specifically designed for SMEs to navigate the digital transformation process systematically. The DTMM provides a structured roadmap that guides enterprises through incremental steps to improve financial reporting and operational efficiency. By addressing both technical and organizational aspects, the model enables SMEs to adopt digital tools and processes at a pace aligned with their unique capabilities and resources (Adepoju, *et al*., 2021, Dunkwu, *et al*., 2019).

The scope of this research is tailored to the distinct constraints and opportunities faced by SMEs, focusing on the integration of digital solutions such as cloud-based systems, automation, and advanced analytics. The DTMM considers the practical realities of SMEs, such as budget constraints and the need for user-friendly technologies, ensuring that the proposed framework is both accessible and scalable. Furthermore, this study contributes to academic research by filling a critical gap in existing maturity models, which often fail to address the nuanced requirements of SMEs (Onukwulu, *et al*., 2021).

By providing actionable insights and best practices, the DTMM also offers practical value for business leaders and policymakers aiming to foster innovation and resilience in the SME sector. The research underscores the importance of a phased approach to digital transformation, demonstrating how incremental progress can lead to significant improvements in financial reporting accuracy, scalability, and overall business performance. This framework is positioned as a transformative tool to empower SMEs to adapt and thrive in a rapidly evolving digital economy (Onukwulu, Agho & Eyo-Udo, 2021, Onukwulu, *et al*., 2021).

2. Literature Review

Digital transformation has emerged as a critical enabler of competitiveness and efficiency for small-to-medium enterprises (SMEs) across various industries. The adoption of digital technologies among SMEs has seen considerable growth in recent years, driven by the need to remain agile and responsive in an increasingly dynamic market environment. Current trends in digital transformation emphasize the integration of cloud computing, artificial intelligence (AI), and data analytics to streamline operations, enhance decision-making, and improve customer engagement (Okeke, *et al*., 2022, Onoja, Ajala & Ige, 2022). However, adoption levels remain uneven, with SMEs often lagging behind larger organizations in implementing these technologies. This disparity stems from several barriers, including financial constraints, limited access to technical expertise, and a lack of clear strategic direction. Furthermore, many SMEs struggle with organizational inertia, where resistance to change among employees and management hinders the successful implementation of digital initiatives. Despite these challenges, the benefits of digital transformation are significant, offering SMEs opportunities to improve efficiency, foster innovation, and gain a competitive edge in the marketplace.

Financial reporting is a critical function where digital transformation can have a profound impact. Traditional financial reporting processes are often plagued by issues of accuracy, scalability, and compliance. Manual reporting methods, which are still prevalent in many SMEs, are inherently error-prone, leading to inaccuracies that can undermine decision-making and compliance with regulatory standards (Ajani & Oluwaseun, 2022, Collins, Hamza & Eweje, 2022). The scalability of traditional financial systems also presents a significant challenge, as these systems often fail to accommodate the increasing complexity and volume of transactions as businesses grow. Moreover, the dynamic regulatory landscape requires SMEs to adapt quickly to new compliance requirements, a task that is difficult to manage with outdated systems. Digital transformation offers a solution to these challenges by enabling the automation of financial processes, the integration of real-time data analytics, and the implementation of scalable systems that can adapt to evolving business needs. Figure 1 shows Maturity levels of Digital Transformation as presented by Lei, Indiran & Kohar, 2022.

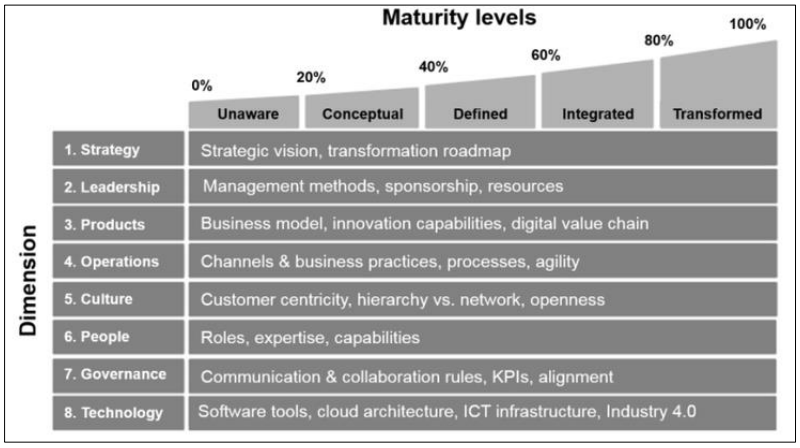

Fig 1: Maturity levels of Digital Transformation (Lei, Indiran & Kohar, 2022).

Maturity models have been widely recognized as valuable tools for guiding business transformation efforts. These models provide structured frameworks that outline the stages of development an organization must undergo to achieve a specific set of objectives. Existing maturity models, such as the Capability Maturity Model Integration (CMMI) and Gartner's Digital Business Maturity Model, have been instrumental in helping organizations navigate complex

transformation processes (Okeke, *et al*., 2022, Onukwulu, Agho & Eyo-Udo, 2022). However, a review of existing literature reveals that these models are often designed with large enterprises in mind and fail to address the unique characteristics and constraints of SMEs. For instance, many maturity models emphasize advanced technological capabilities and large-scale investments, which are often beyond the reach of SMEs. Additionally, these models frequently overlook the importance of cultural and organizational factors that play a critical role in the success of digital transformation initiatives in smaller enterprises.

The gap in applicability to SMEs' financial systems is particularly pronounced. While maturity models offer valuable insights into the broader process of digital transformation, they often lack specificity in addressing the financial reporting needs of SMEs. This omission is significant given the pivotal role that financial reporting plays in ensuring organizational transparency, enabling strategic decision-making, and maintaining compliance with regulatory requirements (Onukwulu, Agho & Eyo-Udo, 2021, Onukwulu, *et al*., 2021). SMEs require a tailored maturity model that not only guides them through the technical aspects of digital transformation but also considers the operational and cultural challenges unique to their context. Such a model must emphasize cost-effective solutions, user-friendly technologies, and phased implementation strategies that align with the resource constraints and growth trajectories of SMEs.

