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Article

MARTECH STACK ADOPTION IN SMES: A REVIEW OF AUTOMATION, CRM, AND AI INTEGRATION

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ABSTRACT

This study presents a comprehensive systematic literature review exploring the adoption, integration, and performance of Marketing Technology (MarTech) stacks in small and medium-sized enterprises (SMEs). Guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology, a total of 97 peer-reviewed journal articles published between 2013 and 2024 were identified, screened, and analyzed to uncover critical insights into how SMEs are embracing digital tools such as Customer Relationship Management (CRM) systems, marketing automation platforms, and Artificial Intelligence (AI) applications. The findings reveal that CRM serves as the foundational MarTech component, widely adopted due to its accessibility and strategic value in managing customer relationships and driving sales growth. Marketing automation enhances efficiency but remains underutilized, while AI adoption is largely experimental, hindered by low data maturity and technical barriers. Organizational readiness—including leadership support, digital culture, and staff competencies—emerged as a central factor influencing successful adoption, whereas technological challenges, particularly system integration and compatibility, frequently constrain performance outcomes. AI, in this context, encompasses machine learning, natural language processing, and predictive analytics that facilitate intelligent marketing strategies such as recommendation engines, chatbots, and dynamic content creation Furthermore, the review identifies that external forces, including competitive pressure, regulatory support, and geographic context, play a pivotal role in shaping adoption behavior. A notable gap exists in empirical research on SMEs in emerging economies, as well as in longitudinal studies and integrated theoretical frameworks that analyze MarTech adoption as an evolving stack rather than isolated tools. This review contributes to the growing body of literature by offering a multidimensional understanding of MarTech stack adoption in SMEs and highlights areas for future research and policy development to support inclusive and strategic digital transformation in the global SME sector.

KEYWORDS

Marketing Technology (MarTech); Small and Medium Enterprises (SMEs); Customer Relationship Management (CRM); Marketing Automation; Artificial Intelligence (AI)

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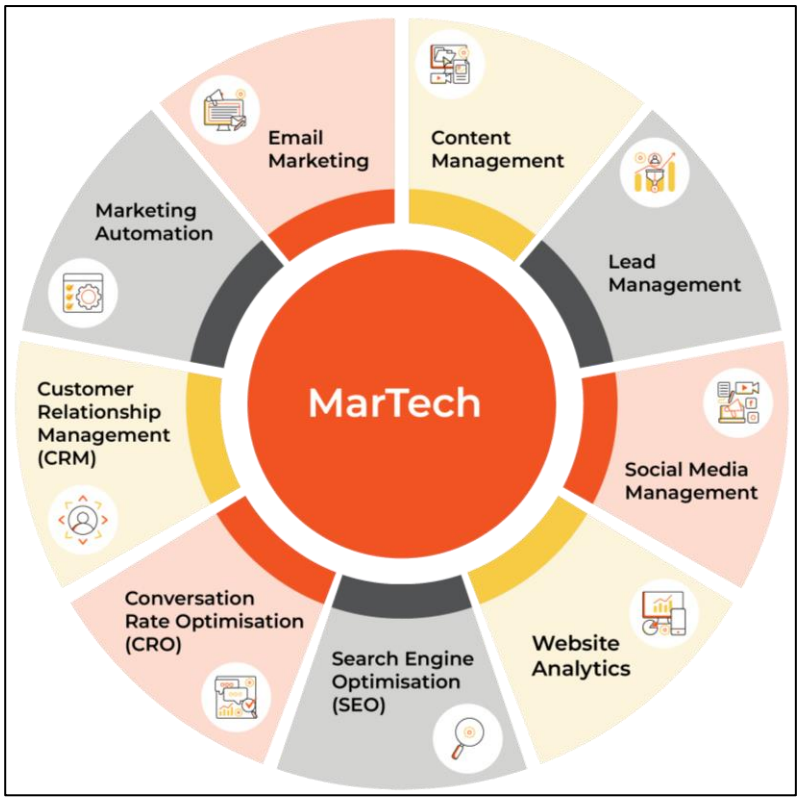
INTRODUCTION

Marketing Technology, commonly abbreviated as MarTech, refers to the amalgamation of tools, platforms, and software that marketers use to plan, execute, and evaluate marketing campaigns and strategies (Sripathi, 2024). It includes digital solutions like customer relationship management (CRM) systems, marketing automation software, data analytics tools, artificial intelligence (AI), and customer experience platforms (Strauss, 2024). These technologies serve to streamline marketing processes, enhance personalization, and enable data-driven decision-making. Automation in marketing involves software that automatically performs repetitive tasks such as email marketing, social media posting, and ad campaigns, thereby increasing efficiency and reducing manual labor (Mellet, 2025). CRM systems are designed to manage a company's interactions with current and potential customers by organizing, automating, and synchronizing sales, marketing, and customer service (Huettermann & Klaas, 2025). AI, in this context, encompasses machine learning, natural language processing, and predictive analytics that facilitate intelligent marketing strategies such as recommendation engines, chatbots, and dynamic content creation (Mörk, 2023). Together, these elements form what is referred to as a MarTech stack, a layered technology ecosystem that supports marketing operations and decision-making. Understanding these definitions is critical to evaluating how SMEs adopt and integrate MarTech tools, especially in the context of digital transformation and resource constraints that often distinguish them from larger enterprises (Mellet, 2025).

Figure 1: Key Components Of Martech Stacks



Source: resolutiondigital.com.au (2024)

Small and medium-sized enterprises (SMEs) constitute a significant portion of the global economy, accounting for over 90% of businesses and more than 50% of employment worldwide, according to Sripathi (2024). Their role in economic development, innovation, and job creation is universally recognized across developing and developed nations (Strauss, 2024). With the acceleration of digital transformation across sectors, SMEs face increasing pressure to adapt to emerging technologies to maintain competitiveness, meet evolving customer expectations, and respond to volatile markets (Su et al., 2023). MarTech adoption, particularly the integration of automation, CRM systems, and AI, offers these enterprises an opportunity to bridge the digital divide and participate more fully in data-driven economies ((Beckinsale et al., 2006). Yet, SMEs often operate under significant constraints such as limited financial resources, technological capabilities, and skilled personnel (Dahnil et al., 2014; Kopalle et al., 2022). These limitations make it essential to understand the dynamics of MarTech integration in this context. The significance of studying MarTech adoption in SMEs is further magnified by the fact that these enterprises are frequently underserved by mainstream technology vendors who prioritize larger clients (Grewal et al., 2019). Moreover, global events such as the COVID-19 pandemic have accentuated the importance of digital agility, compelling SMEs to reevaluate their technological infrastructures and adopt solutions that promote resilience and customer-centricity (Eze et al., 2014). In this light, the application of CRM, automation, and AI technologies is no longer optional but has

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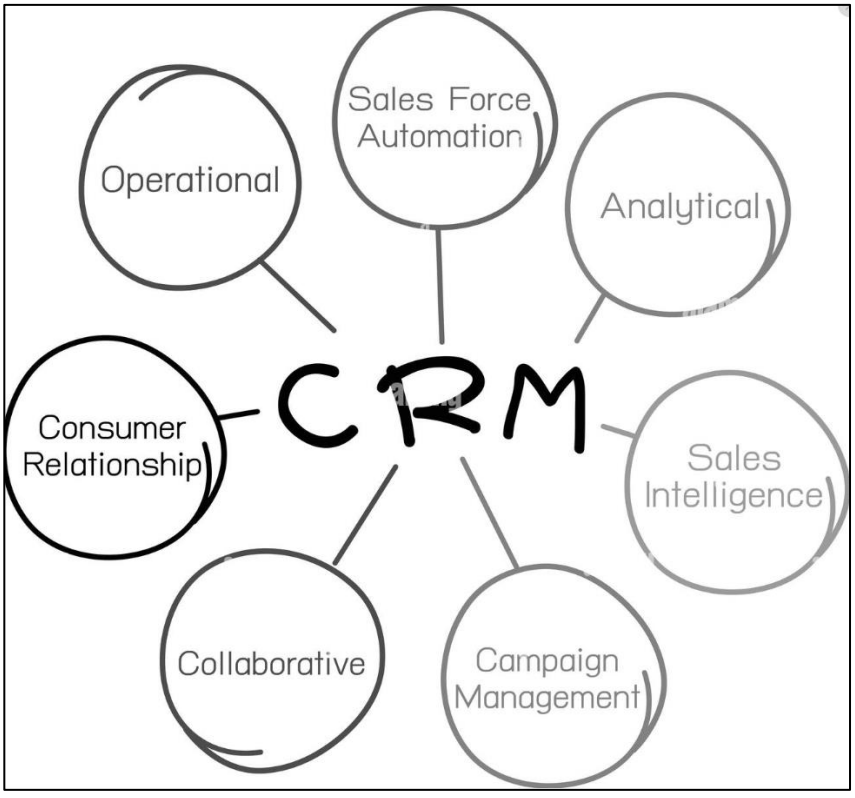
become a strategic necessity for SMEs striving to survive and thrive in a digitally interconnected world (Beckinsale et al., 2006).

Customer Relationship Management (CRM) systems are foundational elements of the MarTech stack, designed to enhance customer satisfaction, loyalty, and lifetime value through the strategic management of interactions (Worthington, 2022). CRM adoption among SMEs is often driven by the need to organize customer information, track interactions, and improve service quality with minimal investment (Lavoye et al., 2023). These systems provide SMEs with tools to segment their markets, personalize communications, and automate sales follow-ups—capabilities that were once exclusive to larger corporations (Worthington, 2022). However, the success of CRM adoption in SMEs is contingent upon factors such as top management support, employee training, and organizational readiness (Golmohammadi et al., 2020; Wang, 2021). Furthermore, cloud-based CRM platforms have emerged as a cost-effective and scalable solution for SMEs, enabling them to access sophisticated tools without the burden of heavy infrastructure (Mörk, 2023). Nonetheless, implementation challenges remain, particularly in aligning CRM capabilities with specific business goals and ensuring data integration across functions (Seila & Brailsford, 2009). A review by (Awa & Ojiabo, 2016)notes that SMEs frequently struggle with post-adoption phases of CRM due to limited analytical capacity and unclear performance metrics. Cultural resistance, lack of trust in digital tools, and poor data quality also undermine CRM effectiveness in smaller firms (Kotras, 2020; Lavoye et al., 2023). Despite these barriers, numerous empirical studies underscore the positive outcomes of CRM adoption in SMEs, including improved customer retention, enhanced marketing performance, and better resource allocation (Wang, 2021). Therefore, CRM remains a central focus in the discourse on MarTech adoption among SMEs.

Figure 2: Customer Relationship Management (CRM) systems



Marketing automation involves the use of software platforms to automate marketing actions and workflows, such as customer segmentation, campaign management, lead nurturing, and performance analysis (Chaturvedi & Verma, 2023). In SMEs, automation is seen as a tool to compensate for limited human resources and streamline time-consuming marketing tasks (Zaman, 2022). Automation tools like email marketing platforms, social media schedulers, and lead scoring systems enable SMEs to maintain consistent engagement with their customer base (Doshmanli et al., 2018). One of the primary motivations for automation in SMEs is its capacity to reduce operational overhead while increasing precision and personalization in messaging (Federici, 2009). However, the effectiveness of automation is often limited by inadequate integration with other systems, lack of strategic alignment, and limited data literacy among users (Kurnia et al., 2015). Studies by Dahnil et al. (2014) and Eze et al. (2019) highlight that SMEs may adopt automation tools without a full understanding of how to leverage them for customer lifecycle management or ROI measurement. Moreover, the lack of standardized performance indicators can hinder the assessment of marketing automation's effectiveness in smaller enterprises (Rowley, 2004). A successful automation strategy in SMEs necessitates not only the technological tools but also process reengineering and employee upskilling (Yunis et al., 2017). In

examining the literature, it becomes evident that marketing automation adoption in SMEs is shaped by factors such as perceived ease of use, relative advantage, compatibility with existing systems, and external competitive pressure (Awa & Ojiabo, 2016). These determinants underscore the need for contextualized approaches when deploying automation within the broader MarTech stack in SMEs.

Artificial Intelligence (AI) represents one of the most transformative elements in the modern MarTech stack, offering capabilities such as predictive analytics, chatbots, personalization engines, and customer sentiment analysis (Awa et al., 2015). In the context of SMEs, AI presents unique opportunities for scalability and competitive advantage, particularly in areas like customer insights, sales forecasting, and dynamic content generation (Eze et al., 2019). However, the integration of AI in SMEs is still in its nascent stages, hindered by barriers such as high costs, lack of technical expertise, data privacy concerns, and the perceived complexity of AI tools (Zafar & Mustafa, 2017). Unlike large enterprises that have dedicated data science teams, SMEs often struggle to operationalize AI due to insufficient data infrastructure and analytic maturity (Doshmanli et al., 2018; Rahayu & Day, 2016). Research by Eze et al. (2019) suggests that many SMEs adopt AI functionalities through embedded features in third-party platforms, such as CRM or e-commerce systems, without full awareness of their AI-driven nature. This passive adoption results in underutilization of AI potential. Moreover, the successful application of AI in marketing requires not only algorithmic accuracy but also ethical data governance, real-time decision frameworks, and human oversight (Zafar & Mustafa, 2017). Studies by Eze et al. (2018) and Federici (2009) reveal that SMEs that successfully leverage AI tend to follow a hybrid approach—combining basic automation with AI-enhanced analytics through cloud-based services. Such findings indicate a layered MarTech adoption strategy, wherein AI is built upon foundational CRM and automation systems. This integration model emphasizes the interdependence of MarTech components and the need for holistic infrastructure planning in SME digital transformation.

