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Digital Entrepreneurship and Online Digital Marketing Strategies for SMEs: Technology-Organization-Environment (TOE) Model

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Abstract

The rapid expansion of the digital economy has created a new investment landscape defined by digital entrepreneurship. This study investigates the profound impact of online digital marketing strategies on Nigerian small and medium-sized enterprises (SMEs), highlighting how effective adoption enhances revenue generation and customer engagement. Evidence from the research shows that many SMEs experienced significant increases in turnover following the integration of digital marketing tools, underscoring their transformative potential. Guided by the Technology-Organization-Environment (TOE) framework, the study demonstrates how SMEs can strategically embrace digital activation to strengthen competitiveness and achieve sustainable growth. A random sample of 450 SMEs was drawn from a population of 500 businesses in the study area, with 90 percent of responses deemed valid for analysis. Findings reveal that 52 percent of SMEs reported annual revenues increase between 3million and 5million Naira after adopting digital marketing, compared to lower earnings prior to digital marketing implementation. The results confirm that leveraging technology, organizational readiness, and environmental adaptation through the TOE framework provides SMEs with a structured pathway to optimize digital entrepreneurship, expand market reach, and secure long-term resilience in the evolving digital economy.

Keywords: Digital Entrepreneurship; SMEs; Technology-Organization-Environment (TOE) Framework; Artificial Intelligence (AI); Social Media Platforms; Digital Banking

1. INTRODUCTION

Small and Medium-sized Enterprises (SMEs) are independently managed businesses with limited scale in workforce and capital, playing a vital role in economic development by fostering innovation, generating employment, enhancing productivity, and contributing significantly to national income and sustainable growth [1]. SMEs are crucial to innovation, job development, and economic growth since they employ a sizable portion of the global workforce and make a substantial contribution to employment creation[2]. By assisting regional businesses and participating in competitive markets, SMEs strengthen economic resilience. As a result, governments and organizations have been forced to concentrate on

policies that support their sustainability through financial incentives, digital transformation, and entrepreneurship programs, realizing their potential to promote sustainable economic growth [3]. Scaling operations in a market that is becoming more digital, however comes with both opportunities and difficulties. One of the most effective ways for SMEs to increase their reach, improve brand awareness, and maximize consumer interaction is through the use of online digital marketing. By identifying important technological, organizational, and environmental aspects that influence strategic decisions, the Technology-Organization-Environment (TOE) framework offers a structured way to better understand the factors impacting SME adoption of digital marketing [4]. SMEs looking to use digital marketing for sustainable growth might use this framework as a model by offering SMEs a methodical basis for embracing digital marketing, the TOE framework guarantees an integrated approach to organizational preparedness, technology innovation, and environmental adaption. SMEs may sustain competitive advantages in the changing digital economy, expand their operations, and improve consumer outreach by using this framework strategically. The TOE framework provides SMEs with a structured methodology for adopting digital entrepreneurship and online marketing strategies effectively [5].

SMEs have increasingly transformed into adopting advanced technologies such as artificial intelligence, automation, and data analytics, which strengthen their digital visibility, improve customer interaction, and simplify business processes [6]. The success of these initiatives, however, depends largely on organizational preparedness, including strong leadership commitment, investment in workforce digital skills, and effective allocation of resources to support innovation. At the same time, external environmental conditions, such as shifting consumer preferences, competitive market pressures, and evolving regulatory frameworks, play a decisive role in shaping how SMEs embrace and adapt to digital strategies. Within this context, the TOE framework provides a structured pathway for SMEs to navigate digital transformation, offering guidance on balancing technological innovation, organizational readiness, and environmental adaptation [7]. Despite challenges such as limited budgets, technological barriers, and complex regulations, the TOE framework enables SMEs to pursue sustainable growth and remain competitive in the digital economy. Businesses can attain long-term competitiveness, sustainable growth, and enhanced digital marketing efficacy by adopting innovation, investing in staff advancement, and keeping to market rules. SMEs that consistently embrace technological innovation, nurture creativity, and respond effectively to shifting market demands will continue to lead in digital entrepreneurship, ensuring resilience in the rapidly evolving digital economy. This research provides critical insights into how SMEs can strategically adopt and implement digital entrepreneurship through the TOE framework, enabling them to overcome barriers and capitalize on emerging opportunities in the online marketplace. This study emphasizes that long-term success depends on understanding the dynamic interaction between technological advancement, organizational readiness, and external environmental forces such as competition, consumer behavior, and regulatory policies. Globally, SMEs dominate economic structures, particularly in developing nations where government employment capacity is limited, representing nearly 90 percent of businesses and contributing over 50 percent of employment in Africa [8]. By driving employment, fostering innovation, and advancing sustainable development, SMEs highlight digital transformation as a crucial pathway to inclusive growth and competitiveness, enabling them to contribute nearly 40 percent of GDP in emerging economies, a share that rises substantially when the economic impact of informal enterprises are fully considered [9]. Rahman, Lal, and Rena [10] project that by 2030 the global economy must generate 600 million new jobs to absorb workforce growth, positioning SME development as a critical priority for governments seeking sustainable employment and inclusive economic advancement [11].

