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Effect of AI Adoption on Competitive Advantage of Small and Medium Enterprises in Europe

[1]Filieri Raguseo Arroyabe & [2]Marikan Mariyana Wahed

[1&2]Department of Marketing, University of Birmingham, United Kingdom

***Email of the corresponding author: filieriraguseo@gmail.com**

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Abstract

Artificial intelligence adoption plays a vital role in enhancing competitive advantage, especially for Small and Medium Enterprises operating in increasingly digitalized European markets. This study investigated the effect of AI adoption on competitive advantage of European SMEs through a comprehensive systematic literature review analyzing multiple empirical studies across diverse European contexts. The research found that AI adoption significantly enhances competitive advantage in European SMEs by improving operational efficiency, decision-making capabilities, and market positioning. Literature analysis revealed that European SMEs demonstrated superior performance outcomes, with 87% reporting increased productivity, 86% experiencing improved effectiveness, and 86% achieving business growth when AI technologies were successfully implemented. The study also established that digital capabilities and innovation competencies serve as primary drivers of AI adoption success, while leadership commitment and organizational readiness play crucial moderating roles in determining competitive outcomes. Moreover, the study found that when European SMEs combined AI adoption with complementary digital technologies such as IoT and Big Data Analytics, organizations observed enhanced revenue growth and sustainable competitive positioning. Companies using generative AI achieved average returns of $3.7 for every dollar invested, with top performers reaching $10.3 returns. The research also observed that strategic AI implementation helped mitigate resource constraints and technological limitations commonly faced by SMEs, thereby reinforcing their ability to compete with larger enterprises in digital markets. These findings support the Resource-Based View and Technology-Organization-Environment theoretical frameworks emphasizing the importance of internal capabilities and strategic alignment in determining AI adoption success and competitive advantage creation. The study concluded that AI adoption is a critical strategic determinant of competitive advantage for European SMEs, particularly when implementation is supported by adequate digital infrastructure, skilled human capital, and effective organizational learning processes. The study recommended that European SMEs develop comprehensive AI adoption strategies that address both technological and organizational readiness factors, while policymakers should design targeted support mechanisms to enhance SME access to AI technologies and promote digital skills development across the European business ecosystem.

Keywords: *Artificial Intelligence, Competitive Advantage, Small and Medium Enterprises, Europe*

1.1 Background of the Study

Artificial intelligence adoption plays a central role in shaping competitive advantage, particularly for Small and Medium Enterprises (SMEs) operating in increasingly digitalized European markets where traditional competitive barriers are rapidly evolving (Ardito et al., 2024). Across Europe, a region experiencing significant digital transformation due to technological advancement and economic integration, SMEs are adapting their business models and operational systems to leverage AI technologies for sustained competitiveness and market positioning. In such environments, the absence of advanced technological capabilities demands a restructured approach to innovation and strategic planning that fosters efficiency, adaptability, and sustainable growth. Effective AI adoption enables SMEs to remain competitive against larger enterprises, optimize operational processes, and respond to market changes, which directly correlates with their market positioning and long-term viability (Arroyabe et al., 2024). Without this technological foundation, European SMEs can quickly become disadvantaged, leading to reduced market share, operational inefficiencies, and diminished competitive positioning.

AI adoption in European SMEs presents unique challenges that make strategic implementation especially critical (Huseyn et al., 2024). The region's diverse regulatory environments and varying levels of digital infrastructure mean that technological readiness and consistent strategic alignment are vital for cross-functional integration. SMEs often face increased resource constraints, limited access to technical expertise, and insufficient understanding of AI benefits and applications. These barriers can be mitigated through comprehensive AI implementation strategies that are not only technologically sound but also organizationally aligned. Engaging stakeholders through structured training programs, digital capability development, strategic partnerships, and continuous learning processes enhances their commitment to technological transformation (Schönberger, 2023). In Europe's context, where multilingual and multicultural business environments are common, AI adoption strategies should also accommodate diverse operational requirements and regulatory frameworks to ensure that implementations achieve desired competitive outcomes across different market segments.

Moreover, competitive advantage is closely tied to how AI adoption influences organizational capabilities and market positioning (Jalil et al., 2025). When AI implementation systems prioritize strategic alignment and capability development—such as enhancing decision-making processes, optimizing operational efficiency, and creating new value propositions—SMEs tend to achieve superior performance outcomes and sustained competitive advantages. In Europe, where SMEs may face competitive pressure from both local and international players, AI-driven competitive strategies become not just a best practice but a strategic necessity. Technologies like machine learning algorithms, automation systems, and data analytics platforms help bridge capability gaps by enhancing operational efficiency and strategic decision-making capabilities, regardless of organizational size or resource limitations.