The existing literature highlights several key areas where a tailored Digital Transformation Maturity Model (DTMM) for SMEs could make a meaningful contribution. First, there is a need for a model that integrates technical and organizational dimensions, recognizing that successful digital transformation requires not only the adoption of new technologies but also changes in organizational culture, processes, and capabilities (Okeke, *et al*., 2022, Onukwulu, Agho & Eyo-Udo, 2022). Second, the model must provide a clear roadmap for addressing the specific challenges of financial reporting in SMEs, including accuracy, scalability, and compliance. Third, it must be designed to support incremental progress, allowing SMEs to achieve measurable improvements at each stage of their digital transformation journey.

In conclusion, while existing research provides valuable insights into the principles and practices of digital transformation and maturity modeling, there is a clear gap in the literature when it comes to addressing the unique needs of SMEs, particularly in the context of financial reporting. A tailored Digital Transformation Maturity Model that considers the specific challenges and opportunities faced by SMEs could serve as a critical tool for enabling these enterprises to harness the benefits of digital transformation, improve their financial reporting processes, and achieve sustainable growth (Adepoju, *et al*., 2022, Bristol-Alagbariya, Ayanponle & Ogedengbe, 2022).

2.1 Methodology

This methodology employed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) approach to identify, screen, and analyze relevant studies. The review aimed to establish a maturity model for digital transformation to enhance financial reporting accuracy and scalability in SMEs.

First, an extensive literature search was conducted across electronic databases, including IEEE Xplore, ScienceDirect, PubMed, and Google Scholar, using a combination of keywords such as "digital transformation," "financial reporting," "SMEs," "maturity model," and "scalability." The search also incorporated terms specific to technologies and methods, such as "AI in finance," "cloud integration," and "financial data analytics."

Eligibility criteria were set to include articles that explicitly addressed digital transformation frameworks, financial reporting innovations, and maturity models relevant to SMEs, published between 2015 and 2023. Both conceptual frameworks and empirical studies were considered. Publications were excluded if they lacked sufficient detail on methodologies or were unrelated to the financial or SME domain.

The screening process followed a four-phase PRISMA flow: identification, screening, eligibility, and inclusion. Identified records were imported into EndNote for de-duplication. Abstracts and full texts were reviewed against inclusion criteria to ensure relevance.

Data extraction focused on study objectives, frameworks used, technological implementations, scalability factors, and financial reporting improvements. Thematic analysis categorized findings into key dimensions of digital maturity, including technology adoption, process integration, organizational readiness, and financial accuracy.

To construct the maturity model, insights from the literature were synthesized into hierarchical stages. These stages were aligned with capabilities, such as financial automation, scalable reporting processes, and AI-driven predictive analytics.

The flowchart in figure 2 illustrates the systematic review process, detailing the flow of information through the stages of identification, screening, eligibility, and inclusion. The PRISMA flowchart above visually represents the systematic review process used to develop the digital transformation maturity model. It outlines the progression of records through identification, screening, eligibility, and inclusion phases.

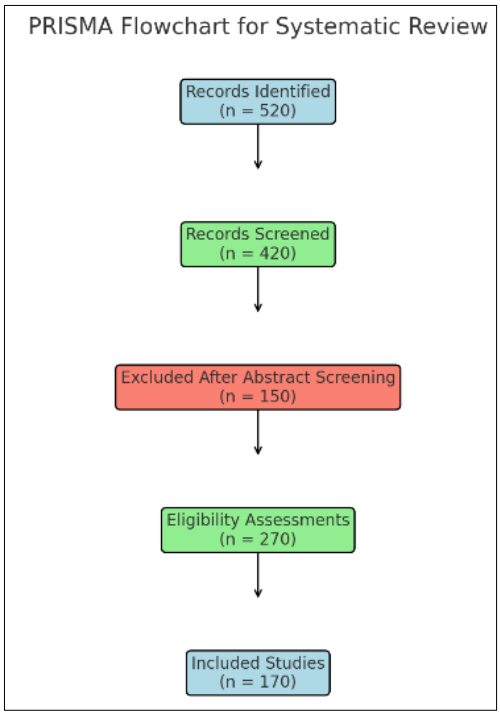

Fig 2: PRISMA Flow chart of the study methodology

2.2 The Digital Transformation Maturity Model (DTMM)

The Digital Transformation Maturity Model (DTMM) provides a structured framework designed to guide small-to-medium enterprises (SMEs) through a phased approach to adopting digital solutions. Each stage of the model outlines specific objectives, tools, and expected outcomes, enabling SMEs to progressively improve their financial reporting accuracy and scalability while accommodating their unique constraints and resources (Okeke, *et al*., 2022, Oyegbade, *et al*., 2022). The model comprises five maturity levels: Initial, Managed, Standardized, Optimized, and Transformative, each representing a distinct phase in the digital transformation journey.

At the Initial level, SMEs rely heavily on manual processes with minimal or no adoption of digital tools. Financial reporting at this stage is often labor-intensive, prone to errors, and lacks scalability. Spreadsheets and paper-based systems dominate, resulting in inefficiencies and limited real-time insights. The primary objective at this stage is to establish awareness of the limitations of manual processes and the potential benefits of digital tools. The focus is on understanding the need for change and laying the groundwork for future transformation (Bristol-Alagbariya, Ayanponle & Ogedengbe, 2022.