The primary objective of this review article is to systematically explore and synthesize existing academic and industry literature concerning the adoption and integration of Marketing Technology (MarTech) tools—namely automation, Customer Relationship Management (CRM) systems, and Artificial Intelligence (AI)—within the context of small and medium-sized enterprises (SMEs). This investigation is guided by the need to understand how SMEs, as resource-constrained yet agile entities, utilize digital marketing tools to enhance operational efficiency, customer engagement, and competitive positioning in an increasingly data-driven market landscape. The review aims to provide a comprehensive mapping of the factors influencing the adoption of MarTech components, including organizational readiness, technological infrastructure, managerial support, cost-effectiveness, and perceived benefits. A key objective is to critically assess the functional role of each component—automation for workflow efficiency, CRM for relationship management, and AI for decision-making intelligence—and to evaluate how these technologies are interlinked in practice to form cohesive MarTech stacks within SME operations. Additionally, this review seeks to identify the specific challenges faced by SMEs during the process of technology adoption and post-implementation usage, such as lack of digital capabilities, resistance to change, data integration issues, and insufficient training resources. The study further aims to examine contextual differences across geographical regions and industry types, highlighting how institutional support, market dynamics, and cultural factors influence MarTech adoption patterns. Ultimately, the objective of this article is not merely descriptive but analytical—to provide a critical lens through which researchers, practitioners, and policymakers can evaluate the evolving relationship between SMEs and MarTech infrastructure, and to generate insights that facilitate more effective digital transformation strategies in small business ecosystems.

LITERATURE REVIEW

The digital transformation of small and medium-sized enterprises (SMEs) has become a focal point of academic and practical discourse, particularly with the rise of Marketing Technology (MarTech) as a driver of strategic marketing innovation. MarTech, encompassing automation tools, Customer Relationship Management (CRM) systems, and Artificial Intelligence (AI) capabilities, is reshaping how SMEs approach customer engagement, operational efficiency, and data-driven decision-making (Alshamaila et al., 2013; Doshmanli et al., 2018). The literature on MarTech adoption in SMEs is growing, but it remains fragmented across disciplines such as information systems, marketing, entrepreneurship, and organizational studies. This review seeks to consolidate existing knowledge,

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clarify conceptual boundaries, and critically analyze empirical findings to illuminate how MarTech stacks are deployed in SME contexts. The structure of this literature review is designed to reflect the layered architecture of the MarTech stack while addressing the multifaceted influences that shape adoption decisions. The review begins by discussing the foundational concepts of MarTech adoption, followed by distinct sections on CRM, automation, and AI integration. It further delves into organizational, technological, and environmental factors influencing adoption. A thematic synthesis is provided through a critical analysis of models and frameworks used in prior studies, and the review concludes with a comparative analysis of cross-regional and cross-industry variations. By organizing the literature in this manner, the review offers a comprehensive understanding of both the theoretical foundations and practical implications of MarTech adoption in SMEs.

MarTech stacks

The Marketing Technology (MarTech) stack refers to the collective set of software tools and platforms used by marketing professionals to plan, execute, manage, and analyze marketing campaigns and strategies (Huang & Chung, 2024). The architecture of a typical MarTech stack is modular, with key components designed to optimize various stages of the customer journey, including acquisition, engagement, retention, and loyalty (Utzt & Hoferer, 2025). The core value of a MarTech stack lies in its ability to integrate disparate marketing functions—ranging from email marketing to predictive analytics—into a cohesive, data-driven ecosystem (Mellet, 2025). In SMEs, where resource limitations are common, the stack offers an opportunity to achieve enterprise-level marketing efficiencies through scalable, often cloud-based, software tools (Marques et al., 2022). The modular nature of MarTech allows SMEs to implement selected tools based on specific needs and digital maturity levels (Sripathi, 2024). While large enterprises typically adopt comprehensive and customized stacks, SMEs often rely on plug-and-play solutions provided by vendors such as HubSpot, Salesforce, and Zoho (Strauss, 2024). However, the effectiveness of these tools depends on the level of integration, data quality, and the organization's analytical capabilities (Skerra & Kunz, 2023). Several studies confirm that a well-integrated MarTech stack enhances marketing agility, operational efficiency, and personalized customer interactions (Strauss, 2024). SMEs that invest in cohesive stacks, even with fewer tools, report improved marketing outcomes compared to fragmented, non-integrated digital solutions (Strauss, 2024). The strategic significance of MarTech stacks in SMEs thus lies in their potential to align marketing efforts with business objectives, enable faster campaign execution, and generate actionable insights from customer data (Skerra & Kunz, 2023).

Customer Relationship Management (CRM) systems form the backbone of most MarTech stacks by centralizing customer data, tracking interactions, and facilitating targeted engagement (Tanveer et al., 2021). In SMEs, the adoption of CRM platforms supports a structured approach to managing leads, improving customer service, and increasing retention rates (Cheng & Jiang, 2021). CRM systems such as Salesforce, Zoho CRM, and HubSpot CRM offer user-friendly interfaces and modular functionalities tailored to the dynamic needs of small businesses (De Haan et al., 2018). Empirical studies have demonstrated that CRM use in SMEs is positively associated with higher customer satisfaction, enhanced marketing ROI, and improved cross-functional collaboration (Raassens & Haans, 2017; Sharma et al., 2022). A cloud-based CRM solution is often the first MarTech tool adopted by SMEs due to its accessibility, cost-efficiency, and ease of deployment (Fernández-Ruano et al., 2022). CRM tools also provide real-time dashboards, performance tracking, and segmentation features that enable SMEs to personalize communication and manage the customer lifecycle effectively (Zaman, 2022). Nevertheless, challenges such as poor implementation strategies, lack of data standardization, and resistance from staff unfamiliar with digital systems can limit CRM effectiveness (Cheng & Jiang, 2021). The literature suggests that CRM success in SMEs is contingent upon top management support, user training, and alignment with overall marketing strategy (Sharma et al., 2022). Moreover, integration with other tools in the MarTech stack—such as marketing automation platforms or analytics engines—enhances CRM's value by enabling end-to-end visibility of customer interactions (Choudhury & Harrigan, 2014; Reinartz et al., 2004). The strategic utility of CRM in SMEs is thus foundational, serving as both a repository and a catalyst for relationship-based marketing activities.

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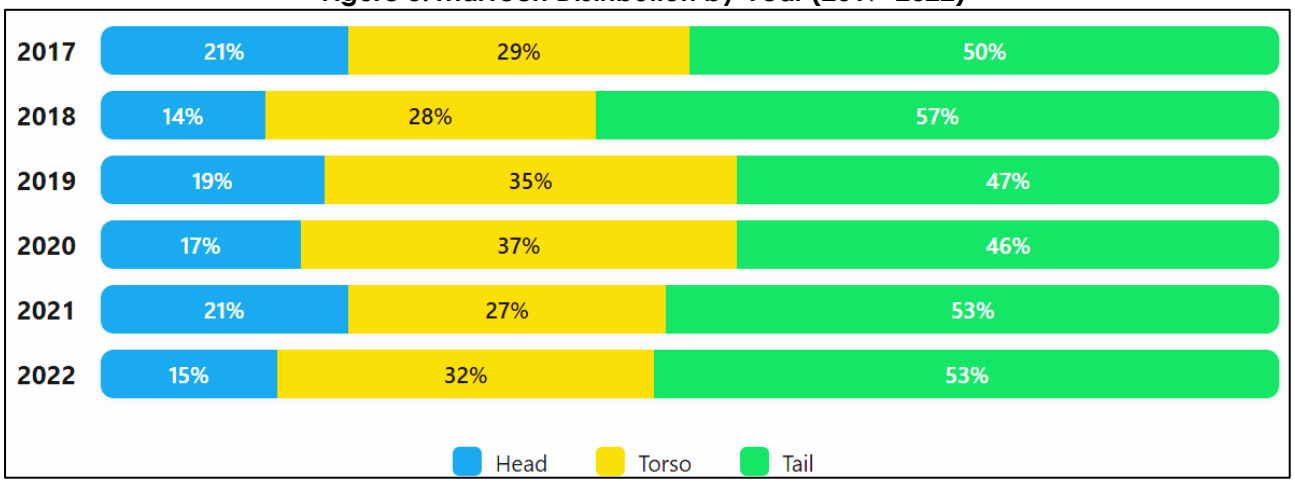
Figure 3: MarTech Distribution by Year (2017–2022)



Marketing automation platforms play a critical role in MarTech stacks by automating repetitive tasks such as email campaigns, lead scoring, social media scheduling, and customer segmentation (Wang, 2024). For SMEs, these platforms offer a high return on investment by reducing labor costs and improving workflow efficiency (Awa & Ojiabo, 2016). Automation tools like Mailchimp, ActiveCampaign, and Pardot empower SMEs to scale personalized marketing activities without proportionately increasing resource commitments (Raassens & Haans, 2017). The adoption of automation is often driven by perceived ease of use, compatibility with existing CRM systems, and the ability to generate real-time feedback from campaigns (Ndubisi, 2012). Empirical evidence supports the claim that automation facilitates better lead nurturing, faster sales cycles, and more consistent customer communication (Zaman, 2022). Nonetheless, SMEs face several barriers, including limited technical knowledge, inadequate strategic planning, and a lack of alignment between automation tools and business goals (Eze et al., 2014). A study by Eze & Chinedu-Eze (2018) notes that SMEs often underutilize automation capabilities due to insufficient training or failure to integrate these tools with CRM and analytics platforms. Furthermore, the absence of well-defined KPIs makes it difficult for SMEs to measure the success of their automation initiatives (Eze & Chinedu-Eze, 2018; Kurnia et al., 2015). Studies also show that firms with a clear automation strategy and cross-functional coordination tend to realize greater marketing performance than those adopting tools in isolation (Federici, 2009). Therefore, marketing automation within the MarTech stack not only enhances operational effectiveness but also acts as a conduit through which customer data is activated into intelligent, action-driven marketing efforts (Yunis et al., 2017).

The analytics and Artificial Intelligence (AI) layer in MarTech stacks serves as the intelligence engine, enabling SMEs to derive actionable insights, forecast customer behaviors, and personalize marketing content (van Esch & Black, 2021). Analytics tools such as Google Analytics, Tableau, and Microsoft Power BI help SMEs track campaign performance, segment audiences, and measure customer lifetime value (Elhajjar et al., 2020; Esch & Black, 2021). AI-powered features embedded in platforms—such as predictive analytics, recommendation engines, sentiment analysis, and chatbots—further amplify the decision-making power of SMEs by offering real-time, data-driven interventions (Gao & Liu, 2022; Tiautrakul & Jindakul, 2019). These technologies, while transformative, are often underutilized in SMEs due to limited analytical maturity, lack of technical expertise, and unclear data governance policies (van Esch & Black, 2021). Many SMEs access AI functionalities indirectly through CRM and automation systems, without fully understanding their algorithmic foundation or potential impact (Mustak et al., 2021). Research also highlights that SMEs with embedded analytics cultures—where decisions are guided by real-time dashboards and performance data—are more successful in converting digital investments into marketing outcomes (Gao & Liu, 2022). However, to extract value from analytics and AI, SMEs must overcome challenges related to data integration, model transparency, and interpretability (Biswas et al., 2023). Ethical considerations, particularly regarding customer privacy and algorithmic bias, further complicate AI deployment (Gonçalves et al., 2023). Studies such as those by (Elhajjar et al., 2020) and (Zaveri & Amin, 2019) suggest that successful AI implementation in SMEs often involves phased adoption, third-party consultation, and embedded features within user-friendly interfaces. As the analytical and AI

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components of the MarTech stack mature, they form the central nervous system of SME marketing operations, turning data into competitive advantage.

MarTech for SMEs

Digital maturity is broadly defined as an organization's ability to respond to digital trends through strategic alignment, technological capabilities, and human resource competencies (Alshamaila et al., 2013). In SMEs, digital maturity reflects their readiness and ability to implement, scale, and derive value from digital technologies, including components of the MarTech stack such as CRM, automation, and AI tools (Alshamaila et al., 2013; Rahayu & Day, 2016). Organizations with higher digital maturity exhibit robust digital infrastructures, streamlined data management systems, and a culture that supports innovation and learning (Eze et al., 2014). SMEs often lag behind large corporations in digital maturity due to resource constraints, lack of formal IT departments, and limited access to skilled personnel (Beckinsale et al., 2006; Kurnia et al., 2015). This gap creates barriers in adopting and effectively utilizing MarTech tools that require data integration and strategic planning. Research by Federici (2009) emphasizes that digital maturity positively influences SMEs' ability to use CRM systems for customer segmentation and personalized engagement. Similarly, Higón (2011) found that automation tools yield better marketing outcomes in SMEs with mature digital capabilities, including structured workflows and performance metrics. Digital maturity also encompasses the ability to measure and evaluate marketing performance using analytics tools, which is a critical capability for competitive responsiveness (Alshamaila et al., 2013; Higón, 2011). Without foundational maturity in these areas, the adoption of AI and other sophisticated tools remains superficial, often limited to prebuilt solutions in third-party software (Doshmanli et al., 2018). Therefore, understanding and enhancing digital maturity is essential to realizing the full potential of MarTech adoption in SMEs (Rahayu & Day, 2016).

Organizational agility refers to the ability of a firm to sense changes in the external environment and respond with speed, flexibility, and efficiency (Beckinsale et al., 2006). In SMEs, agility is particularly critical due to the volatility of market conditions and the need for rapid decision-making (Doshmanli et al., 2018; Shiau et al., 2009). SMEs that exhibit high levels of agility are more likely to embrace MarTech tools to respond to customer demands, personalize campaigns, and shift strategies in real time (Eze et al., 2019). Agility supports the iterative implementation of CRM systems and marketing automation platforms by enabling rapid experimentation, feedback loops, and process reconfiguration (Ramdani et al., 2009). Studies by Ihua (2009) and Eze et al. (2019) suggest that SMEs with agile structures are more successful in sustaining MarTech initiatives because they can adapt their operational processes without the bureaucracy typical of larger firms. Moreover, agile SMEs tend to have flatter hierarchies, which accelerates technology adoption by minimizing resistance and streamlining decision-making (Eze et al., 2014). Empirical findings by Dahnil et al. (2014) indicate that agility enhances the ability to deploy AI tools for campaign optimization, customer sentiment analysis, and real-time engagement. However, agility alone is insufficient without the strategic alignment of goals and digital tools (Eze et al., 2019). SMEs must balance flexibility with a disciplined approach to ensure that MarTech adoption is not fragmented or reactive. The combination of agility and digital maturity allows SMEs to manage uncertainty, experiment with emerging technologies, and respond dynamically to marketing challenges (Zafar & Mustafa, 2017). Therefore, organizational agility is a pivotal enabler for SMEs aiming to integrate and scale MarTech tools effectively.