Digital capabilities form the backbone of AI adoption in European SME environments, yet their effectiveness depends heavily on how they are strategically implemented (Weiss & Vance, 2025). In Europe, where access to advanced AI technologies and expertise may vary across regions, SMEs should rely on scalable solutions and strategic partnerships with technology providers, universities, and research institutions. These capabilities should be supported by organizational learning protocols that encourage continuous improvement, knowledge sharing, and adaptive implementation approaches. Merely deploying AI technology is insufficient; organizations should

develop internal competencies, digital literacy, and innovation capabilities to ensure that these technologies are used to strengthen, rather than complicate, competitive positioning. Furthermore, technical support systems should be comprehensive and accessible to ensure that SMEs do not encounter implementation obstacles that further limit their competitive potential.

Leadership commitment also significantly moderates the relationship between AI adoption and competitive advantage (Alzaghal et al., 2024). Managers and business leaders in European SME settings should embody strategic vision, digital literacy, and adaptive leadership in their approach to AI implementation. The quality and consistency of leadership support directly affect how organizations realize AI benefits and maintain competitive positioning. Where leadership commitment is inconsistent, directive, or unclear, SMEs may experience suboptimal AI implementation outcomes and lose competitive ground. Conversely, leaders who maintain clear strategic vision, invest in employee development, and foster innovation-oriented cultures can nurture organizational capabilities and reinforce competitive advantages through AI adoption. This leadership-driven innovation culture is essential for sustaining competitiveness across diverse European markets.

Market context deeply influences how AI adoption translates into competitive advantage in European SME environments (Soni, 2023). Given the diverse regulatory frameworks, market conditions, and competitive landscapes across European countries, effective AI implementation should be not only technologically advanced but also strategically adaptable. Implementation challenges due to regulatory compliance, market dynamics, or competitive pressures can limit AI adoption effectiveness and suppress competitive gains. To address this, SMEs should invest in context-sensitive AI strategies that consider diverse market requirements, including regulatory compliance, customer expectations, and competitive positioning needs. Regular market analysis, performance assessment, and strategic adaptation can help evaluate AI implementation effectiveness and guide competitive improvements. By aligning AI adoption with the market and regulatory realities of European business environments, SMEs can better leverage technological capabilities and strengthen long-term competitive resilience. Thus, the study examined the effect of AI adoption on competitive advantage of Small and Medium Enterprises in Europe.

1.2 Statement of the Problem

Digital transformation has introduced substantial shifts in how Small and Medium Enterprises approach competitive positioning, with artificial intelligence adoption emerging as a pivotal mechanism for maintaining market relevance, operational efficiency, and sustainable growth. Across Europe, where economic integration and technological advancement are reshaping competitive dynamics, SMEs are particularly vulnerable to competitive disadvantage due to resource constraints, technological barriers, and knowledge gaps. Research by Ardito et al. (2024) indicates that AI adoption positively affects SME revenue growth, with companies achieving substantial performance improvements when AI technologies are successfully integrated with complementary digital assets. Despite such compelling findings, existing research remains limited in providing comprehensive understanding of how AI adoption specifically translates into competitive advantage within Europe's diverse regulatory and market landscapes, where SMEs must navigate varying technological infrastructure, skill availability, and competitive pressures. Moreover, the complexity of AI implementation in resource-constrained environments can create implementation challenges, delay strategic benefits, and diminish the sustainable competitive positioning among European SMEs (Schönberger, 2023). These challenges suggest a critical

research gap in understanding how AI adoption strategies specifically impact competitive advantage outcomes among SMEs in Europe's heterogeneous business environment.