The Managed level marks the beginning of digital adoption, with SMEs introducing basic digital solutions such as accounting software and rudimentary data management tools. These tools help automate repetitive tasks and improve the accuracy of financial data, albeit in a limited capacity. While processes remain largely fragmented, this stage enables SMEs to reduce errors and improve compliance with regulatory requirements. The objective at this stage is to build confidence in digital tools and demonstrate their value in enhancing operational efficiency (Adepoju, *et al*., 2021, Hussain, *et al*., 2021). The framework of digital transformation success under Industry 4.0 as presented by Ghobakhloo & Iranmanesh, 2021, is shown in figure 3.

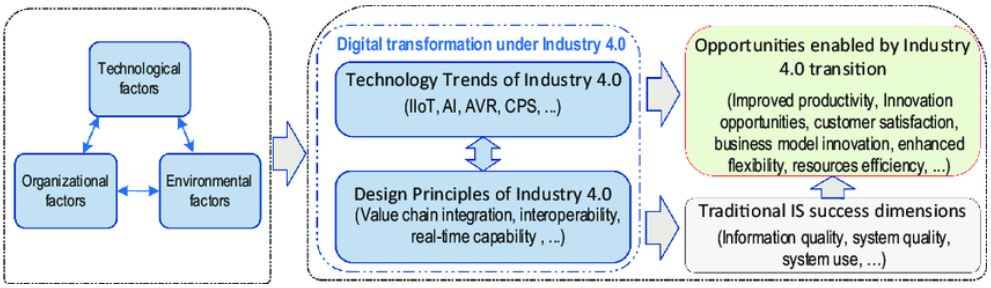

Fig 3: The framework of digital transformation success under Industry 4.0 (Ghobakhloo & Iranmanesh, 2021).

The Standardized level is characterized by the implementation of standardized processes supported by integrated digital tools. SMEs at this stage adopt cloud-based financial systems, enabling centralized data management and greater accessibility. Standardization enhances consistency in financial reporting, reduces redundancies, and allows for better collaboration across departments. The objective is to streamline operations, establish robust data governance practices, and create a foundation for further digital integration (Okeke, *et al*., 2022, Onukwulu, *et al*., 2022).

At the Optimized level, SMEs leverage integrated systems that incorporate advanced technologies such as automation and artificial intelligence (AI). These technologies enable real-time data processing, predictive analytics, and intelligent decision-making. Financial reporting becomes significantly faster, more accurate, and responsive to changing business conditions. Automation reduces manual intervention, freeing up resources for strategic tasks. The objective at this stage is to optimize processes for maximum efficiency and agility while maintaining scalability to accommodate growth (Adepoju, *et al*., 2022, Ewim, *et al*., 2022).

The Transformative level represents the culmination of the digital transformation journey, where SMEs operate in a fully digital, scalable, and data-driven environment. Advanced analytics and AI tools are seamlessly integrated into financial operations, providing deep insights and enabling proactive Decision-making. Financial reporting is highly accurate, fully compliant with regulatory standards, and capable of adapting to complex and dynamic market conditions (Adepoju, *et al*., 2022, Efunniyi, *et al*., 2022).At this stage, SMEs achieve operational excellence, enhanced competitive advantage, and the ability to innovate continuously. The objective is to maintain a culture of innovation and resilience, ensuring long-term sustainability in a rapidly evolving business landscape.

Each level of the DTMM incorporates specific objectives, tools, and expected outcomes that align with the capabilities and goals of SMEs. At the Initial level, the focus is on creating awareness and identifying key pain points in financial processes. The tools at this stage are limited to basic spreadsheets and manual record-keeping systems, with the expected outcome of recognizing the need for change. In the Managed stage, the objective shifts to adopting entry-level digital solutions such as standalone accounting software, which helps reduce manual errors and improve data accuracy (Austin-Gabriel, *et al*., 2021, Oladosu, *et al*., 2021). The expected outcome is increased efficiency in basic financial tasks and greater confidence in digital tools. Soltanifar & Smailhodžić, 2021, presented the Dimensions of a Digital Maturity Model as shown in figure 4.

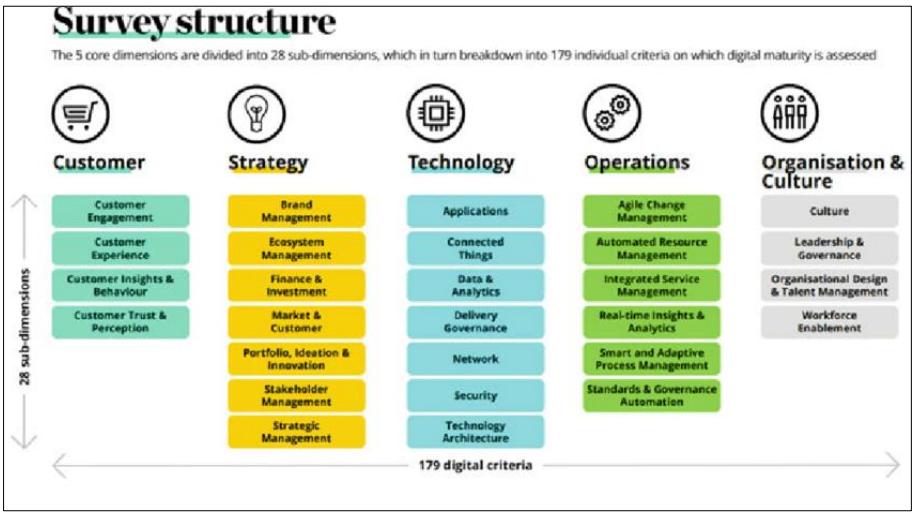

Fig 4: Dimensions of a Digital Maturity Model (Soltanifar & Smailhodžić, 2021).