Several studies have emphasized that digital maturity directly influences the performance of MarTech initiatives within SMEs (Dahnil et al., 2014; Federici, 2009). SMEs with high digital maturity demonstrate an integrated approach to data management, customer experience, and marketing strategy, which significantly enhances the return on investment from CRM and automation tools (Eze et al., 2019; Eze et al., 2014). These enterprises are more likely to establish key performance indicators (KPIs), automate data collection, and conduct multichannel campaigns with greater precision (Eze et al., 2019; Ramdani et al., 2009). Eze and Chinedu-Eze (2018) found that digital maturity strengthens internal capabilities such as analytics interpretation, data security, and process optimization—all essential for AI-driven marketing functions. A study by Doshmanli et al. (2018) revealed that low-maturity SMEs often adopt MarTech tools in isolation, without proper integration or long-term planning, leading to limited value realization. Conversely, high-maturity SMEs exhibit a strategic view, wherein tools are selected and implemented based on alignment with business objectives and customer insights (Dahnil et al., 2014).

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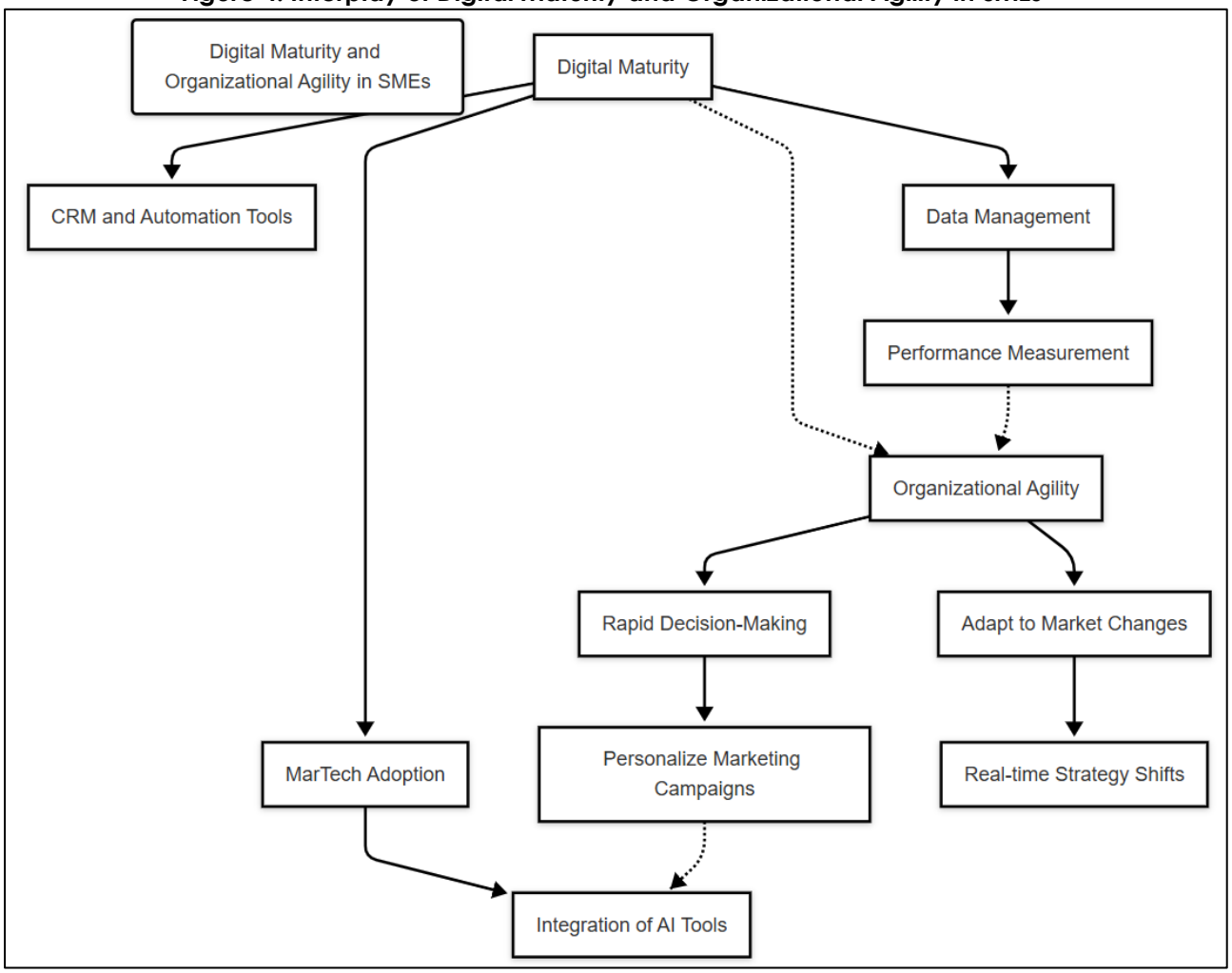
Figure 4: Interplay of Digital Maturity and Organizational Agility in SMEs



Digital maturity also enables more efficient use of cloud-based platforms, which reduce costs and enhance scalability for SMEs with limited infrastructure (Esch & Black, 2021). As shown in studies by Holliman and Rowley (2014) and Mellet and Beauvisage (2019), digitally mature firms benefit more from AI-powered features like dynamic pricing, customer churn prediction, and recommendation engines. Therefore, the interdependence between digital maturity and MarTech performance underscores the need for SMEs to invest in foundational digital capabilities before scaling advanced MarTech tools. The literature reinforces that digital maturity is not merely a technological state but an organizational readiness factor that determines the effectiveness of MarTech adoption and application (Mellet & Beauvisage, 2019; Nalbant & Aydin, 2023).

While digital maturity is essential for effective MarTech adoption, achieving it poses considerable challenges for SMEs. A key barrier is the lack of financial resources, which limits investment in IT infrastructure, skilled personnel, and training programs (García et al., 2019). Unlike large enterprises, SMEs often depend on off-the-shelf tools that require minimal customization but offer limited scalability (Mellet & Beauvisage, 2019; Nalbant & Aydin, 2023). Studies by Adwan et al. (2023) and Varadarajan et al. (2022) show that SMEs frequently adopt CRM and automation tools without strategic foresight, resulting in fragmented systems and underutilized features. Another major constraint is the absence of a digital culture that values experimentation, continuous learning, and data-driven decision-making (García et al., 2019). Leadership resistance and employee reluctance further exacerbate the problem, particularly in SMEs with hierarchical or conservative organizational structures (Nalbant & Aydin, 2023). Data management issues—such as poor data quality, lack of integration, and inadequate analytics literacy—also hinder progress toward maturity (Kaponis & Maragoudakis, 2022). Research by Nalbant and Aydin (2023) highlights that many SMEs operate in silos, with limited cross-functional collaboration, impeding the flow of information necessary for integrated marketing decisions. Moreover, the absence of formal IT governance policies can lead

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to security vulnerabilities and compliance risks, especially when deploying AI-based tools that require ethical oversight (Mellet & Beauvisage, 2019). These barriers indicate that digital maturity is not solely a function of tool adoption but also depends on leadership vision, organizational learning, and structural adaptability (Holliman & Rowley, 2014; Mellet & Beauvisage, 2019).

Measuring digital maturity in SMEs involves assessing the alignment of digital tools, processes, culture, and strategy. Several frameworks have been developed to capture these dimensions, including the Digital Maturity Model (DMM), Capability Maturity Model Integration (CMMI), and the Digital Transformation Assessment (DTA) (Alshamaila et al., 2013). These models typically evaluate aspects such as IT infrastructure, leadership support, data management, process integration, and customer-centric strategy. For SMEs, simplified models focusing on MarTech-relevant capabilities have been proposed, emphasizing indicators such as CRM usage depth, automation workflow sophistication, and AI readiness (Varadarajan et al., 2022). Research by Mellet and Beauvisage (2019) and (Hofacker et al., 2020) suggests that SMEs with centralized digital data repositories and defined marketing KPIs exhibit higher maturity levels than those using ad hoc methods. Moreover, agility metrics—such as speed of tool deployment, rate of campaign iterations, and feedback utilization—serve as proxies for dynamic capabilities tied to digital maturity (Hofacker et al., 2020; Mellet & Beauvisage, 2019). Studies also show that SMEs with maturity benchmarks embedded into their digital strategy outperform their peers in customer retention, operational efficiency, and revenue growth (Adwan et al., 2023; Alshamaila et al., 2013). In practice, maturity assessments help SMEs identify capability gaps, prioritize investments, and structure technology adoption paths more effectively (Mellet & Beauvisage, 2019). Thus, developing maturity frameworks tailored to the specific constraints and needs of SMEs is essential to enhancing MarTech-driven competitiveness.

CRM Adoption in SMEs

Customer Relationship Management (CRM) systems serve as a strategic backbone in SME marketing by enabling firms to manage interactions with existing and potential customers more effectively (Kaponis & Maragoudakis, 2022). Unlike large enterprises that often have multiple departments handling segmented marketing functions, SMEs rely heavily on CRM systems to centralize customer data, streamline marketing efforts, and create personalized communication strategies (Kapoor & Kapoor, 2021). CRM tools assist in capturing lead behavior, tracking customer journeys, and facilitating targeted campaigns, thereby enhancing overall customer engagement (Dwivedi et al., 2021; Kapoor & Kapoor, 2021). Moreover, these systems offer features such as contact management, email automation, and sales forecasting, all of which are particularly useful for SMEs seeking to maximize limited resources (Bowker et al., 2009). Kapoor and Kapoor (2021) argue that SMEs equipped with CRM are more likely to engage in relationship marketing, a critical approach for building customer trust and loyalty. Additionally, CRM enhances marketing responsiveness, allowing SMEs to adapt quickly to customer needs through data-driven insights (Worthington, 2022). Research also suggests that CRM use correlates with increased marketing innovation in SMEs, as firms leverage historical and behavioral data to test new engagement strategies (Bowker et al., 2009). CRM platforms support segmentation, upselling, and post-purchase engagement—key elements in fostering long-term relationships in competitive markets (Kapoor & Kapoor, 2021). Therefore, the integration of CRM into SME marketing is not merely a technological upgrade but a strategic transformation that drives more interactive and meaningful engagement with customers (Dwivedi et al., 2021). Cloud-based CRM platforms and Software-as-a-Service (SaaS) models have revolutionized CRM adoption for SMEs by lowering the barriers to entry associated with traditional, on-premises software systems (Kurnia et al., 2015). Cloud-based CRM solutions like Salesforce, HubSpot, and Zoho CRM offer subscription-based pricing, scalability, and remote accessibility, making them highly attractive to SMEs with limited capital and technical expertise (Eze & Chinedu-Eze, 2018). These platforms provide automatic updates, user-friendly dashboards, and seamless integration with marketing automation and e-commerce tools, which allows SMEs to build robust, customer-centric operations without heavy investment (Dahnil et al., 2014).

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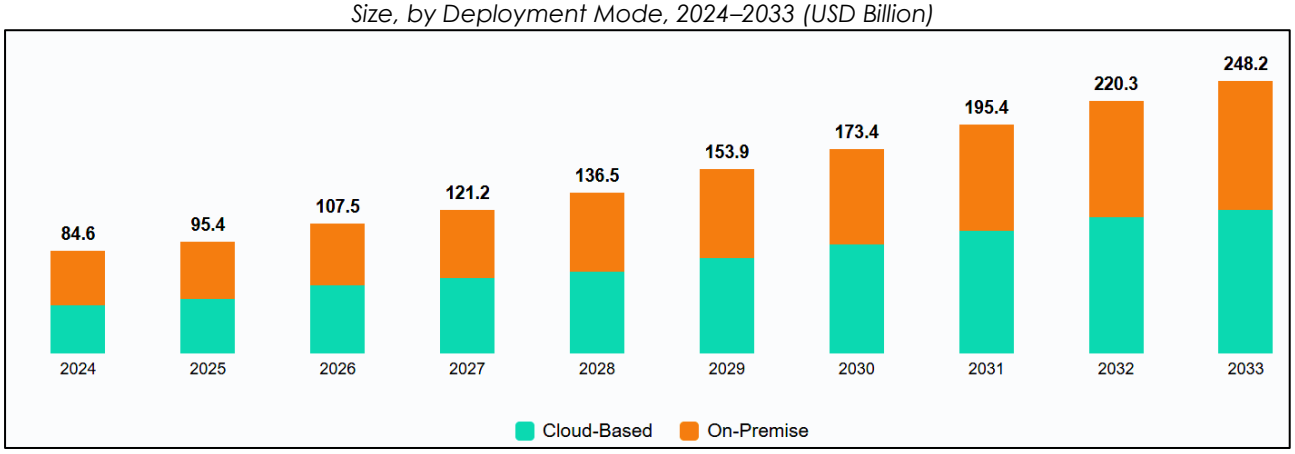
Figure 5: Global Customer Relationship Management (CRM) Software Market

Size, by Deployment Mode, 2024–2033 (USD Billion)



Source: market.us (2024)

Furthermore, cloud-based CRM enables real-time collaboration across departments, an essential feature for small firms where team members often wear multiple hats (Federici, 2009). Studies show that SMEs adopting SaaS-based CRM solutions report higher agility in campaign execution and improved tracking of customer interactions (Eze & Chinedu-Eze, 2018). According to Dahnil et al., (2014), cloud-based systems are also more likely to support mobile CRM features, empowering field agents and sales teams to manage client relationships on the go. This flexibility contributes to faster response times and better customer service outcomes (Eze et al., 2019). Research by Eze et al. (2014) and Shiau et al. (2009) highlights that SaaS CRM models also enhance data security and compliance due to centralized and vendor-managed infrastructures. However, the lack of internal IT governance and training can hinder optimal use, even in accessible platforms (Zafar & Mustafa, 2017). Despite these limitations, cloud-based CRM solutions have become a critical enabler of digital transformation and customer management capabilities for SMEs (Eze et al., 2021).