While various studies underscore the role of digital capabilities, innovation competencies, and organizational readiness in driving AI adoption success (Arroyabe et al., 2024; Huseyn et al., 2024), their specific implications for European SME competitive advantage remain underexplored. The diverse regulatory frameworks and varying levels of digital maturity across European markets introduce additional complexity, where inadequate AI implementation can lead to competitive disadvantage, resource waste, or operational inefficiencies. According to Weiss and Vance (2025), AI adoption influences competitive outcomes not only directly but also through mediating factors such as organizational capabilities and strategic alignment. However, few studies offer insight into how these dynamics unfold specifically within European SME contexts, considering the unique challenges of limited resources, skill shortages, and market competition. Furthermore, Jalil et al. (2025) found that key components of AI implementation-such as technology orientation and digital value creation capabilities-significantly predicted competitive performance, suggesting that any implementation misalignment may adversely affect organizational competitiveness. Thus, the central problem this study sought to address was the lack of comprehensive empirical evidence regarding how AI adoption practices influence competitive advantage in European Small and Medium Enterprises, especially considering the region's unique technological, regulatory, and competitive landscape.

1.3 Research objective

The objective of the study was to examine the effect of AI adoption on competitive advantage of small and medium enterprises in Europe

2.1 Literature Review

Farmanesh et al. (2025) examined the relationship between artificial intelligence, green innovation, and competitive advantage among Turkish construction SMEs using the Natural Resource-Based View theory. The study employed structural equation modeling (SEM) to analyze responses from 228 executives in Turkey's construction sector. The study found that financial resources significantly impact sustainable competitive advantage among SMEs, while green innovation strategies serve as a mediator in the relationship. The implications suggest that SMEs should integrate AI adoption with green innovation strategies to maximize their sustainable competitive advantage, particularly when facing financial resource constraints. This study contributes to achieving UN Sustainable Development Goal 9 by providing insights for managers and policymakers on sustainable practices in the construction sector.

Arroyabe et al. (2024) conducted a comprehensive empirical investigation of AI adoption drivers among European SMEs using dynamic capabilities and resource dependency theories. The study analyzed data from 12,108 SMEs across the European Union, sourced from the Flash Eurobarometer database. Their methodology employed both classical regression methods and advanced machine learning techniques, including artificial neural networks and tree regression. The findings revealed that digital capabilities are the primary driver of AI adoption, with innovation capabilities exhibiting synergistic effects when combined. Contrary to existing literature, business environmental support alone demonstrated limited impact, emphasizing its effectiveness only within well-developed institutional frameworks. The study found that internal capabilities exert greater influence on AI adoption compared to external environmental support.

The implications suggest that SME managers should prioritize balanced investment in both digital and innovation capabilities, while policymakers should design comprehensive support structures that enhance internal capabilities alongside creating enabling external environments.

Schönberger (2023) identified key AI applications and challenges for German SMEs through a quantitative survey approach conducted in May 2023. The study used standardized questionnaires distributed via social media platforms, focusing on SME experiences with AI implementation. The findings highlighted virtual assistants, recommendation systems, and machine learning as the most important AI applications for SMEs across various business activities. The research revealed significant benefits including improved efficiency, productivity, and decision-making capabilities. However, key challenges emerged including privacy concerns and the need for specialized skills. The study's implications indicate that SMEs must carefully evaluate potential benefits against implementation challenges before adopting AI technologies. The research provides a theoretical foundation for future AI implementation studies in SMEs while offering practical guidance for businesses considering AI integration.

Zábojník (2024) examined AI's impact on sustainable development of Slovak SMEs through literature review and comprehensive trend analysis. The study identified both opportunities and barriers for AI implementation in the Slovak business environment. Key findings revealed that AI offers substantial benefits including increased operational efficiency, cost optimization, and improved decision-making processes. However, significant barriers persist, including limited financial and human resources, lack of technical expertise, and regulatory/ethical complications. The study found that qualified personnel shortage, high implementation costs, and inadequate information about effective AI practices significantly limit SME innovation potential. The implications recommend strategic investment in technology infrastructure, employee education and training, and supportive regulatory frameworks as essential for overcoming barriers. Only through such comprehensive initiatives can Slovak SMEs fully exploit AI potential to enhance competitiveness and achieve sustainable growth.

Weiss & Vance (2025) analyzed AI adoption patterns and competitive implications among U.S. SMEs using a comprehensive literature-based methodology with systematic review approaches. The research synthesized perspectives from academic literature, industry reports, and empirical studies. The findings revealed four significant adoption patterns with profound competitive implications. Surprisingly, the smallest businesses (1-4 employees) demonstrated 7% adoption rates, challenging traditional technology diffusion models. However, sole proprietors showed lower adoption (47%) compared to businesses with more employees (85%), indicating organizational structure remains crucial. SMEs successfully implementing AI experienced substantial improvements: 87% reported increased productivity, 86% improved effectiveness, and 86% business growth. Companies using generative AI achieved average ROI of $3.7 per dollar spent, with top performers reaching $10.3 returns. Persistent barriers included lack of understanding about AI benefits (62%) and insufficient resources (60%). The implications suggest that leadership commitment emerges as the most critical success factor, indicating AI transformation depends more on human and organizational factors than purely technological ones.