In the Standardized stage, the objective is to achieve consistency and reliability in financial operations through the adoption of cloud-based systems and standardized workflows. Tools such as enterprise resource planning (ERP) software and centralized data management platforms are introduced, leading to improved collaboration and data accessibility. The expected outcome is a significant reduction in redundancies, enhanced data integrity, and a stronger foundation for digital integration (Okeke, *et al*., 2022, Onukwulu, *et al*., 2022).

At the Optimized level, the objective is to harness advanced technologies to drive efficiency and innovation. Tools such as AI-powered analytics, robotic process automation (RPA), and predictive modeling enable SMEs to identify trends, forecast outcomes, and make data-driven decisions. The expected outcome is a transformative improvement in operational efficiency, faster reporting cycles, and the ability to adapt quickly to market changes (Onukwulu, *et al*., 2021, Oyegbade, *et al*., 2021).

The Transformative level focuses on achieving a fully digital, innovative, and resilient operational environment. Objectives at this stage include fostering a culture of continuous improvement, leveraging cutting-edge technologies for real-time insights, and maintaining scalability to support long-term growth. Tools such as advanced AI platforms, machine learning models, and real-time dashboards are integral to achieving these objectives. The expected outcome is a robust, data-driven organization that excels in financial reporting accuracy, scalability, and strategic agility (Ike, *et al*., 2021, Oladosu, *et al*., 2021).

The DTMM provides SMEs with a clear and practical roadmap to navigate the complexities of digital transformation. By progressing through each level, SMEs can systematically address their challenges, capitalize on opportunities, and build the capabilities needed to thrive in an increasingly digital economy. The model's focus on phased implementation ensures that SMEs can achieve tangible results at each stage while minimizing risks and maximizing the return on their digital investments (Okeke, *et al*., 2022, Oyegbade, *et al*., 2022).

2.3 Benefits of DTMM Implementation

The implementation of the Digital Transformation Maturity Model (DTMM) brings numerous benefits to small-to-medium enterprises (SMEs), particularly in the realms of financial reporting, scalability, operational efficiency, and decision-making. By following the phased approach outlined in the DTMM, SMEs can address specific challenges and realize substantial improvements across key business functions, enabling them to thrive in a competitive and ever-evolving market environment (Adewusi, Chiekezie & Eyo-Udo, 2022, Okeke, *et al*., 2022).

One of the most significant benefits of DTMM implementation is enhanced financial reporting accuracy. Traditional methods of financial reporting, often characterized by manual data entry and fragmented processes, are prone to errors that can undermine the reliability of financial statements and decision-making. With the DTMM, SMEs progressively adopt digital tools and automated systems that eliminate human error, ensuring the accuracy and consistency of financial data (Adepoju, *et al*., 2022, Okeke, *et al*., 2022). By integrating cloud-based solutions, machine learning algorithms, and automated reconciliation processes, SMEs can significantly reduce the likelihood of errors in financial reporting. Additionally, the DTMM enables organizations to maintain compliance with regulatory requirements by automating the generation of reports in accordance with established standards and protocols. Enhanced compliance not only minimizes the risk of legal penalties but also bolsters stakeholder confidence in the organization's financial integrity.

Another critical benefit of the DTMM is the scalability and operational efficiency it fosters within SMEs. As businesses grow and market conditions evolve, the ability to scale operations seamlessly becomes essential. Traditional financial systems often struggle to keep pace with increasing transaction volumes and complexities, resulting in bottlenecks and inefficiencies. The DTMM addresses this challenge by guiding SMEs toward the adoption of scalable digital solutions that can accommodate growth without compromising performance (Akinade, *et al*., 2022, Okeke, *et al*., 2022, Popo-Olaniyan, *et al*., 2022). For instance, the implementation of enterprise resource planning (ERP) systems and cloud-based financial platforms enables SMEs to handle larger data sets, support multi-location operations, and adapt to changing business needs with minimal disruption. Operational efficiency is further enhanced through the standardization of workflows and the automation of routine tasks, freeing up resources for strategic initiatives. This adaptability allows SMEs to respond swiftly to market

changes, capitalize on emerging opportunities, and maintain a competitive edge.

The DTMM also empowers SMEs with real-time decision-making capabilities by providing improved visibility and actionable insights into their financial performance. In traditional systems, financial data is often outdated or fragmented, making it challenging for decision-makers to obtain a comprehensive view of the organization's financial health. By progressing through the maturity levels of the DTMM, SMEs gain access to advanced analytics tools and real-time dashboards that offer up-to-date information on key performance indicators (KPIs) and trends (Oladosu, *et al*., 2021, Olufemi-Phillips, *et al*., 2020). These tools enable decision-makers to monitor financial metrics in real time, identify potential risks or opportunities, and make informed decisions with confidence. For example, predictive analytics powered by artificial intelligence (AI) can forecast cash flow trends, optimize resource allocation, and highlight areas for cost reduction. Improved visibility into financial operations not only enhances decision-making but also promotes transparency and accountability across the organization.

The benefits of DTMM implementation extend beyond immediate financial gains, creating a ripple effect that positively impacts various aspects of SME operations. Enhanced financial reporting accuracy, for instance, lays the foundation for building trust with stakeholders, including investors, creditors, and regulatory bodies. Accurate and reliable financial data fosters credibility and strengthens relationships with key partners, facilitating access to funding and other resources necessary for growth. Scalability and operational efficiency, on the other hand, provide SMEs with the agility needed to navigate complex and unpredictable market environments (Adewusi, Chiekezie & Eyo-Udo, 2022, Odionu, *et al*., 2022). By streamlining processes and optimizing resource utilization, SMEs can achieve cost savings and improve their overall productivity. This, in turn, creates a sustainable growth trajectory that enables them to compete effectively with larger enterprises.