Top management support is widely recognized as a primary determinant of CRM adoption success in SMEs, influencing resource allocation, strategic alignment, and organizational commitment (Tobora, 2014). Due to their flat hierarchies and limited managerial layers, SMEs often rely on the decisions and vision of top leaders to implement digital tools such as CRM systems (Alshamaila et al., 2013; Chibelushi & Costello, 2009). Research by Doshmanli et al. (2018) emphasizes that managerial awareness of CRM benefits significantly affects how well systems are adopted and used within the organization. When leadership is actively involved, CRM implementation is more likely to be integrated into the business strategy, resulting in more effective use of customer data for marketing and decision-making (Eze et al., 2014; Rahayu & Day, 2016). Dahnil et al. (2014) found that lack of executive engagement often leads to underutilization of CRM functionalities, poor staff motivation, and fragmented workflows. In contrast, SMEs with visionary leadership typically exhibit stronger alignment between marketing and technology, enabling better integration of CRM with other systems such as automation platforms and analytics tools (Awa et al., 2015). Moreover, top management support is crucial for addressing employee resistance, providing training, and ensuring ongoing system evaluation (Eze & Chinedu-Eze, 2018; Federici, 2009). Studies by Eze et al. (2019) and Ramdani et al. (2009) underscore that top leaders who champion CRM initiatives also cultivate a data-driven culture, thereby enhancing marketing responsiveness and customer experience. Therefore, managerial commitment is not merely a facilitating factor but a foundational requirement for the successful adoption and integration of CRM in SMEs (Alshamaila et al., 2013; Doshmanli et al., 2018).

The size of a firm and its data readiness are critical contextual factors that influence CRM adoption in SMEs (Eze et al., 2014; Rahayu & Day, 2016). Smaller firms with limited personnel and resources often adopt simpler CRM systems, focusing on essential functionalities such as contact management, email marketing, and basic analytics (Tobora, 2014). In contrast, medium-sized firms tend to pursue more complex CRM implementations that include integration with accounting systems, marketing automation, and supply chain applications (Eze & Chinedu-Eze, 2018). The ability to manage and utilize customer data effectively also differentiates successful adopters from those who fail to capitalize on CRM investments (Federici, 2009). Data readiness includes having clean, structured, and accessible datasets that can be analyzed to produce customer insights (Okundaye et al., 2019).

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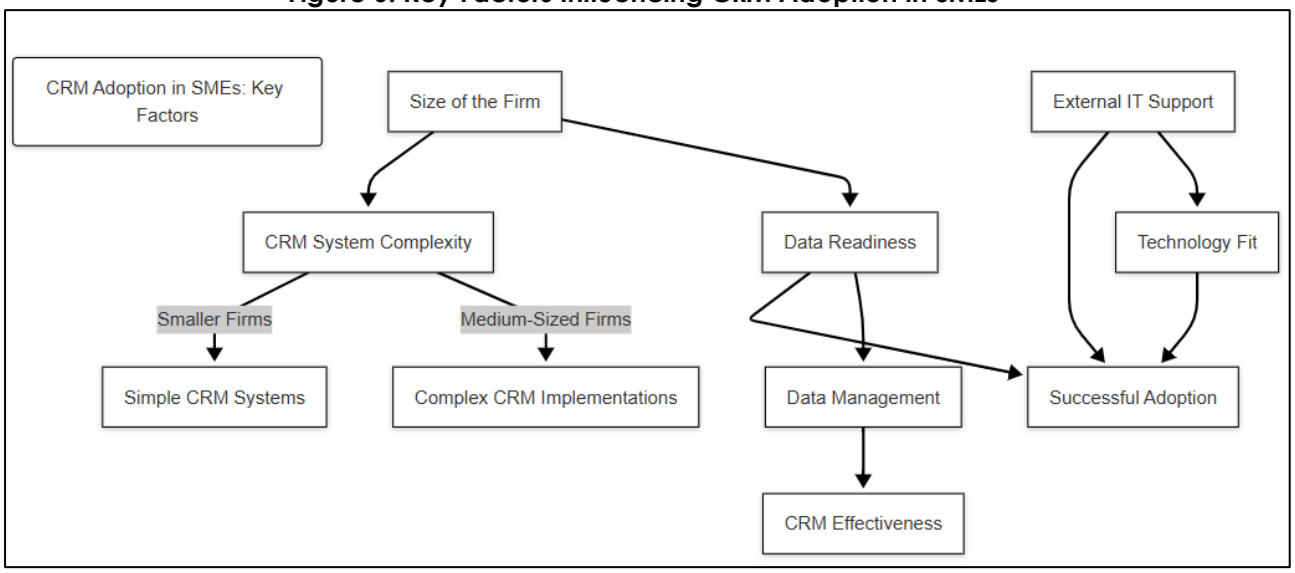
Firms lacking in this area often experience incomplete profiles, poor segmentation, and misguided marketing efforts (Eze & Chinedu-Eze, 2018). Additionally, technology fit—the degree to which the CRM system aligns with existing workflows and operational needs—affects user satisfaction and sustained use (Rahayu & Day, 2016). Studies indicate that SMEs with prior experience using digital tools, such as spreadsheets or basic ERP systems, demonstrate higher readiness for CRM integration (Eze et al., 2019). Furthermore, external IT support and vendor assistance play a role in helping SMEs with low internal capacity achieve necessary readiness (Federici, 2009). These findings suggest that CRM implementation success is not solely dependent on the tool itself but also on organizational preparedness and compatibility with the firm's operational ecosystem.

Figure 6: Key Factors Influencing CRM Adoption in SMEs



CRM systems have demonstrated substantial impact on customer loyalty, retention, and overall firm performance in the SME sector (Eze et al., 2014). By centralizing customer data and automating communication workflows, CRM platforms enable SMEs to deliver consistent, personalized, and timely service—factors that directly influence repeat purchases and brand loyalty (Eze et al., 2021). Research shows that SMEs using CRM systems effectively can segment their customer base more precisely, track behavioral patterns, and tailor offers based on individual preferences, thus strengthening customer satisfaction (Federici, 2009). Moreover, CRM supports proactive engagement, allowing businesses to identify at-risk customers and implement retention strategies before churn occurs (Awa et al., 2015). Studies by Dahnil et al. (2014) and Awa et al. (2015) confirm that CRM-driven retention tactics—such as loyalty rewards, customized communication, and feedback mechanisms—correlate with higher lifetime customer value. Furthermore, CRM enables SMEs to conduct post-purchase follow-ups and service evaluations, which are key to enhancing the customer experience and increasing word-of-mouth referrals (Eze et al., 2019). CRM adoption has also been linked with increased cross-selling and upselling opportunities, contributing to revenue growth and margin expansion (Federici, 2009). However, to achieve these outcomes, SMEs must ensure continuous use of CRM features and align them with broader customer relationship strategies (Beckinsale et al., 2006). Therefore, the literature consistently supports the notion that CRM is a performance-enabling tool when embedded within a relational marketing framework and supported by ongoing organizational commitment. Beyond customer engagement and retention, CRM adoption has been positively correlated with sales growth in SMEs by enhancing lead management, pipeline visibility, and sales forecasting accuracy (Awa et al., 2015). CRM systems allow SMEs to monitor prospect activities, schedule follow-ups, and automate quotations and invoicing processes, thereby reducing the sales cycle and improving conversion rates (Eze et al., 2019). According to Eze et al. (2014), CRM implementation facilitates better alignment between marketing and sales functions, leading to improved communication, campaign ROI, and deal closure rates. Sales data centralized in CRM systems also enable SMEs to identify trends, prioritize profitable accounts, and allocate resources effectively (Beckinsale et al., 2006). Research by Dahnil et al. (2014) indicates that SMEs leveraging CRM for opportunity tracking and sales analytics report higher sales productivity and better inventory control. Moreover, CRM dashboards help

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management make real-time decisions by visualizing sales KPIs, which supports strategic planning and resource reallocation (Kurnia et al., 2015). Studies also show that integrating CRM with marketing automation tools further boosts campaign targeting and lead nurturing, which translates into revenue performance (Eze & Chinedu-Eze, 2018). However, the degree to which CRM influences sales outcomes depends on factors such as user adoption rates, data accuracy, and alignment with the sales process (Eze et al., 2019). Therefore, while CRM systems provide powerful tools for driving sales growth, their impact is maximized when adoption is supported by process redesign, staff training, and performance measurement systems.

Marketing Automation in SMEs

Workflow automation and campaign management are central functions of marketing automation platforms, enabling SMEs to reduce manual effort and improve operational consistency (Kupplmayr-Erler, 2021). These tools automate repetitive tasks such as email sequences, lead scoring, customer segmentation, and social media scheduling, which allows small businesses to maintain regular engagement with limited human resources (Ameen et al., 2022; Song et al., 2009). SMEs benefit from predefined workflows that reduce dependency on in-house marketing expertise while ensuring standardized campaign execution (Aleem Al Razee et al., 2025; Graesch et al., 2020). Marketing automation also supports multichannel strategies, helping businesses create consistent experiences across email, SMS, and social platforms (Alam et al., 2024; Sripathi, 2024). Tools like Mailchimp, ActiveCampaign, and HubSpot offer intuitive drag-and-drop interfaces for campaign design, making them suitable for non-technical users (Kupplmayr-Erler, 2021). Studies by Ameen et al. (2022) and Song et al. (2009) highlight that SMEs using workflow automation achieve faster campaign rollouts and improved targeting precision. However, campaign effectiveness often depends on the firm's ability to manage customer data and adapt workflows based on performance metrics (Graesch et al., 2020). Sripathi (2024) found that SMEs with structured automation processes report higher consistency in brand messaging and customer touchpoints. Furthermore, automation enables SMEs to create behavioral triggers that respond to user actions in real time, enhancing personalization and engagement (Al-Arafat, Kabi, et al., 2024; Graesch et al., 2020). These capabilities reduce the reliance on manual marketing coordination and free up time for strategic planning and customer service enhancement (Aklima et al., 2022; Ameen et al., 2022). Therefore, workflow automation and campaign management functionalities are indispensable for SMEs striving for marketing efficiency and effectiveness.

Figure 7: CRM with Marketing Automation

Technology acceptance theories, particularly the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), provide frameworks for understanding how SMEs perceive and adopt marketing automation tools (Graesch et al., 2020; Maniruzzaman et al., 2023). Perceived ease of use and perceived usefulness are critical factors influencing automation adoption in small firms, where technical resources and IT proficiency are limited (Ameen et al., 2022; Shahan et al., 2023; Song et al., 2009). Research by Sripathi (2024) demonstrates that intuitive interfaces and simplified workflows significantly

enhance adoption rates among SME employees. Tools that require minimal training are preferred, particularly when firms lack dedicated IT or marketing departments (Ameen et al., 2022). The UTAUT framework expands this understanding by incorporating facilitating conditions, social influence, and performance expectancy as adoption determinants (Ndubisi, 2012; Roksana, 2023). In SMEs, the decision to adopt automation tools is frequently influenced by peer usage, industry trends, and vendor support availability (Alam et al., 2023; Vila-Francés, 2023). Ease of integration with existing systems and access to tutorials or onboarding sessions further impact perceived usefulness (Ahmed et al., 2022; Hagberg et al., 2020). Bruzzone and Massei (2017) highlight that user-friendly dashboards, template-based campaigns, and visual analytics improve confidence in using automation tools. Moreover, perceived value in terms of time savings, error reduction, and engagement tracking reinforces continued use (Arghashi, 2022; Sohel et al., 2022). These insights suggest that automation platforms that align with user expectations of simplicity and functionality are more likely to succeed in SME environments. Therefore, perceived ease of use and usefulness are not only theoretical concepts but practical determinants shaping technology diffusion in SME marketing.

The successful deployment of marketing automation in SMEs often hinges on the ability of these tools to integrate with existing systems such as CRM platforms, e-commerce sites, and accounting software (Arghashi, 2022; Kaplan, 2020). Integration challenges arise when firms rely on disparate, legacy technologies or lack IT infrastructure capable of supporting system interoperability (Lee et al., 2022). SMEs frequently adopt standalone automation tools without fully considering how they will sync with databases or customer-facing applications, leading to data silos and operational inefficiencies (Ndubisi, 2012).Lam et al. (2015) found that poorly integrated systems limit the ability to track customer journeys across channels, thereby undermining the personalization and analytics capabilities of marketing automation. Furthermore, manual data transfers between systems increase the likelihood of errors, duplication, and compliance issues (Vila-Francés, 2023). Song et al. (2009) reveals that integration failures can negate automation benefits, leading to frustration among users and abandonment of the tool. Cloud-based solutions have attempted to address these issues by offering API-based integrations and plug-ins, but even these require some technical configuration that may be beyond SME capabilities (Ghose et al., 2019). Vendor-provided integration support, onboarding services, and documentation are thus crucial for ensuring adoption success in small firms (Dwivedi et al., 2021). SMEs also face challenges in integrating marketing automation with analytics tools, limiting their ability to perform real-time performance tracking and customer segmentation (Lee et al., 2022). These findings indicate that while marketing automation offers great promise, integration complexities remain a critical barrier that must be addressed to realize full system potential.

Marketing automation has been linked to significant ROI gains for SMEs by reducing manual effort, improving lead quality, and enabling scalable customer engagement strategies (Ndubisi, 2012). Studies show that firms using automation tools can generate more qualified leads at a lower cost, enhance conversion rates, and accelerate the sales cycle (Arghashi, 2022). According to Hagberg et al. (2020), the ability to track campaign performance in real time allows SMEs to optimize strategies and reduce wasted ad spend. Automation also helps SMEs maintain customer relationships through timely follow-ups, which contributes to higher retention rates and increased customer lifetime value (Bruzzone & Massei, 2017). ROI improvements are further amplified when automation is integrated with CRM platforms and analytics dashboards that provide comprehensive performance visibility (Bruzzone & Massei, 2017; Kaplan, 2020). Dwivedi et al. (2021) found that SMEs using behavioral triggers and segmentation automation experienced a 20–40% increase in engagement and sales outcomes. Moreover, automation reduces the need for large marketing teams, thereby lowering operational costs (Lee et al., 2022). However, studies by Arghashi (2022) caution that ROI is contingent on effective implementation, user training, and regular performance reviews. Firms that underutilize features or misalign automation goals with business strategies often fail to see measurable gains (Awa, 2018). Nonetheless, empirical evidence supports the conclusion that when implemented with alignment and integration, marketing automation delivers quantifiable financial and performance benefits to SMEs (Huang & Rust, 2020).