This study advances AI-powered tools revolutionize digital marketing by enabling personalized customer engagement, predictive analytics, and automated campaign management that significantly enhance business performance. As a disruptive force, artificial intelligence is redefining industries, reshaping occupational structures, and transforming organizational practices, driving SMEs and larger enterprises alike to adapt to rapid technological progress and evolving consumer expectations in order to remain competitive and sustainable within the dynamic digital economy [12]. AI-driven technologies empower SMEs to strengthen digital marketing effectiveness by leveraging automated content creation, predictive analytics, and personalized customer engagement, enabling them to compete more effectively with larger enterprises and achieve greater efficiency, scalability, and market responsiveness in the digital economy [12]. AI-driven chatbots provide immediate and personalized customer support, while machine

learning enhances advertising precision by identifying consumer patterns and optimizing targeting for improved brand visibility. Social media algorithms further strengthen outreach by detecting emerging trends and amplifying engagement across diverse platforms. In addition, AI-powered search engine optimization (SEO) tools elevate website rankings, attract organic traffic, and enable SMEs to achieve higher returns on investment while reducing operational costs through data-driven decision-making. These technologies empower SMEs to adapt quickly to shifting digital environments, scale their operations efficiently, and sustain growth in highly competitive markets. Examining the integration of AI tools reveals their potential to address resource limitations, streamline workflows, and open new avenues for expansion. The study underscores the importance of developing accessible and scalable AI solutions tailored to the specific challenges faced by SMEs, ensuring that even resource-constrained businesses can benefit from advanced technologies. By adopting AI strategically, SMEs can unlock opportunities for innovation, strengthen customer relationships, and enhance market influence. In today's rapidly evolving digital economy, online marketing has become a fundamental driver of business growth and brand recognition, positioning AI not merely as a supportive tool but as a transformative force shaping the future of entrepreneurship and competitiveness [13]. The fusion of cutting-edge technologies with sophisticated data analytics has fundamentally transformed organizational communication, allowing businesses to craft highly targeted and efficient marketing strategies that resonate with specific audiences. Leveraging digital tools such as search engine optimization, artificial intelligence, and social media platforms, enterprises can decode consumer behavior, refine campaign effectiveness, and monitor performance instantly, thereby enhancing engagement, competitiveness, and long-term sustainability in the dynamic digital marketplace.