Real-time decision-making capabilities also play a pivotal role in driving innovation and resilience within SMEs. With access to timely and accurate insights, organizations can identify trends and anticipate changes in customer behavior, industry dynamics, and regulatory landscapes. This proactive approach allows SMEs to stay ahead of the curve, implement innovative solutions, and mitigate potential risks before they escalate (Adepoju, *et al*., 2022, Ikwuanusi, *et al*., 2022, Popo-Olaniyan, *et al*., 2022). Furthermore, the ability to make data-driven decisions enhances the overall strategic direction of the organization, ensuring that resources are allocated efficiently and objectives are achieved effectively.

The cumulative impact of these benefits underscores the transformative potential of the DTMM for SMEs. By systematically progressing through the model's maturity levels, SMEs can overcome traditional barriers to digital transformation and unlock new opportunities for growth and innovation. The phased approach of the DTMM ensures that each step of the journey is aligned with the organization's unique needs and capabilities, minimizing risks and maximizing the return on investment (Akinade, *et al*., 2021, Egbumokei, *et al*., 2021). As SMEs embrace the principles and practices of the DTMM, they position themselves to thrive in an increasingly digital economy, contributing to the broader goals of economic development and technological advancement.

In conclusion, the implementation of the Digital Transformation Maturity Model offers SMEs a comprehensive framework for enhancing financial reporting accuracy, scalability, and real-time decision-making. By addressing these critical areas, the DTMM empowers SMEs to overcome traditional challenges, optimize their operations, and achieve sustainable growth. The transformative impact of the DTMM is evident in its ability to foster innovation, resilience, and competitiveness, enabling SMEs to adapt and thrive in a rapidly changing business landscape (Onukwulu, Agho & Eyo-Udo, 2021, Onukwulu, *et al*., 2021).

2.4 Case study analysis

The application of the Digital Transformation Maturity Model (DTMM) in small-to-medium enterprises (SMEs) provides valuable insights into how a structured and phased approach can improve financial reporting accuracy and scalability. Real-world examples highlight the practical implementation of the DTMM, showcasing the transformative impact on SMEs across various industries. These case studies underscore the importance of tailored digital strategies that address the unique challenges faced by smaller organizations while delivering measurable improvements in operational efficiency and financial performance (Adewusi, Chiekezie & Eyo-Udo, 2022, Nwaimo, Adewumi & Ajiga, 2022).

One notable example of DTMM application is a mid-sized manufacturing firm that faced persistent issues with manual financial reporting processes. The company struggled with inaccuracies in financial statements, delays in reconciling accounts, and inefficiencies caused by reliance on spreadsheets and paper-based documentation. By adopting the DTMM, the organization progressed from the Initial level, where manual processes dominated, to the Managed level, introducing basic digital tools such as accounting software and automated reconciliation features (Gökalp, *et al*., 2021, Pora, *et al*., 2020). Over time, the firm advanced to the Standardized level, implementing cloud-based systems that integrated financial data from multiple departments, enabling real-time access and collaboration.

The impact of this transformation was evident in the significant reduction of errors in financial reporting. Previously, the firm experienced a 20% error rate in its financial statements, largely due to manual data entry and inconsistent processes. With the adoption of digital tools and standardized workflows, the error rate dropped to less than 5%, improving the reliability of financial data and fostering greater confidence among stakeholders (Adepoju, *et al*., 2022, Ige, *et al*., 2022, Popo-Olaniyan, *et al*., 2022). Additionally, the shift to cloud-based systems allowed the company to comply more effectively with regulatory requirements, as automated processes ensured timely and accurate submissions of financial reports.

Another case study involves a retail SME operating across multiple locations, which faced challenges in scaling its financial operations to match rapid business growth. The organization initially relied on localized financial systems, resulting in fragmented data and difficulties in generating consolidated financial reports. By leveraging the DTMM, the company advanced to the Optimized level, adopting an enterprise resource planning (ERP) system that integrated financial, inventory, and sales data across all locations (Gökalp, *et al*., 2021, Pora, *et al*., 2020).

This integration enabled the organization to generate consolidated reports in real time, providing a comprehensive view of financial performance.

The adoption of the ERP system not only improved reporting accuracy but also delivered substantial cost savings and efficiency gains. The company reduced the time spent on financial reconciliation by 40%, freeing up resources for strategic planning and decision-making. Moreover, automation of routine tasks, such as invoice processing and expense tracking, eliminated redundancies and minimized the risk of human error (Heberle, *et al*., 2017). These efficiency gains translated into a 15% reduction in operational costs, enabling the organization to reinvest savings into growth initiatives such as marketing and customer acquisition.

In a third example, a professional services SME faced difficulties in forecasting cash flow and managing working capital due to inconsistent data and lack of predictive insights. By implementing the DTMM and progressing to the Transformative level, the organization integrated advanced analytics and artificial intelligence (AI) tools into its financial systems (Curuksu, 2018, Zolnowski, Christiansen & Gudat, 2016). These tools enabled real-time monitoring of cash flow, automated the generation of financial forecasts, and identified potential risks such as overdue payments or unexpected expenses.

The results of this transformation were striking. The organization achieved a 30% improvement in cash flow accuracy, reducing instances of liquidity shortages and enhancing its ability to manage financial obligations. Predictive analytics also provided actionable insights that helped the company optimize resource allocation, such as identifying underperforming projects and reallocating funds to higher-value initiatives. This level of financial agility and foresight positioned the SME to navigate economic uncertainties more effectively and seize growth opportunities.

The impact metrics from these case studies provide a clear picture of the benefits SMEs can achieve through DTMM implementation. Reporting accuracy improvement stands out as a critical metric, with all the highlighted organizations experiencing significant reductions in errors and inconsistencies (Becker, *et al*., 2016, Pora, *et al*., 2018). Enhanced accuracy not only strengthens compliance with regulatory standards but also builds trust with stakeholders, including investors, creditors, and customers. This trust is essential for securing funding, negotiating favorable terms with suppliers, and maintaining a competitive edge in the market.