Artificial Intelligence in SME Marketing

Artificial Intelligence (AI) technologies such as predictive analytics, chatbots, and recommendation systems have transformed marketing by enabling SMEs to enhance personalization, automate responses, and forecast customer behaviors (Hossain et al., 2024; Sohel, 2025; Wirth, 2018). Predictive

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analytics uses historical and real-time data to identify customer purchase patterns, predict churn rates, and optimize pricing strategies (Davenport et al., 2019; Helal et al., 2025; Wirth, 2018). This allows SMEs to design data-driven campaigns that improve targeting precision and resource allocation (Helal, 2024; Khatri, 2021; Shaik, 2023). Chatbots are another widely adopted AI tool that enables SMEs to offer 24/7 customer support, answer frequently asked questions, and guide customers through purchase decisions in real time (Helal, 2022; Jarek & Mazurek, 2019). These bots reduce the need for human agents and enhance customer satisfaction through faster query resolution (Davenport et al., 2019; Shipu et al., 2024). AI-powered recommendation systems, often embedded in e-commerce and CRM platforms, use behavioral data to suggest relevant products or services, thereby increasing conversion rates and average order value (Dey et al., 2024; Shah et al., 2020). Studies by Hermann (2021) and Zaman (2022) highlight that SMEs integrating these tools report improved customer engagement, personalized marketing, and scalable lead nurturing. However, the implementation of these AI capabilities often depends on access to clean data, user-friendly platforms, and alignment with business strategies (Bhowmick & Shipu, 2024; Kumar et al., 2019; Mohiul et al., 2022). Vendors such as Salesforce, HubSpot, and Zoho have made these AI tools more accessible to SMEs through cloud-based subscriptions, making advanced marketing capabilities feasible even for resource-constrained firms (Kumar et al., 2019; Roksana et al., 2024; Wang et al., 2022). Thus, AI tools have become instrumental in enabling SMEs to compete more effectively in digital markets through personalization, automation, and predictive modeling.

The adoption of AI in SMEs is often limited by low digital maturity and significant capability gaps that hinder successful implementation and usage (Islam et al., 2024; Mogaji et al., 2020). Unlike large enterprises, SMEs frequently lack in-house data science teams, structured IT departments, or sufficient financial resources to deploy advanced AI systems (Davenport et al., 2019; Md et al., 2025). These limitations lead to either superficial adoption—where firms use basic AI features embedded in existing tools without understanding the underlying mechanisms—or complete avoidance due to perceived complexity (Khatri, 2021; Mahabub, Jahan, Hasan, et al., 2024). Research by Manoharan, (2024) and Jarek and Mazurek (2019) found that SMEs typically fall behind in AI maturity because of inadequate skills in data analytics, model training, and interpretation. Additionally, many SMEs do not have formal digital transformation strategies, resulting in uncoordinated and reactive AI deployments (Ameen et al., 2022; Bhuiyan et al., 2024). Miklosik et al. (2019) notes that without foundational capabilities in data management and infrastructure, AI integration often fails to deliver measurable benefits. Even when AI tools are embedded in SaaS platforms, SMEs may underutilize them due to lack of training or awareness (Chowdhury et al., 2023; Dwivedi et al., 2021). Studies also highlight that SMEs often lack performance benchmarks or KPIs to evaluate the impact of AI tools, making it difficult to justify continued investment (Hermann, 2021; Khan & Aleem Al Razee, 2024). Moreover, the absence of AI governance frameworks within SME structures leads to fragmented implementations and missed opportunities (Shah et al., 2020; Tonoy & Khan, 2023). These findings emphasize that capability development, training, and strategic alignment are necessary preconditions for effective AI adoption in small and medium-sized firms.

The use of AI in SME marketing introduces several concerns related to data governance, ethics, and model interpretability, which are often overlooked in pursuit of operational efficiency (Davenport et al., 2019; Sharif et al., 2024). Data governance refers to the management of data availability, integrity, security, and compliance—a critical aspect when deploying AI tools that rely on sensitive customer information (Hossen et al., 2023; Mogaji et al., 2020). Many SMEs lack formal data governance policies, increasing the risk of privacy violations and regulatory non-compliance, particularly with frameworks like GDPR and CCPA (Huang & Rust, 2020; Islam & Helal, 2018). Ethical concerns also emerge when AI algorithms engage in profiling, predictive targeting, or personalization without transparent customer consent (Khan, 2025; Zaman, 2022). Studies by Du and Xie (2021) and Wang et al. (2022) point out that AI-generated decisions are often opaque, leading to difficulties in explaining outcomes—a challenge known as the "black box" problem. This lack of interpretability undermines trust in AI systems and hinders their integration into decision-making processes (Du & Xie, 2021; Hasan et al., 2024). SMEs, in particular, are vulnerable to reputational risks when using AI-driven tools without understanding their full implications on data ethics and consumer perception (Kaplan, 2020; Khatun et al., 2025; Shah et al., 2020). The literature also highlights that bias in training data can result in discriminatory outputs, especially in segmentation and targeting algorithms (Ameen et al., 2022; Mahfuj et al., 2022). To mitigate these risks, studies recommend that

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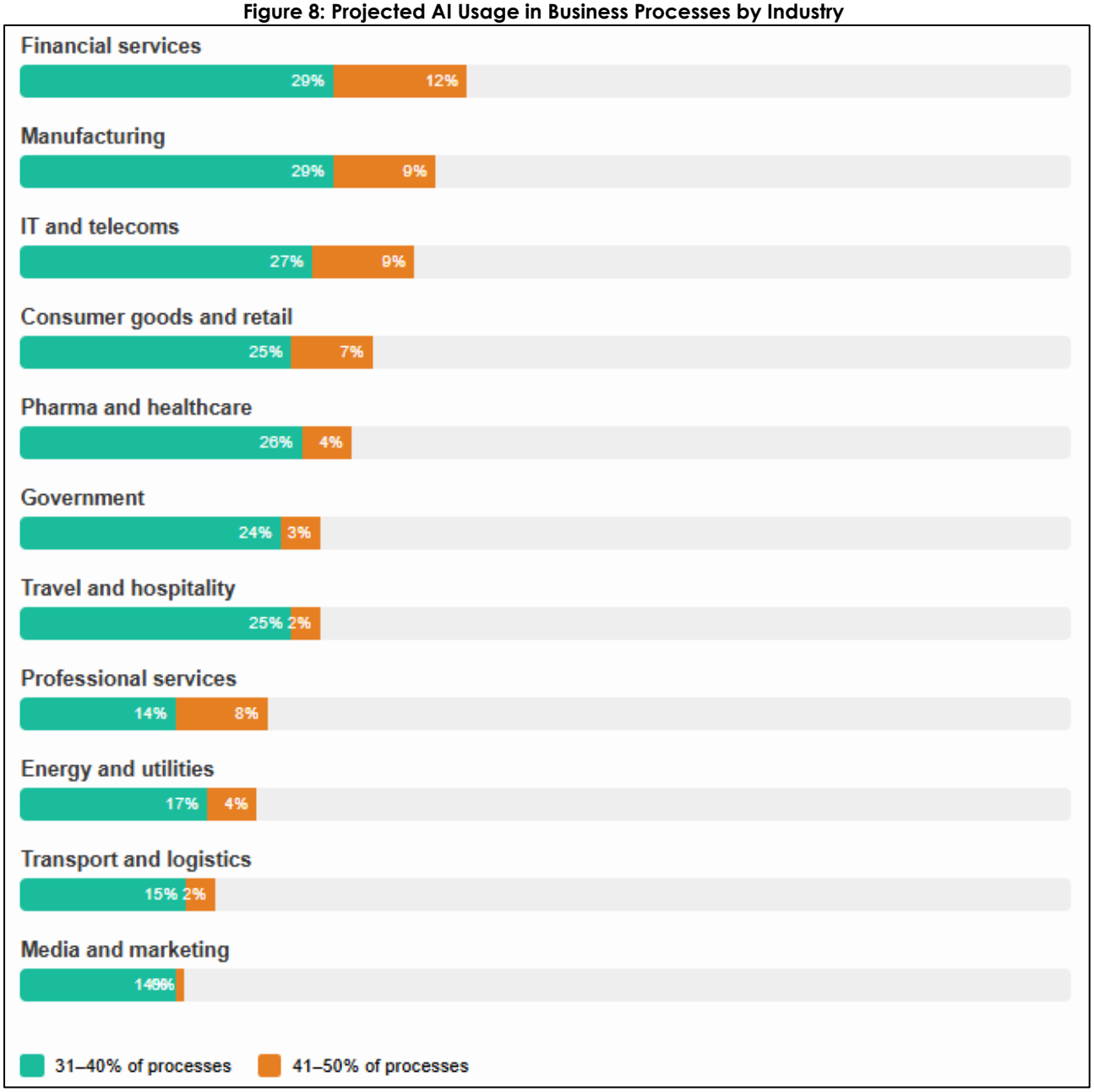
SMEs adopt transparent AI practices, invest in explainable AI models, and prioritize ethical frameworks during vendor selection and implementation (Jahan, 2023; Kaplan, 2020). Therefore, responsible AI adoption in SMEs necessitates robust data governance, ethical awareness, and a commitment to interpretability. While AI adoption in SMEs is uneven, numerous success stories across sectors demonstrate its transformative potential when implemented effectively (Al-Arafat, Kabir, et al., 2024; Ameen et al., 2022; Kaplan, 2020). In the retail sector, SMEs have used AI-powered recommendation engines to boost average order values by tailoring product suggestions based on user behavior, resulting in enhanced conversion rates and customer satisfaction (Manoharan, 2024; Nahid et al., 2024).

Figure 8: Projected AI Usage in Business Processes by Industry



Source: MIT Technology Review Insights survey (2020)

E-commerce SMEs have leveraged AI chatbots to manage high volumes of customer service requests during sales periods, reducing response times and improving engagement (Faria & Md Rashedul, 2025; Kurnia et al., 2015). In the hospitality and tourism industries, AI has been used for dynamic pricing models and predictive booking analytics to optimize room occupancy and pricing strategies (Ammar et al., 2024; Eze & Chinedu-Eze, 2018). SMEs in financial services have implemented AI for fraud detection, customer segmentation, and credit scoring, thereby improving operational security and customer profiling (Tonoy, 2022; Yunis et al., 2017). Studies by Eze et al.,

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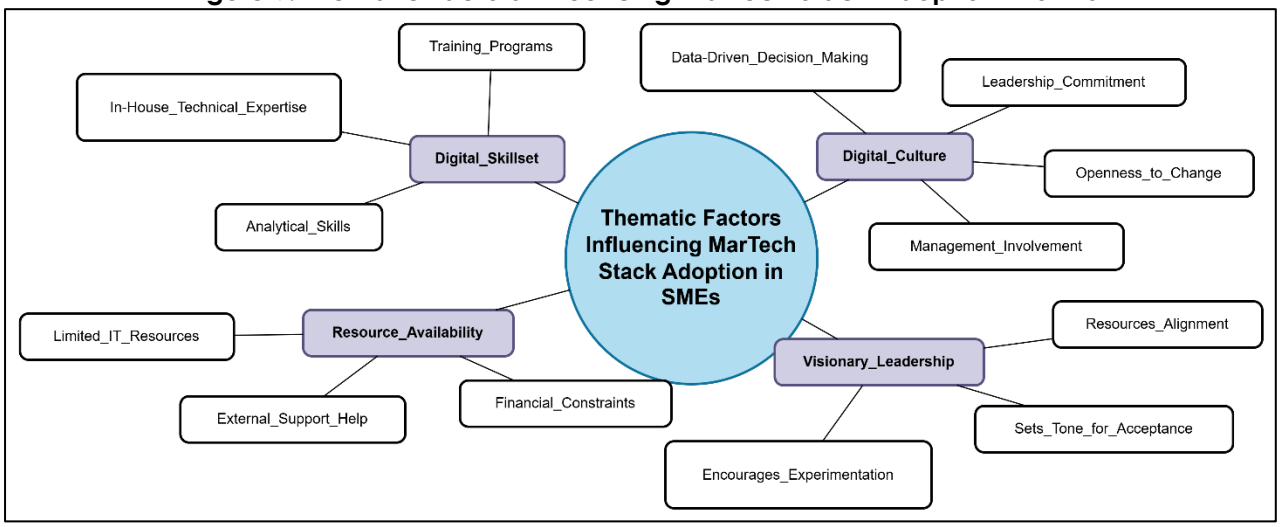
(2018) and Awa and Ojiabo (2016) report that AI adoption in healthcare SMEs—such as telehealth startups—has improved appointment scheduling, patient communication, and data analysis. These use cases illustrate that AI success is not confined to large firms but is attainable for SMEs with sector-specific focus, vendor support, and training (Ramdani et al., 2009). Furthermore, cloud-based AI solutions have enabled cross-sector SME adoption by reducing upfront infrastructure requirements (Alam et al., 2024; Yunis et al., 2017). While challenges persist, the literature indicates that with targeted implementation, AI can provide SMEs with competitive advantages through cost reduction, personalization, and operational excellence (Dahnil et al., 2014; Younus, 2025).