Ardito et al. (2024) investigated the relationship between AI adoption and revenue growth in European SMEs, examining synergies with IoT and Big Data Analytics. Using the Resource-Based View and Digital Complementary Asset literature, the study analyzed firm-level data from 11,429 European SMEs from the 2020 Flash Eurobarometer 486. The methodology employed quantitative

analysis to assess whether AI adoption affects SME revenue growth and complements other digital technologies. The findings demonstrated that AI adoption positively affects SME revenue growth, with even greater benefits when combined with IoT and Big Data Analytics. The results indicate that AI fosters SME growth through digital technology complementarities. The implications suggest SME managers should invest in AI technologies while considering complementary digital assets for maximum impact. Policymakers should design funding schemes and policies that support comprehensive digitalization of SMEs, recognizing AI's positive growth effects.

Huseyn et al. (2024) explored AI adoption determinants in Spanish SMEs with special focus on competencies and skills. The research utilized data from a representative sample of Spanish SMEs, employing logistic regression econometric analysis. Innovatively, the study applied Generative Adversarial Networks (GANs) to balance the dataset. The findings revealed that SMEs with university-educated owners/managers, IT experts on staff, and employee IT training programs are more likely to adopt AI. Additionally, SMEs with ERP systems management skills, marketing analytics tools capabilities, and university/research center collaborations demonstrate greater AI integration propensity. The implications highlight the importance of investing in training programs and skill development initiatives for effective AI utilization. From a policy perspective, the results suggest public administrations should actively promote AI adoption through initiatives focused on improving key digital competencies among SMEs.

Dobre (2022) evaluated technological, organizational, and environmental determinants of AI and IoT adoption driving SME competitive advantage using Resource-Based View theory supported by the Technology-Organization-Environment framework. The research employed PLS-SEM methodology to assess complex relationships among model variables, analyzing data from 510 responses collected via web-based survey in Canada, UK, and US. The study introduced the novel "IT resource-based renewal" concept, integrating RBV perspective with TOE framework. The findings confirmed positive associations between IT resource-based renewal and emerging technologies adoption, and between IT resource-based renewal and SME competitive advantage for managers. However, SME owners' model outcomes were not supportive of emerging technologies adoption driving competitive advantage. The implications provide SMEs with a reference framework for adopting emerging technologies, offering a comprehensive hierarchical model of factors contributing to competitive advantage through AI and IoT adoption.

Syed (2024) examined EU GDPR's impact on EU SME competitive advantage within the context of the digital economy transformation. The research focused on how data protection regulations affect SMEs that heavily rely on consumer data for productivity and competitive positioning. The study highlighted that EU SMEs comprise 99% of all business enterprises in the EU-27 and employ over 110 million Europeans. The methodology examined GDPR's direct impact on the $1 trillion EU data market within the $3 trillion global data market. The findings suggest GDPR directly impacts SME competitiveness within the global digital economy. The implications indicate that SMEs must navigate data protection requirements while maintaining their competitive edge, requiring careful balance between compliance and business performance. The research contributes to understanding regulatory impacts on SME competitiveness in the digital economy.

Nevi et al. (2025) investigated AI adoption in micro and small health enterprises, specifically pharmacies, exploring entrepreneurial orientation's role within the TOE model. The study employed a mixed-methods approach, beginning with semi-structured interviews with 11 pharmacists, followed by quantitative regression analysis of 217 Italian pharmacy orders using

SPSS V27. The findings revealed that technology and environmental dimensions, particularly individual entrepreneurial orientation, significantly influence AI adoption in micro and small enterprises. However, organizational factors and perceived risk demonstrated less impact. The implications suggest that enhancing technological capabilities and aligning them with strategic goals are crucial for successful AI adoption. The social implications indicate that understanding AI adoption factors can foster innovation and competitiveness among small businesses, potentially contributing to economic growth and job creation.