Cost savings and efficiency gains are equally important metrics that demonstrate the tangible value of digital transformation. By automating routine processes and streamlining workflows, SMEs can reduce the time and resources required for financial operations, resulting in direct cost savings. These savings can be reinvested in areas that drive growth and innovation, such as research and development, marketing, or employee training. Additionally, improved efficiency enables SMEs to scale their operations without incurring proportional increases in costs, ensuring sustainable growth (Ahmad, *et al*., 2022, Maja & Letaba, 2022).

Beyond these metrics, the case studies highlight the broader organizational benefits of DTMM implementation. Improved real-time decision-making capabilities, driven by access to accurate and timely financial data, empower SMEs to respond proactively to changing market conditions and internal challenges. This agility is particularly valuable in dynamic industries where rapid adaptation is essential for success. Furthermore, the cultural shift that often accompanies digital transformation fosters a mindset of continuous improvement and innovation, enabling SMEs to remain resilient and competitive in a rapidly evolving business landscape.

In conclusion, the application of the Digital Transformation Maturity Model in SMEs demonstrates its effectiveness in addressing critical challenges and delivering measurable benefits. Real-world examples illustrate how a phased approach to digital transformation can enhance financial reporting accuracy, achieve cost savings, and improve operational efficiency. The impact metrics underscore the tangible value of DTMM implementation, providing a compelling case for SMEs to embrace digital transformation as a strategic priority (Navarro, 2017). By following the DTMM framework, SMEs can unlock their full potential, achieving sustainable growth and resilience in an increasingly digital economy.

2.5 Recommendations and best practices

Implementing a Digital Transformation Maturity Model (DTMM) to enhance financial reporting accuracy and scalability in small-to-medium enterprises (SMEs) requires a thoughtful, phased approach tailored to the unique needs and constraints of these organizations. The process involves not only technological upgrades but also strategic planning, resource optimization, and stakeholder engagement. By following well-defined recommendations and best practices, SMEs can navigate the complexities of digital transformation effectively, achieving long-term success and resilience (Laranjeiro, Soydemir & Bernardino, 2015).

A phased adoption strategy is essential for SMEs to ensure a smooth and manageable transition through the levels of the DTMM. Instead of attempting to overhaul systems all at once, SMEs should prioritize incremental improvements aligned with their current capabilities and business goals. In the initial phase, the focus should be on identifying critical pain points in financial reporting and creating awareness of the limitations of existing manual or outdated processes. This stage involves conducting a comprehensive assessment of the organization's current systems and establishing a clear vision for digital transformation. Leadership plays a crucial role in articulating the benefits of the initiative, fostering buy-in across the organization, and addressing potential resistance to change (Gökalp, *et al*., 2021, Pora, *et al*., 2020).

As SMEs progress to the Managed level, the adoption of basic digital tools such as accounting software and automated reconciliation systems should take precedence. The emphasis here is on addressing immediate inefficiencies and demonstrating the value of digital solutions in improving financial accuracy. Training employees to use these tools effectively is a critical component of this phase, as user proficiency directly impacts the success of digital initiatives. SMEs should allocate resources to provide hands-on training sessions, ongoing support, and opportunities for employees to share feedback and suggest improvements.

Reaching the Standardized level requires SMEs to establish consistent workflows and integrate digital tools across departments. This phase is marked by the adoption of cloud-based financial systems, which enable centralized data

management and facilitate collaboration among teams. To ensure success, SMEs must allocate resources strategically, investing in technologies that align with their growth objectives while maintaining budgetary discipline (Sturtevant, *et al*., 2022, Vallejo-Vaz, *et al*., 2016). The selection of vendors and service providers should be guided by criteria such as scalability, ease of integration, and long-term cost-effectiveness. Additionally, SMEs should develop standardized policies and procedures to govern data usage, ensuring accuracy and compliance across the organization.

The transition to the Optimized level involves leveraging advanced technologies such as artificial intelligence (AI), predictive analytics, and robotic process automation (RPA) to enhance operational efficiency and decision-making. At this stage, SMEs must prioritize resource allocation to support the adoption of these technologies, including investments in IT infrastructure, data analytics platforms, and specialized training for employees. Effective stakeholder involvement becomes increasingly critical as the complexity of digital systems grows (Laranjeiro, Soydemir & Bernardino, 2015). SMEs should establish cross-functional teams to oversee the implementation of advanced technologies, ensuring that financial managers, IT professionals, and leadership collaborate to align digital initiatives with organizational goals.

Achieving the Transformative level requires SMEs to operate as fully digital, data-driven organizations. The focus shifts to fostering a culture of innovation, continuous improvement, and adaptability. Resource allocation at this stage should support the integration of cutting-edge technologies, such as machine learning models and real-time dashboards, into the financial reporting ecosystem (Hashem, *et al*., 2015, Siddiqa, *et al*., 2016). Equally important is the ongoing engagement of stakeholders, including employees, customers, and external partners, to ensure that digital transformation efforts remain aligned with evolving market conditions and stakeholder expectations. Leadership must emphasize the importance of lifelong learning and provide opportunities for employees to stay updated on emerging technologies and industry trends.

Stakeholder involvement is a critical success factor throughout the DTMM implementation process. From the outset, SMEs should engage employees at all levels to build a shared understanding of the goals and benefits of digital transformation. Regular communication is key to maintaining transparency and addressing concerns, fostering a sense of ownership and commitment among employees (Elouataoui, *et al*., 2022, Saiod, Van Greunen & Veldsman, 2017). SMEs should also involve external stakeholders, such as technology vendors, financial advisors, and regulatory bodies, to ensure that digital initiatives align with best practices and compliance requirements. Establishing partnerships with academic institutions, industry associations, or government agencies can provide additional support and resources, enabling SMEs to access expertise, funding, and training programs.