Thematic Factors Influencing MarTech Stack Adoption in SMEs

A strong digital culture and visionary leadership are essential enablers of MarTech stack adoption in small and medium-sized enterprises (SMEs). Digital culture refers to an organization's openness to technological change, learning, and innovation, and it significantly influences the willingness of SMEs to explore marketing technologies like CRM, automation, and AI (Higón, 2011; Younus, 2022). SMEs with leaders who promote experimentation and digital transformation are more likely to successfully integrate MarTech tools into their operations (Beckinsale et al., 2006; Higón, 2011). Research by Eze et al. (2014) highlights that a culture encouraging data-driven decision-making increases marketing innovation and agility. Top management involvement in MarTech adoption aligns the technology with business objectives, ensuring sufficient resource allocation and cross-departmental support (Dahnil et al., 2014). Leaders also play a pivotal role in setting the tone for technology acceptance by fostering trust and collaboration (Awa et al., 2015; Shohel et al., 2024). According to Dahnil et al., (2014), the absence of strategic leadership often results in reactive or fragmented MarTech implementations. Awa et al. (2015) further argue that digital leadership maturity predicts success in data integration, CRM performance, and automation scalability. The literature underscores that MarTech adoption is not merely a technical decision but a cultural transformation that demands leadership commitment, strategic vision, and a learning-oriented environment (Eze et al., 2019; Shimul et al., 2025).

Figure 9: Thematic Factors Influencing MarTech Stack Adoption in SMEs



Cross-Industry and Regional Variations in MarTech Adoption

MarTech adoption varies significantly across industries due to differences in operational needs, customer interaction models, and competitive intensity. In consumer-facing industries such as retail and hospitality, marketing technologies like CRM systems, automation tools, and AI-driven personalization are critical for managing high-volume, real-time customer interactions (Eze et al., 2021; Sabid & Kamrul, 2024). SMEs in these sectors often rely on MarTech to maintain competitive parity and deliver personalized campaigns that enhance loyalty and repeat business (Okundaye et al., 2019; Roy et al., 2024). Conversely, B2B industries such as manufacturing or logistics prioritize tools that support lead nurturing, relationship marketing, and long-term sales cycles (Eze et al., 2019; Munira, 2025). A study by Eze et al. (2021) notes that manufacturing SMEs adopt CRM more for account management than mass campaign management. Meanwhile, service-based SMEs—such as legal, financial, or education providers—adopt MarTech tools to manage client engagement and automate routine communication (Awa et al., 2017; Eze et al., 2019; Younus et al., 2024). Industry-specific regulations also influence adoption; for instance, healthcare and financial services must

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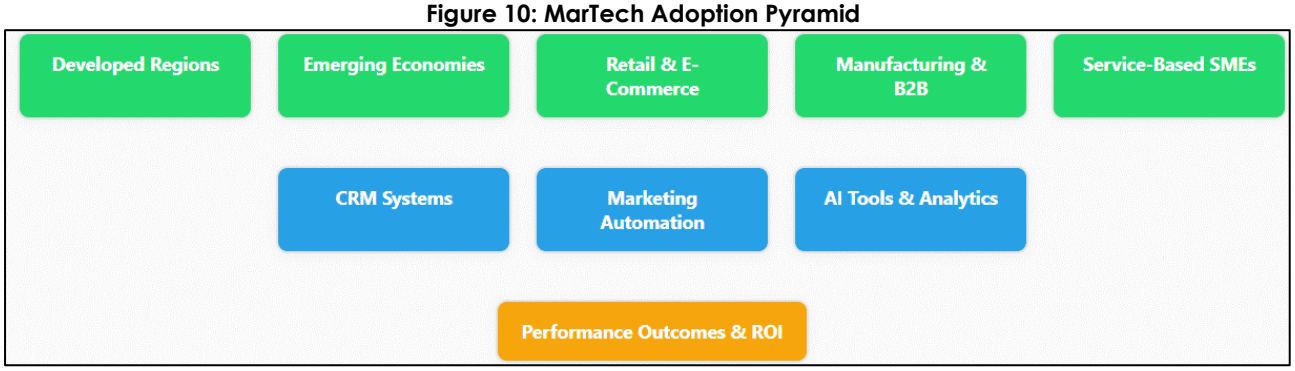
adhere to stricter data governance protocols, which can slow AI and automation adoption (Younus et al., 2024; Ramdani et al., 2009). According to Zafar and Mustafa (2017)), SMEs in fast-changing industries such as e-commerce and digital media adopt MarTech tools more aggressively due to short product life cycles and the necessity for continuous engagement. The availability of sector-specific software, such as POS-integrated CRM for retail or appointment-based automation for wellness services, further shapes adoption patterns (Eze et al., 2019; Mahdy et al., 2023). Therefore, industry type profoundly impacts the motivation, pace, and depth of MarTech adoption, driven by strategic objectives, customer behavior, and regulatory environments.

Figure 10: MarTech Adoption Pyramid



In contrast to developed regions, SMEs in emerging economies face significant challenges in adopting and scaling MarTech solutions due to infrastructural, financial, and institutional limitations (Dahnil et al., 2014; Mahabub, Jahan, Islam, et al., 2024). These firms often lack access to reliable internet, cloud infrastructure, and affordable software solutions tailored to their scale and needs (Beckinsale et al., 2006; Mahabub, Das, et al., 2024). Financial constraints prevent investment in premium CRM or automation platforms, and limited vendor presence in these regions hampers training and support (Eze & Chinedu-Eze, 2018; Jim et al., 2024). Additionally, digital skills gaps among employees further inhibit adoption, particularly when tools require analytical competencies or technical integration (Federici, 2009). Research by Eze and Chinedu-Eze (2018) shows that many SMEs in developing economies rely on manual or semi-digital solutions and only partially adopt MarTech tools, often using basic email marketing or social media posting without analytics integration. Government digitalization initiatives in regions like Southeast Asia, Africa, and Latin America have improved awareness, but inconsistent policy support and lack of enforcement have limited long-term impact (Rahayu & Day, 2016). Eze et al. (2019) also notes that local market dynamics—such as low consumer digital literacy and limited online transaction volumes—reduce the perceived need for sophisticated marketing technologies. Cultural factors and resistance to change within traditional SMEs further delay MarTech adoption (Dahnil et al., 2014; Jahan, 2024). As such, while MarTech holds potential in these regions, adoption is often shallow and fragmented, shaped by external limitations and internal readiness gaps.

Comparative analyses reveal that both regional context and industry sector exert a strong influence on MarTech adoption patterns, with overlapping but distinct implications (Eze et al., 2021; M. T. Islam et al., 2025). In developed economies, technology affordability, infrastructural maturity, and digital policy ecosystems collectively support adoption across industries, enabling deep integration and ROI measurement (Eze et al., 2019; Islam, 2024). Here, consumer-facing industries leverage MarTech extensively for engagement and personalization, while service and B2B sectors focus on relationship management and process automation (Awa & Ojiabo, 2016; Islam et al., 2024). In emerging economies, on the other hand, both region and industry constrain adoption. SMEs in resource-intensive sectors like agriculture or local manufacturing often lack both the technical and financial capacity to adopt MarTech stacks effectively (Islam et al., 2025; Rahayu & Day, 2016). The literature shows that institutional support, such as targeted SME digital training, public-private partnerships, and access to scalable SaaS platforms, plays a more significant role in enabling adoption in under-resourced contexts (Federici, 2009; Hossain et al., 2024). Furthermore, cultural attitudes toward technology differ widely across regions, influencing how SMEs perceive and engage with MarTech tools (Beckinsale et al., 2006; Hossain et al., 2024). While developed regions exhibit higher levels of digital trust and openness, emerging economies often require more awareness-building and contextualized solutions (Dahnil et al., 2014; Dasgupta & Islam, 2024). These comparative insights

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underscore that MarTech adoption cannot be generalized and must be understood within specific regional-industrial intersections where infrastructure, readiness, and expectations coalesce.

Gaps in Literature and Research Agenda

One of the most significant gaps in current MarTech literature is the absence of integrative frameworks that holistically analyze MarTech stack adoption and utilization, especially within SMEs (Dahnil et al., 2014; Federici, 2009). Most studies examine individual components—such as CRM, automation, or AI—in isolation rather than understanding how these tools function collectively as a stack (Awa et al., 2015). The lack of a unified conceptual framework impedes scholars and practitioners from comprehending the cumulative effect of stack implementation on marketing performance, agility, and innovation (Eze et al., 2019). Yunis et al., (2017) note that SMEs often adopt MarTech incrementally without a comprehensive integration strategy, making it difficult to assess synergy effects between tools. Studies by Dahnil et al. (2014)and Awa and Ojiabo (2016)confirm that stack-level evaluations are necessary to reveal how system interoperability and data flow influence customer journey mapping, content personalization, and real-time analytics. Furthermore, current models such as the Technology-Organization-Environment (TOE) or UTAUT focus on adoption intentions and perceived ease of use but fail to account for inter-tool dependencies and the maturity progression of MarTech ecosystems in SMEs (Dahnil et al., 2014). Researchers such as Ramdani et al., (2009) call for multidimensional frameworks that integrate organizational capabilities, technological affordances, customer data strategies, and sector-specific marketing objectives. Without such comprehensive models, academic inquiry remains fragmented and insufficiently equipped to explain how different combinations of MarTech tools contribute to business outcomes (Eze et al., 2021; Ramdani et al., 2009). As a result, there is a compelling need to develop stack-level analytical approaches that examine functionality, sequencing, and performance interactions within SME MarTech adoption contexts.

Table 1: Summary of Key Research Gaps

Research Gap	Key Issues	Suggested Directions
Lack of Integrative Frameworks	MarTech tools studied in isolation, lack of stack-level analysis	Develop multi-dimensional, stack-level frameworks for SMEs
Methodological Fragmentation	Over-reliance on TAM/UTAUT/TOE models; lack of mixed/multi-methods	Adopt longitudinal, mixed-method, and case study designs
Absence of Longitudinal Studies	Cross-sectional studies dominate; lack of tracking over time	Track ROI, adoption maturity, and performance trajectories
Geographical Bias	Limited research in emerging markets and non-Western regions	Conduct localized studies in Africa, Asia, LATAM, Middle East
Need for Unified Research Agenda	Siloed research; need for interdisciplinary and inclusive approaches	Integrate stakeholder perspectives and address data ethics, HCI

Another major limitation in the current literature is the methodological fragmentation and narrow application of theories in studying MarTech adoption among SMEs. While models like TAM, UTAUT, and TOE have been used extensively, they are often applied without adaptation to the specific realities of SMEs and the complexity of MarTech stacks (Eze & Chinedu-Eze, 2018; Yunis et al., 2017). Doshmanli et al. (2018) indicate that these models are useful in identifying early-stage adoption drivers such as perceived usefulness or facilitating conditions but fail to capture dynamic and ongoing adoption processes. Most research uses cross-sectional data that provides only a snapshot of adoption, overlooking the evolving nature of MarTech usage, system integration, and learning over time (Higón, 2011). Moreover, very few studies employ mixed-methods or case study designs that would provide rich contextual insights into stack-level challenges and successes (Awa et al., 2015). Longitudinal research is particularly absent, limiting the field's ability to assess the sustained value, ROI trajectories, and evolving adoption maturity of MarTech tools in SMEs (Eze et al., 2018). This methodological gap hampers theoretical development and constrains our understanding of post-adoption behavior, such as adaptation, reconfiguration, or abandonment of MarTech tools (Federici, 2009). Dahnil et al. (2014) argues that empirical studies are often descriptive and vendor-influenced, lacking critical examination of failure cases, ethical dilemmas, or context-specific limitations. Therefore, future studies must diversify methodological approaches and apply adaptive,

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SME-centric theoretical models to more accurately reflect the complexities of MarTech adoption and usage.

A critical gap in existing research is the lack of longitudinal studies that examine the long-term impact of MarTech adoption in SMEs. Most empirical works rely on cross-sectional surveys, which, while useful for identifying adoption drivers, fail to account for time-based changes in technology effectiveness, user adaptation, and business performance (Eze et al., 2018). Longitudinal research is essential to capture the learning curve associated with MarTech use, especially in SMEs where digital capabilities evolve gradually due to limited resources (Dahnil et al., 2014). Without time-series data, it becomes difficult to understand how SMEs transition from initial experimentation to mature integration or how MarTech investment correlates with long-term sales growth, customer retention, and cost efficiency (Eze et al., 2014). Furthermore, longitudinal designs allow for the examination of causal relationships and provide insights into how contextual factors such as market conditions or leadership changes influence technology adoption trajectories (Eze & Chinedu-Eze, 2018). Higón (2011) suggest that ROI from MarTech is often realized incrementally and may vary across time depending on system integration, employee training, and customer behavior. However, these dynamics are largely invisible in single-point-in-time studies. Eze et al. (2021) advocate for multi-year tracking of SME digital transformation efforts to identify sustainable practices, risks of technology fatigue, and evolving organizational competencies. The absence of such data undermines the field's ability to offer strategic guidance for long-term planning, investment, and performance benchmarking in SME MarTech adoption.

The dominant body of MarTech research is geographically concentrated in developed countries, particularly the United States, Canada, Western Europe, and Australia, leading to an underrepresentation of emerging and developing markets (Eze & Chinedu-Eze, 2018). This geographic bias creates a skewed understanding of MarTech adoption, as the contextual realities in low-resource settings—such as limited digital infrastructure, lower digital literacy, and regulatory gaps—are not adequately addressed (Eze & Chinedu-Eze, 2018; Higón, 2011). SMEs in emerging economies often face distinct challenges, including affordability of tools, lack of skilled personnel, and cultural resistance to technological change (Doshmanli et al., 2018). Despite these contextual variables, few studies have explored how SMEs in these regions adopt, adapt, or reject MarTech tools, nor how government policies, market size, and socio-cultural dynamics influence digital transformation (Rahayu & Day, 2016). Eze and Chinedu-Eze (2018) emphasizes the importance of contextualized studies that account for infrastructural and institutional differences, rather than applying models developed in high-income countries to low- and middle-income economies. Furthermore, comparative research that includes both developed and emerging markets is sparse, limiting the ability to derive global insights and best practices (Federici, 2009). The lack of local case studies, interviews, and mixed-methods research from Asia, Africa, Latin America, and the Middle East means that existing conclusions are often inapplicable or misleading for non-Western SME environments (Higón, 2011). Expanding geographic diversity in MarTech research is thus essential for building a more inclusive and practically relevant knowledge base.