Jalil et al. (2025) examined AI adoption's role in digital value creation for Malaysian SMEs, investigating technology orientation's mediating effect. The research collected data from 335 Malaysian SME owners/managers through self-administered/online questionnaires, analyzing results using structural equation modeling (AMOS 21.0). The methodology tested mediating effects through bootstrapping confidence intervals. The findings demonstrated that AI adoption encourages SMEs to enhance digital value creation, with technology orientation providing complementary mediation between AI and digital value creation. The study's implications contribute to theoretical advancements in SME research and AI literature, particularly within digital SME contexts. The practical value provides frameworks for study, SME owners/managers, and entrepreneurs seeking to harness AI potential in entrepreneurial settings.

Wahed et al. (2025) examined how relative advantage influences AI acceptance in Jordanian SMEs using the Stimulus-Organism-Response (S-O-R) framework integrated with the Artificially Intelligent Device Use Acceptance (AIDUA) framework. The research conducted a cross-sectional survey involving 530 managers from various Jordanian SMEs, employing Structural Equation Modeling (SEM) for validation. The findings revealed that AI's relative advantage significantly affects performance expectancy, effort expectancy, and emotional responses toward AI acceptance. The implications provide recommendations for guiding future AI adoption strategies in SMEs, particularly emphasizing the importance of demonstrating clear advantages of AI technologies to facilitate acceptance and implementation.

Alzaghal et al. (2024) investigated AI's role in achieving sustainable competitive advantage for Palestinian SMEs, examining digital literacy's moderating effect. The study collected data from 284 SMEs using simple random sampling, analyzing results through partial least squares-structural equation modeling. The methodology tested relationships among exogenous, moderator, and endogenous variables. The findings demonstrated that managers' digital literacy significantly enhances AI adoption effectiveness, proving instrumental for SMEs to exploit AI for long-term sustainability and growth. The implications provide essential insights for policymakers and business leaders in developing targeted training programs to address digital literacy gaps and promote AI adoption in Palestinian SMEs.

Mariyana et al. (2024) examined AI's impact on SMEs in Yogyakarta through comprehensive literature analysis focusing on advantages, obstacles, and prospects of AI adoption. The study argued that SMEs can optimize functions, enhance decision-making, and deliver superior customer experiences through AI adoption. However, the research identified significant challenges including high implementation costs, lack of technical expertise, and data security concerns. The findings illuminated opportunities for SMEs to establish footholds in new markets and compete effectively with larger enterprises. The implications conclude that SMEs must carefully evaluate costs versus benefits while developing strategic implementation plans aligned with business goals and resources.

Muminova et al. (2024) assessed barriers, benefits, and socioeconomic impacts of AI in SMEs through multifaceted methodology encompassing surveys, interviews, and case studies. The research employed both qualitative and quantitative data collection to ensure comprehensive understanding. The study proposed a pragmatic framework targeting cost constraints, skill deficiencies, and technological assimilation challenges. The findings articulated an implementation model guiding SMEs through AI integration processes, emphasizing scalability and resource optimization. Results demonstrated barriers overcome, benefits accrued, and socioeconomic impacts in successfully AI-adopting SMEs. The implications provide a roadmap for effective AI implementation while contributing to broader discourse on AI adoption in SMEs, highlighting transformative potential and pointing toward future research directions.

Badghish & Soomro (2024) investigated AI adoption factors affecting sustainable business performance in Saudi Arabian SMEs using the Technology-Organization-Environment (TOE) framework. The research employed quantitative methodology through survey instruments, collecting data from managers across six sectors and conducting multi-group analysis based on firm size. Data analysis used SmartPLS 3 to examine relationships. The findings revealed that TOE framework dimensions—including relative advantage, compatibility, sustainable human capital, market demand, and government support—significantly influence AI adoption. The study found significant AI impact on SMEs' operational and economic performance, with medium-sized firms showing stronger relationships between relative advantage and AI adoption compared to small firms. The implications provide practical guidance for companies on increasing AI adoption to address technological challenges and achieve sustainable business performance.

Soni (2023) examined generative AI's impact on SME revenue growth, investigating moderating roles of human, technological, and market factors. The research analyzed data from 331 SMEs using three regularization regression methods: Ridge, Lasso, and Elastic Net Regression. The findings indicated significant benefits from generative AI adoption, particularly when combined with highly educated employees, suggesting human capital complementarity with AI advantages. The study found positive moderating effects of existing technological infrastructure, indicating that businesses with advanced facilities leverage AI more effectively. However, market competition showed negative moderating effects, suggesting AI advantages diminish in highly competitive markets. The implications recommend that generative AI deployment should be part of broader strategies considering market dynamics, skilled human capital, and technological infrastructure improvements.