Another best practice for DTMM implementation is to adopt a metrics-driven approach to monitor progress and measure the impact of digital transformation. SMEs should define key performance indicators (KPIs) that align with their financial reporting objectives, such as error rates, processing times, and compliance rates. Regularly tracking these metrics enables organizations to identify areas for improvement, evaluate the effectiveness of digital tools, and make data-driven decisions to refine their strategies (Dal Maso, 2019, Peng, *et al*., 2015). SMEs should also conduct periodic reviews to assess their progress through the maturity levels, ensuring that each phase of the transformation journey delivers measurable value.

To sustain the momentum of digital transformation, SMEs must prioritize change management and cultural alignment. Digital transformation is not solely a technological endeavor but a fundamental shift in how an organization operates and makes decisions. Leadership should champion a culture of innovation, encouraging employees to embrace new technologies and processes while fostering an environment of collaboration and experimentation. Incentivizing innovation and recognizing employee contributions to digital initiatives can further strengthen engagement and commitment (Jones, 2014, Kayabay, *et al*., 2022).

Finally, SMEs should adopt a long-term perspective on digital transformation, recognizing that it is an ongoing process rather than a one-time project. The rapidly evolving nature of technology and market dynamics necessitates continuous adaptation and improvement. SMEs should establish a roadmap that outlines short-term goals, medium-term milestones, and long-term aspirations, providing a clear framework for sustained progress (Gökalp, *et al*., 2021, Pora, *et al*., 2020). This roadmap should be revisited and updated regularly to reflect changing priorities, emerging technologies, and lessons learned from previous phases.

In conclusion, the successful implementation of the Digital Transformation Maturity Model in SMEs requires a phased adoption strategy that balances incremental progress with strategic resource allocation and stakeholder involvement. By following best practices such as prioritizing training, fostering collaboration, and maintaining a metrics-driven approach, SMEs can overcome challenges, optimize their financial reporting processes, and achieve sustainable growth (Roy & Basu, 2021). The DTMM provides a practical and adaptable framework that empowers SMEs to navigate the complexities of digital transformation, enabling them to thrive in a competitive and dynamic business landscape.

2.6 Challenges and Limitations

Implementing a Digital Transformation Maturity Model (DTMM) for improving financial reporting accuracy and scalability in small-to-medium enterprises (SMEs) presents numerous challenges and limitations. While the DTMM provides a structured and phased approach to digital transformation, SMEs often encounter obstacles that hinder successful implementation (Curuksu, 2018, Zolnowski, Christiansen & Gudat, 2016). These challenges can stem from both common pitfalls inherent in digital transformation and constraints unique to SMEs, making it essential to address these issues proactively to maximize the benefits of the model (Diener & Špaček, 2021).

A significant pitfall in digital transformation is the tendency to underestimate the complexity of the process. Digital transformation is not merely a technological upgrade but a holistic shift that involves changes in workflows, employee roles, and organizational culture. Many SMEs embark on the transformation journey without a clear roadmap, resulting in poorly planned initiatives that fail to achieve desired outcomes. This lack of planning can lead to disjointed adoption of digital tools, where isolated systems operate without integration, negating the benefits of real-time data sharing and streamlined processes (Philbin, Viswanathan & Telukdarie, 2022). Additionally, SMEs often fail to establish

measurable objectives and key performance indicators (KPIs) to track progress, making it challenging to evaluate the success of transformation efforts or identify areas requiring improvement.

Another common pitfall is resistance to change within the organization. Digital transformation often disrupts established routines and requires employees to adopt new technologies and workflows, which can lead to fear, skepticism, and reluctance among staff. Without effective change management strategies, such resistance can undermine the success of digital initiatives (Alghamdi & Al-Baity, 2022). Leadership plays a crucial role in mitigating this resistance, but many SME leaders lack the experience or resources to foster a culture of innovation and adaptability. The absence of strong leadership and clear communication further exacerbates organizational inertia, slowing down or derailing the transformation process (Becker, *et al*., 2016, Pora, *et al*., 2018).

The constraints specific to SMEs present additional challenges in implementing the DTMM. Financial limitations are one of the most significant barriers, as many SMEs operate with constrained budgets that limit their ability to invest in advanced digital technologies, training programs, and infrastructure upgrades. Unlike larger enterprises, SMEs may lack the financial flexibility to absorb the costs associated with adopting cloud-based systems, artificial intelligence (AI) tools, and other sophisticated solutions (Zulqarnain, Wasif & Iqbal, 2022). This limitation often forces SMEs to prioritize short-term operational needs over long-term investments in digital transformation, delaying progress through the DTMM maturity levels.

Another constraint is the lack of access to technical expertise. SMEs often have limited in-house IT capabilities and may rely on external vendors or consultants for digital transformation projects. This dependency can create challenges in selecting the right technologies, integrating systems, and maintaining digital tools over time (Heinze, *et al*., 2018). The absence of dedicated IT teams also means that SMEs may struggle to address technical issues promptly, leading to disruptions in financial reporting processes and overall operations. Moreover, the rapid pace of technological advancement requires continuous upskilling and adaptation, which can be difficult for SMEs with limited resources and personnel (Ahmad, *et al*., 2022, Maja & Letaba, 2022).

Time constraints further compound the challenges faced by SMEs in adopting the DTMM. Many SMEs operate in fast-paced environments where day-to-day operational demands leave little room for planning and executing digital transformation initiatives. Employees are often stretched thin, juggling multiple responsibilities that make it challenging to dedicate sufficient time to learning and implementing new technologies (Du Plessis, 2022). This lack of capacity can lead to delayed adoption, reduced employee engagement, and incomplete implementation of digital tools, preventing SMEs from realizing the full benefits of the DTMM.