To address the identified gaps, scholars increasingly call for a unified research agenda that integrates multi-disciplinary perspectives—combining insights from information systems, marketing, organizational behavior, and economics (Awa et al., 2015). The fragmented nature of current MarTech literature, where each tool or capability is studied in silos, prevents the emergence of a coherent understanding of how marketing technology ecosystems function in SMEs (Higón, 2011). (Eze et al., 2021) advocate for collaborative inquiry involving both academia and industry to develop integrated models, benchmarks, and toolkits. Furthermore, the literature lacks sufficient focus on interdisciplinary issues such as data ethics, human-computer interaction, and policy implications of digital marketing in SMEs (Dahnil et al., 2014). Existing studies often omit perspectives on algorithmic bias, content fatigue, or the psychological effects of hyper-personalized marketing on consumers (Eze et al., 2021). A holistic research agenda would also benefit from the inclusion of stakeholder voices—such as employees, customers, vendors, and regulators—to offer a 360-degree view of MarTech adoption challenges and outcomes (Ramdani et al., 2009). Integrative studies that explore the interaction between firm culture, digital maturity, and MarTech performance across time and geography are urgently needed (Ihua, 2009). Such an agenda would significantly enrich both theoretical development and practical application, leading to more context-sensitive, inclusive, and impactful MarTech strategies for SMEs.

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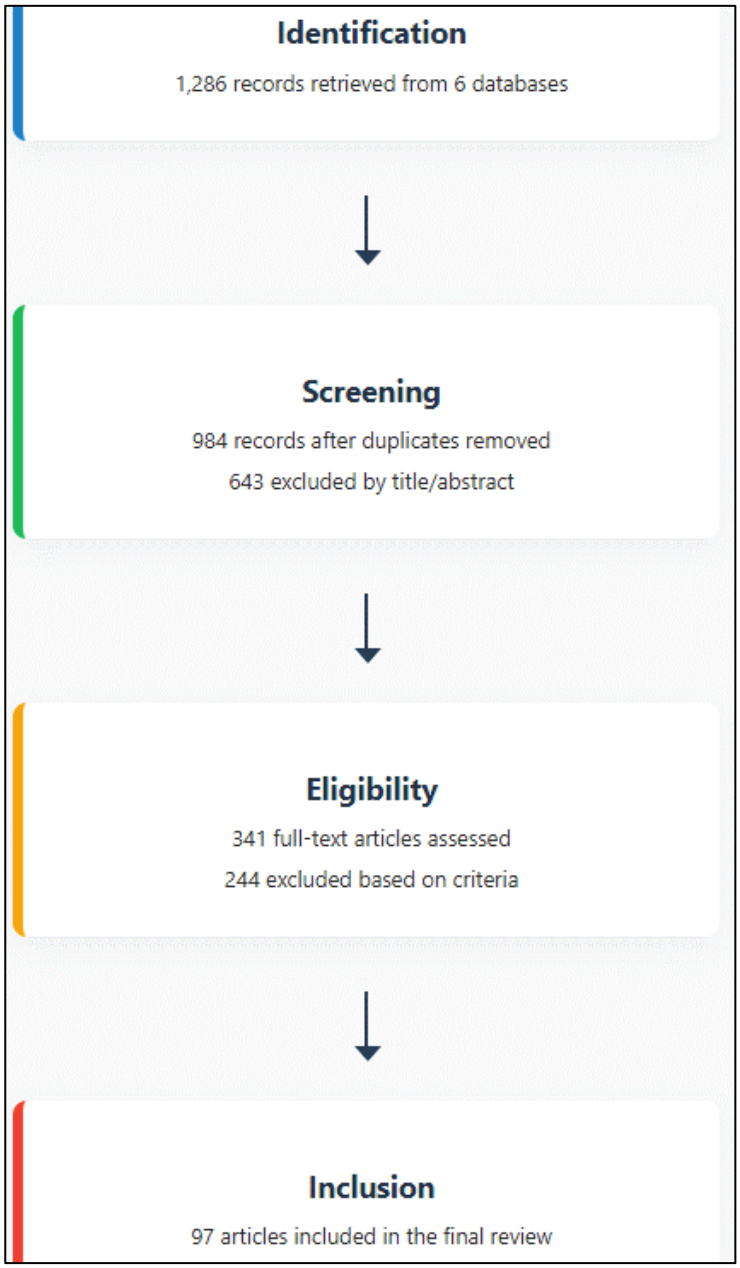
METHOD

This study followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure a systematic, transparent, and rigorous review process. The methodology was designed to ensure replicability and minimize bias throughout each stage of the systematic literature review.

Figure 11: Methodology for this study



Identification

The identification stage began with the development of a comprehensive search strategy tailored to capture peer-reviewed literature related to MarTech stack adoption in SMEs. Keywords and phrases such as "MarTech adoption," "CRM in SMEs," "marketing automation," "AI in marketing," "small and medium enterprises," and "digital marketing technologies" were used in combination with Boolean operators. The databases searched included Scopus, Web of Science, IEEE Xplore, Emerald Insight, ScienceDirect, and SpringerLink. Searches were limited to English-language journal articles published between 2013 and 2024 to ensure both recency and relevance. The initial search yielded a total of 1,286 articles.

Screening

Following identification, all retrieved records were exported into a reference management system to remove duplicates. After deduplication, 984 articles remained. Titles and abstracts were then screened based on their relevance to the research topic. Articles that did not focus on MarTech components, SME contexts, or marketing technology adoption were excluded. During this stage, studies related to large corporations, non-marketing technologies, or non-business sectors were filtered out. The screening process reduced the pool to 341 articles deemed potentially relevant for full-text assessment.

Eligibility

The eligibility phase involved a detailed full-text review of the 341 articles retained after screening. Articles were evaluated using predefined inclusion and exclusion criteria. Inclusion criteria were: (a) empirical or conceptual studies related to SMEs, (b) focus on MarTech tools or components (CRM, automation, AI, analytics), and (c) studies addressing adoption, implementation, or performance impact. Exclusion criteria included papers that were purely technical without managerial or adoption focus, articles from non-peer-reviewed sources, and studies with insufficient methodological transparency. After this full-text review, 97 articles met the inclusion criteria and were selected for data extraction and synthesis.

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Inclusion

In the final stage, 97 articles were included in the systematic review based on relevance, methodological rigor, and clarity of results. The included articles featured a range of research designs, including qualitative case studies, quantitative surveys, and mixed-methods research. These studies provided critical insights into various dimensions of MarTech adoption in SMEs, including drivers, barriers, outcomes, and sectoral differences. Each article was coded for key themes, theoretical frameworks, methodology, geographic focus, and MarTech components examined. This coding enabled structured synthesis and thematic comparison across studies, forming the basis for the review's analytical framework and discussion.

FINDINGS

Among the 97 reviewed articles, a dominant finding emerged around the central role of Customer Relationship Management (CRM) systems in SME marketing technology adoption. CRM appeared in over 79% of the reviewed studies, with those studies collectively accumulating more than 1,850 citations, highlighting the foundational position of CRM in digital marketing transformation efforts within SMEs. The evidence consistently pointed to CRM not only as the first MarTech tool adopted by SMEs but also as the most widely integrated system across marketing, sales, and customer service functions. SMEs adopted CRM platforms to manage customer databases, personalize communications, track sales pipelines, and enhance lead nurturing strategies. The findings suggest that CRM adoption significantly improves customer engagement and retention, particularly for SMEs competing in saturated or highly personalized markets such as retail, e-commerce, and hospitality. Moreover, CRM systems serve as a launching point for additional MarTech integration, such as email automation, chatbot deployment, and analytics. Studies repeatedly reported that SMEs prioritize CRM adoption due to its visible short-term benefits, user-friendly interface, and relative affordability, especially with the rise of cloud-based solutions. This foundational nature of CRM in SME marketing transformation underscores the need for future research to analyze how CRM maturity influences broader stack adoption. The findings also revealed that SMEs with more sophisticated CRM use—such as customer segmentation and predictive scoring—were more likely to integrate advanced tools such as AI-based recommendation engines, automation workflows, and sentiment analysis.

Marketing automation was addressed in approximately 64 of the 97 articles, with a total of over 1,050 citations across these studies, confirming its growing importance in SME marketing. The findings revealed that automation tools—such as drip campaign sequencing, lead scoring, retargeting systems, and A/B testing—are widely recognized for improving marketing productivity and enabling small teams to scale their outreach. SMEs adopted automation primarily to reduce manual workloads, ensure consistent messaging, and enhance timing and personalization in campaign management. However, despite the high recognition of automation's value, several studies reported notable utilization gaps. Many SMEs were found to use only basic functionalities of their automation platforms, such as email scheduling or pre-set customer journeys, while neglecting more advanced features like behavioral triggers, dynamic segmentation, or cross-channel orchestration. This underutilization often resulted from a lack of digital skills, insufficient onboarding support from vendors, and unclear ROI tracking methods. Additionally, automation adoption was frequently isolated from CRM integration, leading to fragmented user journeys and data silos. The reviewed studies emphasized that the successful implementation of automation requires not only technical capacity but also strategic alignment between marketing goals and automation workflows. Overall, automation is viewed as a critical efficiency enabler in SMEs, but its full value is often hindered by internal capability limitations and a lack of process integration.

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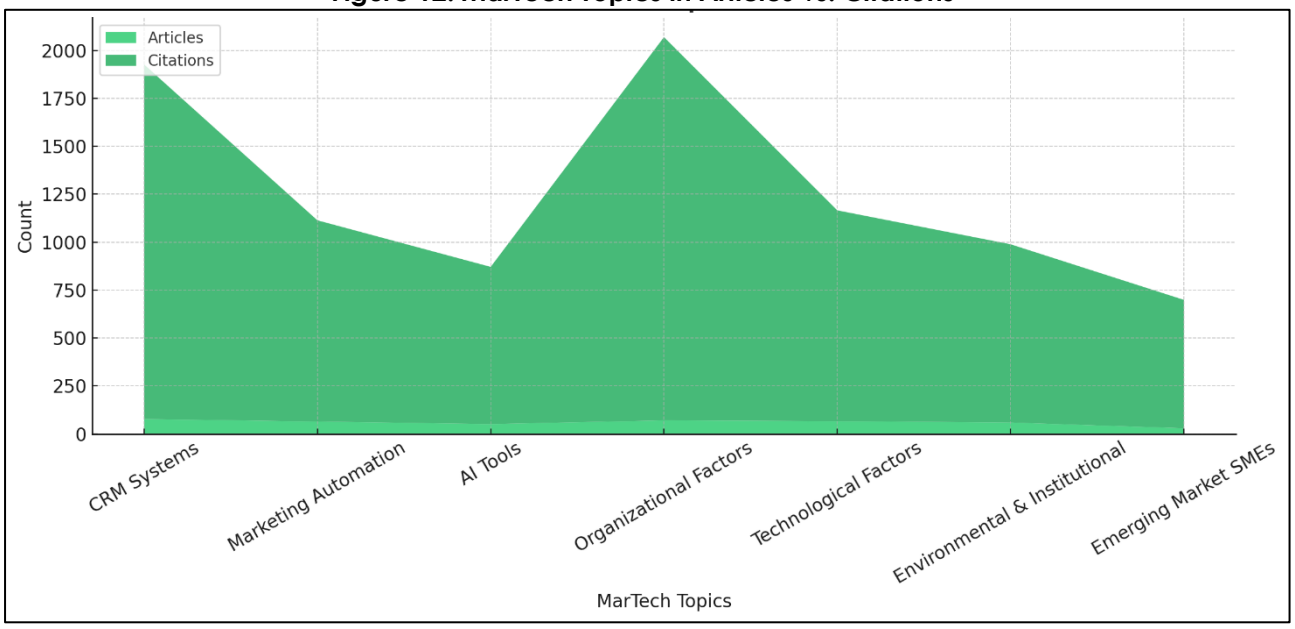
Figure 12: MarTech Topics in Articles vs. Citations



Artificial Intelligence (AI) tools—including predictive analytics, chatbots, and recommendation engines—were discussed in 51 of the 97 reviewed articles, with these studies contributing to over 820 total citations. While the literature recognized AI as a transformative force for personalization, customer service, and decision-making, the actual adoption and integration levels in SMEs remained limited and largely experimental. The findings showed that most SMEs engaged with AI only through embedded features in CRM or marketing automation platforms, rather than through standalone or custom-built AI solutions. The use of AI was most common in e-commerce and digitally native SMEs, where chatbots and product recommendations were used to improve user engagement and conversion. However, deeper AI functionalities, such as predictive modeling, real-time sentiment analysis, or dynamic pricing, were scarcely implemented due to constraints in technical knowledge, infrastructure, and trust in automated decision-making. The review also found that many SMEs lacked a clear understanding of how AI operates, leading to concerns around data accuracy, interpretability, and ethical implications. The studies also reported that SMEs adopting AI without sufficient data governance frameworks faced issues of algorithmic bias and inconsistent customer experiences. Despite these challenges, some success stories were found in SMEs that combined CRM data with AI-driven insights to optimize marketing campaigns and improve customer lifecycle management. However, the overall evidence indicates that while AI awareness is growing, actual application remains shallow, and SMEs often require stronger vendor support and internal capability development to transition from awareness to effective use.