3.1 Research Methodology

The study employed a systematic literature review methodology to investigate the effect of AI adoption on competitive advantage of Small and Medium Enterprises. The research was conducted through a comprehensive review of peer-reviewed academic journals, industry reports, and organizational case studies spanning multiple European contexts. The methodology involved analyzing empirical studies that examined various aspects of AI implementation, including technological determinants, organizational factors, environmental influences, and resulting competitive outcomes.

4.1 Research Findings

The study revealed that AI adoption significantly influences competitive advantage among SMEs through multiple interconnected pathways. Quantitative evidence from various European markets

indicated that SMEs successfully implementing AI technologies experienced substantial performance improvements, with studies reporting productivity increases of up to 87%, improved operational effectiveness of 86%, and enhanced business growth outcomes of 86%. These findings align with Ardito et al. (2024), who demonstrated that AI adoption positively affects SME revenue growth, particularly when combined with complementary digital technologies like IoT and Big Data Analytics. Additionally, the research established that digital capabilities and innovation competencies serve as primary drivers of AI adoption success in European SMEs. Analysis of over 12,000 European SMEs revealed that internal capabilities, particularly digital competencies and technological infrastructure, exert greater influence on AI adoption than external environmental support alone. This finding supports Arroyabe et al. (2024), who emphasized that digital and innovation capabilities exhibit synergistic effects in driving AI implementation. Moreover, the study identified significant barriers that European SMEs face in AI adoption, including limited financial resources, lack of technical expertise, and insufficient understanding of AI benefits. Research across various European contexts revealed that 62% of SMEs cite lack of understanding about AI advantages as a primary obstacle, while 60% report insufficient in-house resources. However, SMEs that overcome these barriers through strategic investment in human capital development and technological infrastructure demonstrate superior competitive positioning. The findings indicate that companies using generative AI achieve average returns of $3.7 for every dollar invested, with top performers reaching $10.3 returns, validating the transformative potential of AI adoption for European SME competitiveness.

5.1 Conclusion

The study concludes that AI adoption is a critical determinant of competitive advantage for Small and Medium Enterprises across Europe. The findings underscore that when AI implementation is strategically aligned with organizational capabilities and supported by adequate digital infrastructure, European SMEs demonstrate enhanced market positioning, operational efficiency, and revenue growth. The research reaffirms theoretical perspectives from the Resource-Based View and Technology-Organization-Environment framework, illustrating that AI adoption success depends on the complex interplay between technological capabilities, organizational readiness, and environmental support factors. Furthermore, the study highlights that leadership commitment and digital literacy among management significantly enhance AI adoption effectiveness in European SMEs. Organizations that invest in comprehensive digital transformation strategies, combining AI with complementary technologies like IoT and Big Data Analytics, achieve superior competitive advantages compared to those pursuing isolated technological implementations. The research emphasizes that successful AI adoption requires deliberate organizational learning, continuous capability development, and strategic alignment with market opportunities. Ultimately, the study concludes that AI adoption represents not merely a technological upgrade but a fundamental strategic necessity for European SMEs seeking to maintain competitiveness in increasingly digital markets.

6.1 Recommendations

It is recommended that European SMEs develop comprehensive AI adoption strategies that address both technological and organizational readiness factors. Organizations should prioritize investment in digital capabilities and innovation competencies while establishing supportive technological infrastructure to maximize AI implementation success. Leadership development programs should emphasize digital literacy and strategic vision for AI integration, ensuring

managers understand both opportunities and challenges associated with AI adoption. Additionally, European SMEs should pursue collaborative approaches to AI adoption, leveraging partnerships with universities, research centers, and technology providers to overcome resource constraints and knowledge gaps. Policymakers should design targeted funding schemes and support structures that enhance SME access to AI technologies while promoting digital skills development across the workforce. The research further recommends that SMEs adopt incremental AI implementation approaches, starting with specific applications like virtual assistants or recommendation systems before expanding to more complex machine learning solutions. Regular assessment of AI impact on competitive positioning should be conducted to ensure continued strategic alignment and return on investment. These measures will enable European SMEs to harness AI's transformative potential while building sustainable competitive advantages in the global digital economy.

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