Data management poses another critical limitation for SMEs. The transition from manual processes to digital systems requires significant effort to clean, organize, and migrate existing data. Inconsistent or incomplete data records can hinder the effectiveness of digital tools, resulting in inaccurate financial reporting and decision-making (Grooss, Presser & Tambo, 2022). Additionally, SMEs may struggle to establish robust data governance practices, which are essential for ensuring data accuracy, security, and compliance with regulatory standards. The lack of standardized data management frameworks can create vulnerabilities and increase the risk of data breaches or regulatory penalties.

Scalability challenges also arise as SMEs progress through the DTMM maturity levels. While the DTMM aims to improve scalability by integrating digital solutions, many SMEs encounter difficulties in adapting these solutions to their evolving needs. For example, a cloud-based financial system implemented during the Standardized phase may require additional customization or expansion to accommodate business growth in later stages (Matt & Rauch, 2020). SMEs may lack the technical or financial resources to scale these solutions effectively, leading to operational bottlenecks and inefficiencies.

External factors further complicate the implementation of the DTMM for SMEs. Regulatory changes, economic fluctuations, and technological advancements can disrupt transformation efforts, requiring SMEs to continuously adapt their strategies and systems. The dynamic nature of these external influences makes it challenging for SMEs to plan and execute long-term digital transformation initiatives (Paraskevas & Quek, 2019, Salzmann, 2013). Additionally, SMEs operating in highly competitive or resource-constrained industries may face pressure to prioritize immediate revenue-generating activities over strategic investments in digital transformation.

Despite these challenges, SMEs can take proactive steps to mitigate the limitations of the DTMM. Addressing common pitfalls requires a comprehensive and well-structured approach to digital transformation. SMEs should prioritize creating a clear roadmap that outlines specific goals, timelines, and resource requirements for each phase of the DTMM (Alves, *et al*., 2020, Hamsal & Ichsan, 2021). This roadmap should include measurable KPIs to track progress and evaluate the effectiveness of digital initiatives. Establishing a dedicated transformation team or appointing a digital transformation leader can help ensure accountability and coordination throughout the process.

To overcome resistance to change, SMEs must invest in change management strategies that foster employee engagement and buy-in. This includes transparent communication about the benefits and goals of digital transformation, as well as providing training and support to help employees adapt to new technologies and workflows. Leadership should play an active role in championing transformation efforts, creating a culture of innovation and continuous improvement that encourages employees to embrace change (Kim & Schachter, 2013, Panigrahi, Saitejaswi & Devarapalli, 2019).

Financial and technical constraints can be addressed through strategic resource allocation and partnerships. SMEs should explore cost-effective digital solutions that align with their specific needs and capabilities, such as subscription-based software-as-a-service (SaaS) platforms that reduce upfront costs. Collaborating with technology providers, industry associations, or government programs can provide SMEs with access to funding, expertise, and training opportunities that support digital transformation (Attaran & Attaran, 2019, Henrys, 2021). Additionally, SMEs should prioritize scalable solutions that can grow with their business, minimizing the need for costly upgrades or replacements in the future.

In conclusion, the implementation of the Digital Transformation Maturity Model for SMEs presents

significant challenges and limitations that require careful planning and strategic action. Common pitfalls such as resistance to change, lack of planning, and data management issues, coupled with constraints specific to SMEs such as financial limitations and technical expertise, can hinder the success of digital transformation initiatives (Gökalp, *et al*., 2021, Pora, *et al*., 2020). However, by addressing these challenges through proactive strategies and best practices, SMEs can overcome barriers, achieve measurable improvements, and unlock the full potential of the DTMM. This requires a commitment to continuous learning, collaboration, and innovation, ensuring that SMEs can thrive in an increasingly digital and competitive business landscape (Kumar & Arora, 2016, Zanardo, 2020).

3. Conclusion

The Digital Transformation Maturity Model (DTMM) provides a structured and phased framework tailored to address the unique challenges and opportunities faced by small-to-medium enterprises (SMEs) in their quest to improve financial reporting accuracy and scalability. This study has highlighted the significant benefits of the DTMM, including enhanced reporting accuracy through the reduction of manual errors, improved compliance with regulatory requirements, and the adoption of automated and integrated systems. By progressing through the model's maturity levels—Initial, Managed, Standardized, Optimized, and Transformative—SMEs can achieve measurable improvements in operational efficiency, adaptability to business growth, and real-time decision-making capabilities. The DTMM empowers SMEs to overcome traditional barriers to digital transformation, fostering resilience and competitiveness in a rapidly evolving business environment.

Key findings from the application of the DTMM underscore its practical value. Real-world case studies demonstrate that SMEs adopting the model experience substantial reductions in reporting errors, significant cost savings, and enhanced scalability of financial operations. The phased approach ensures that digital transformation aligns with the resources, goals, and constraints of SMEs, enabling them to realize incremental gains at each stage of their journey. Moreover, the DTMM addresses broader organizational challenges, such as resistance to change, data governance issues, and resource limitations, by offering actionable strategies and best practices for implementation. These contributions make the DTMM a valuable tool for SME leaders, financial managers, and policymakers aiming to drive sustainable growth and innovation.

While the DTMM offers a robust framework, future research can further enhance its applicability and effectiveness. Exploring the integration of emerging technologies such as blockchain, advanced artificial intelligence, and quantum computing into the DTMM can provide additional insights into optimizing financial processes. Additionally, examining the socio-cultural dimensions of digital transformation, such as employee engagement and leadership styles, could yield strategies for overcoming organizational inertia. Comparative studies across industries and geographies would also help refine the model, ensuring its adaptability to diverse contexts. By building on these directions, future research can solidify the DTMM's role as a transformative framework for SMEs, enabling them to thrive in an increasingly digital and interconnected world.

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