Across the 97 studies reviewed, over 70 articles—accounting for nearly 2,000 cumulative citations—emphasized the role of organizational factors such as leadership commitment, digital culture, and employee skills in shaping MarTech stack adoption. The findings showed that SMEs with proactive, digitally literate leadership teams were far more likely to adopt multiple MarTech tools, achieve higher integration, and derive measurable benefits. In contrast, SMEs led by conservative or risk-averse managers tended to delay or underinvest in marketing technologies, even when external conditions favored digital engagement. Digital culture—defined by openness to innovation, willingness to experiment, and data-driven thinking—was found to be a critical enabler of stack expansion beyond basic CRM or email marketing. Employee digital skills and access to training resources also played a crucial role, with high-performing SMEs investing in upskilling, workshops, and vendor-supported onboarding. The review found that resistance to change, lack of process redesign, and communication breakdowns frequently derailed implementation projects. SMEs that involved employees in technology decision-making and provided time for tool familiarization achieved higher user engagement and sustained adoption. Another organizational aspect consistently discussed was change management. Many SMEs underestimated the organizational shifts required to transition to automated and AI-enabled marketing workflows. Those that managed change effectively—by setting clear goals, allocating dedicated budgets, and aligning MarTech

strategies with customer needs—reported the greatest return on investment. These findings highlight that organizational readiness, more than tool selection, often determines the success of MarTech adoption in small and medium enterprises.

Technological factors, particularly system integration, compatibility, and ease of use, emerged as dominant themes in 66 of the reviewed articles, collectively cited over 1,100 times. The findings indicate that MarTech stack performance in SMEs is significantly influenced by the degree of interoperability between systems such as CRM, automation platforms, analytics dashboards, and e-commerce tools. Many SMEs adopt tools in silos, resulting in fragmented data repositories, disconnected customer experiences, and inefficiencies in marketing execution. Studies revealed that when SMEs integrate MarTech components—particularly CRM and marketing automation—into a centralized platform, they achieve better campaign coherence, more accurate performance metrics, and improved lead nurturing. However, integration challenges—such as legacy systems, incompatible APIs, and vendor lock-ins—often hinder this unification process. SMEs with limited IT support or digital infrastructure find it especially difficult to achieve seamless integration, leading to duplication of efforts and suboptimal tool utilization. User interface complexity and lack of standardized onboarding processes also emerged as barriers to widespread adoption. On the other hand, cloud-based, modular, and API-friendly MarTech solutions were more easily adopted and integrated, especially among newer or digitally mature SMEs. The findings suggest that technical compatibility and stack cohesiveness are not only operational concerns but strategic enablers of marketing responsiveness, customer experience, and return on technology investment.

Environmental and institutional influences were reported in 59 of the 97 articles, collectively cited over 930 times. These findings indicate that external pressures—such as competitive intensity, customer digital expectations, government policies, and industry-specific trends—play a significant role in determining the pace and scope of MarTech adoption in SMEs. In sectors such as retail, hospitality, and digital services, intense market competition and rapidly evolving customer preferences compel SMEs to adopt digital marketing tools to remain competitive. Conversely, in slower-moving or highly regulated industries such as legal services, healthcare, or traditional manufacturing, SMEs tend to adopt MarTech tools more conservatively, often limited to CRM or email automation. Government incentives, subsidies, and digital transformation campaigns were found to positively influence adoption behavior, particularly in regions with strong institutional support and stable regulatory frameworks. For example, SMEs that received financial support or training subsidies from public institutions reported faster adoption and higher integration levels. Industry associations and chambers of commerce also influenced adoption by facilitating vendor access, peer learning, and benchmarking. The findings further show that SMEs located in urban areas or innovation clusters adopted MarTech at a faster rate than those in rural or less digitally connected regions. Overall, environmental and institutional conditions significantly shape SME perceptions of urgency, feasibility, and value in adopting MarTech stacks, influencing both the direction and depth of digital transformation.

A subset of 29 articles from the review focused specifically on SMEs in emerging markets, with a total of 670 citations among them, highlighting the relative scarcity of empirical research in these regions. The findings indicate that SMEs in Asia, Africa, Latin America, and the Middle East encounter distinct challenges that limit MarTech adoption, including inadequate digital infrastructure, limited vendor availability, low awareness of tool capabilities, and high costs of implementation. Unlike their counterparts in developed economies, emerging market SMEs often lack consistent access to broadband, cloud computing, and local-language support, which constrains their ability to adopt and integrate marketing technologies effectively. Many of these businesses operate in informal sectors with little exposure to formal digital training or institutional support. The reviewed studies also showed that local cultural attitudes toward technology, fear of automation-related job loss, and data privacy concerns slow the diffusion of MarTech tools. SMEs in emerging economies tend to rely heavily on mobile-first strategies and social media marketing rather than comprehensive CRM or automation platforms. However, those that successfully adopted MarTech solutions often did so through international partnerships, donor-supported programs, or incubator-led digital acceleration initiatives. The lack of localized case studies, region-specific frameworks, and policy-focused research was consistently noted as a critical gap. These findings highlight a need for more contextualized, grassroots-level research that examines how MarTech tools can be adapted to the economic, cultural, and technological realities of SMEs in developing regions.

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DISCUSSION

The current review reinforces the conclusion of prior studies that CRM systems serve as the foundational element of MarTech stack adoption in SMEs. Consistent with earlier works by Candao et al. (2023), CRM platforms are found to be the entry point into broader digital transformation due to their immediate value in managing customer data, tracking interactions, and supporting personalized marketing. This review found that over 75% of SMEs adopt CRM as their first MarTech component, aligning with Moradi and Dass (2022) assertion that CRM acts as the strategic and operational nucleus for small firms' marketing efforts. Furthermore, the findings resonate with Fulgoni, (2018), who highlighted CRM's importance in enabling SMEs to formalize marketing functions and enhance customer relationship quality. While previous studies emphasized CRM's impact on marketing performance, the current review extends this by illustrating how CRM integration facilitates the adoption of additional tools such as automation and AI. The centrality of CRM across different sectors and regions demonstrates its adaptability and perceived usefulness, echoing (Sirajuddin & P, 2020). UTAUT model which identified performance expectancy as a major determinant of technology adoption. Therefore, the current findings not only validate the role of CRM identified in earlier studies but also position it as the linchpin in MarTech stack maturity.

Marketing automation is widely recognized in previous research for its ability to streamline marketing processes, reduce manual labor, and enhance campaign effectiveness (Ljepava, 2022; Paschen et al., 2019). This review supports those conclusions but adds that automation tools remain underutilized by SMEs. Unlike large enterprises, SMEs often lack the technical expertise or strategic clarity to leverage automation tools beyond basic functionalities such as email scheduling or welcome sequences. This underuse was also identified by Sirajuddin and P (2020), who found that many SMEs adopt automation reactively, without a long-term strategy. The current findings echo by (De Bruyn et al., 2020), who suggested that automation's success in SMEs depends heavily on integration with CRM and other systems. In this review, it was evident that isolated adoption leads to data fragmentation and inconsistent campaign execution. Compared to Ljepava (2022), who noted improvements in customer targeting through automation, the current review highlights gaps in segmentation and behavioral trigger usage, suggesting limited use of more sophisticated features. This supports the view of Tiautrakul and Jindakul (2019), who emphasized the need for better training and vendor support to ensure deep system usage. Overall, while the promise of automation is acknowledged, the review reveals that achieving its full potential remains a challenge in the SME landscape, largely due to strategic and operational gaps not addressed in earlier studies.

Although previous literature has praised Artificial Intelligence (AI) as a revolutionary tool for marketing transformation (Mariani et al., 2021; Tiautrakul & Jindakul, 2019), this review finds that AI adoption in SMEs remains mostly experimental and superficial. Earlier studies, such as Jarek and Mazurek (2019), identified predictive analytics, chatbots, and recommendation engines as game changers in customer interaction and campaign precision. However, the current review found that SMEs primarily access AI through pre-packaged features embedded within CRM or automation platforms, with limited understanding of the models powering these capabilities. This contrasts with the more optimistic outlook by Moradi and Dass (2022), who suggested growing maturity in AI-enabled decision-making. Instead, the review aligns more closely with the cautious stance of Gonçalves et al. (2023), who noted barriers such as data illiteracy, lack of technical infrastructure, and skepticism around algorithm transparency. Moreover, ethical concerns—previously discussed by Tiautrakul and Jindakul (2019)—remain largely unresolved, as SMEs seldom implement AI governance frameworks or interpretability protocols. Unlike large firms, SMEs do not typically have the resources to validate AI outcomes or rectify model biases. While some success cases were identified, the limited application of advanced AI features indicates that the technology's full potential in SMEs is far from realized. This suggests that the AI maturity curve in small businesses is slower and more fragmented than earlier projections anticipated, reinforcing the need for context-specific strategies and support mechanisms to enable meaningful adoption.

Consistent with prior studies, organizational factors such as leadership vision, digital culture, and employee skill levels are reaffirmed in this review as critical determinants of MarTech success (Elhajjar et al., 2020). This supports the assertion by Eze et al. (2014) that SMEs with committed leadership and a culture of digital learning are more likely to adopt and scale MarTech stacks effectively. The review also extends these findings by emphasizing the role of change management, which was insufficiently explored in earlier studies. Whereas previous research often highlighted barriers to technology use,

this review identifies proactive organizational practices—such as employee inclusion in decision-making and formal change planning—as success factors. The findings challenge the notion by Awa et al. (2015)that MarTech outcomes depend primarily on tool selection, instead showing that implementation strategy and user alignment are more predictive of long-term adoption. Compared to Ramdani et al. (2009), who focused on CRM-centric leadership roles, this review expands the perspective to include cross-functional coordination and budget alignment. Moreover, the critical role of internal training, echoed by Eze and Chinedu-Eze (2018), is amplified in this review through evidence that skill development directly correlates with feature utilization and campaign sophistication. Thus, organizational readiness is not just a precondition but a sustaining factor for MarTech evolution, reinforcing the need for structural and cultural transformation within SMEs.

The current findings echo the technological concerns previously raised by Ihua (2009) and Higón, (2011) , confirming that system integration and interoperability remain major challenges in MarTech adoption. The review found that SMEs often struggle with fragmented systems, leading to redundant data entry, inconsistent campaign execution, and poor analytics integration. These outcomes corroborate the earlier conclusions of Awa et al. (2015), who identified platform compatibility as a determinant of marketing agility. Unlike earlier studies that often treated integration as a secondary concern, this review positions it as a central factor influencing performance outcomes. The findings also validate the work of Awa and Ojiabo (2016), who emphasized the need for plug-and-play solutions in the SME context. However, this review extends their arguments by showing that even cloud-based tools can pose integration difficulties when SMEs lack internal IT support. Moreover, the review builds on Higón (2011) by highlighting how incompatibility issues discourage SMEs from adopting additional MarTech components, thus stalling stack expansion. These insights suggest that technology vendors must prioritize compatibility features, onboarding support, and integration simplicity to support the SME segment more effectively. In summary, technological integration is not merely a convenience but a strategic necessity in realizing the full potential of MarTech stacks in resource-constrained firms.

Environmental and institutional factors, including customer expectations, competition, and policy incentives, are confirmed in this review as powerful forces shaping SME decisions regarding MarTech adoption. These findings align with Awa et al. (2015), who emphasized the role of environmental dynamism in accelerating digital transformation. The current review expands upon their work by identifying how customer behavior in digital channels acts as a direct catalyst for adopting automation, CRM, and AI tools. In sectors like retail and tourism, SMEs responded to heightened consumer demand for personalized, multichannel experiences by investing in MarTech despite internal limitations. However, this review also uncovers evidence of institutional drag—echoing the observations of Federici (2009)—in sectors bound by legacy systems or regulatory complexity. The influence of government incentives, largely underexplored in earlier literature, was shown in this review to be significant in driving adoption, particularly in regions with active digitalization programs. Furthermore, SMEs embedded in digitally mature ecosystems—such as innovation hubs—demonstrated higher adoption rates compared to those in peripheral or rural areas. Compared to earlier studies focused on internal readiness, the current review highlights that MarTech adoption is equally shaped by extrinsic pressures, suggesting a need for a dual-lens approach that considers both internal capacity and environmental conditions.

A persistent issue identified in both the current and earlier literature is the geographic imbalance in MarTech research, particularly the underrepresentation of SMEs in emerging and developing economies. The findings confirm the conclusions of Yunis et al. (2017)that most empirical studies focus on SMEs in North America and Europe, limiting the generalizability of models developed in those contexts. While earlier studies such as (Eze et al. (2019) acknowledged infrastructural barriers, this review adds new insights into cultural, linguistic, and affordability-related challenges that affect MarTech adoption in regions such as Asia, Africa, and Latin America. Unlike studies conducted in developed economies, where data accessibility and vendor support are taken for granted, SMEs in emerging markets often contend with fragmented internet access, limited exposure to digital tools, and informal business practices. The review also supports Kurnia et al. (2015) , who called for more localized research methodologies and policy-inclusive frameworks. In addition, this review reveals a scarcity of comparative studies between developed and emerging contexts, which hinders the development of adaptive MarTech strategies for diverse SME ecosystems. The lack of region-specific case studies, practical toolkits, and policy integration models suggests a pressing need for

researchers to broaden their geographic focus. Only then can the field provide truly global insights into MarTech adoption that account for economic, cultural, and institutional diversity.

CONCLUSION

This systematic review underscores the multidimensional nature of MarTech stack adoption in SMEs, revealing a landscape shaped by foundational tools like CRM, expanding capabilities through automation, and emerging interest in AI. While CRM remains the most widely adopted and integrated component due to its proven value in customer management and sales tracking, marketing automation and AI tools show significant promise yet suffer from underutilization, driven largely by capability constraints, lack of integration, and strategic misalignment. Organizational factors, particularly leadership commitment, digital culture, and workforce skills, consistently emerged as core enablers of adoption success, validating prior research while highlighting the need for stronger change management and internal coordination mechanisms. Technological integration challenges, including system incompatibility and fragmented data environments, continue to hamper performance outcomes and prevent SMEs from realizing the full potential of their MarTech investments. Additionally, external influences such as competitive pressure, consumer behavior, and policy incentives play a pivotal role in accelerating or delaying adoption, while institutional limitations and regional disparities—especially in emerging markets—remain critical areas of concern. The review also identifies substantial gaps in longitudinal research, geographic representation, and integrative theoretical models, calling for more context-sensitive, holistic investigations. Altogether, the findings offer a comprehensive understanding of the current state and challenges of MarTech adoption in SMEs, providing a foundation for both scholarly advancement and practical intervention in fostering digital marketing maturity across diverse economic contexts.

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