Internet-driven platforms provide a robust digital infrastructure that facilitates intelligent data exchange, empowering e-commerce transactions, targeted marketing, information access, and advanced data mining, thereby enabling businesses to thrive and remain competitive within today's rapidly evolving and highly contested online marketplace [14]. Within the contemporary ICT-enabled consumer-centric economy, marketing stands as a foundational element of SME strategy, driving sustainable expansion, strengthening competitive advantage, and fostering enduring resilience amid increasingly dynamic and rapidly evolving market environments [15]. This study seeks to provide SME owners with a practical framework for navigating the complexities of the digital economy, enhancing their online visibility, refining customer experiences, and ultimately achieving sustainable growth in an increasingly technology-driven age. It pays particular attention to the challenges faced by SMEs in developing nations such as Nigeria, where limited resources, infrastructural gaps, and regulatory constraints often hinder their pursuit of economic sustainability. By emphasizing the critical role SMEs play in national and global economies, the research underscores how digital entrepreneurship can transform the sector, offering innovative pathways for expansion, competitiveness, and resilience. The TOE framework emerges as a strategic model that enables SMEs to overcome barriers, integrate digital tools more effectively, and align organizational readiness with external market demands. Policymakers are encouraged to leverage the TOE framework to design initiatives that strengthen SME competitiveness, accelerate digital adoption, and bridge persistent technology divides. Empowering SMEs to embrace emerging technologies through structured approaches not only fosters innovation but also ensures long-term prosperity and economic stability in developing markets. By adopting customer-centric strategies and harnessing digital platforms, SMEs can uncover new opportunities for growth, secure stronger market positions, and maintain competitiveness. With supportive economic climates and strategic planning, SMEs are well positioned to build a prosperous future, driving inclusive development and sustaining their relevance in the rapidly evolving digital landscape. This paper is structured thematically into introduction, background of the study, research objectives, theoretical framework, research question, research design and methodology, data analysis, discussion of research finding, future research focus, recommendation and conclusion.

2. Background Of The Study

Digital entrepreneurship refers to the process of creating, developing, and managing businesses that primarily operate online, leveraging digital technologies to drive innovation, market engagement, and revenue generation [16]. Entrepreneurs in this space utilize platforms such as e-commerce, social media,

AI and cloud computing to reach global audiences efficiently. By lowering the cost of physical infrastructure and enabling scalability, digital entrepreneurship revolutionizes business. Digital businesses function online by utilizing cloud computing, e-commerce platforms, and remote collaboration, in contrast to traditional business models that necessitate shops, warehouses, or offices to effect business transactions [17]. This increases market reach internationally and reduces overhead costs. Efficiency gains from automation, AI, and digital marketing enable companies to grow quickly without incurring corresponding cost increases. Applications, online courses, and platform as a service (PaaS), infrastructure as a service(IaaS) and software as a service (SaaS) are examples of digital products that produce income without inventory restrictions [18]. By promoting accessibility, affordability, and flexibility, this innovation enables people to start businesses with little initial outlay of funds. Key aspects include digital marketing strategies, data-driven decision-making, and technology adoption for competitive advantage. Digital entrepreneurship plays a crucial role in economic growth by fostering innovation, enhancing accessibility, and enabling small businesses to compete in dynamic, technology-driven marketplaces[19] . Digital entrepreneurship, in contrast to traditional business, allows SMEs to compete with larger enterprises by providing scalability, flexibility, and efficiency. SMEs can experience revolutionary growth through digital entrepreneurship and online digital marketing tactics, which promote innovation, scalability, and competitiveness in the digital economy. With the help of the TOE framework, SMEs may better understand the obstacles to digital adoption, align organizational structures, and adapt to changing market conditions. Through the integration of AI-powered tools, social media interaction optimization, and consumer trend analysis, SMEs can enhance brand awareness, create sustainable digital companies, and succeed over the long haul in an increasingly digital economy.

By enabling SMEs to take advantage of affordable business solutions, automate marketing procedures, and reach a worldwide audience with no infrastructure investment, the rise of e-commerce, social media, and digital platforms has contributed to the expansion of digital entrepreneurship. Through the use of creative customer engagement strategies and flexible business structures, digital entrepreneurship helps companies to overcome economic obstacles. Due to their substantial contributions to employment, innovation, and market diversity, SMEs are the foundation of the global economy. However, SMEs frequently face difficulties with funding, resources, and access to cutting-edge technologies. Because digital entrepreneurship allows SMEs to maximize business operations through online tools and marketing methods, it provides a workable option to drive the economy and household income. The TOE framework provides a structured approach for SMEs to adopt digital entrepreneurship and online marketing strategies effectively [20]. By assessing technological innovations, organizational readiness, and environmental influences, SMEs can refine their digital strategies to enhance business growth. Practical contributions of TOE include identifying suitable technologies, strengthening internal capabilities, and adapting to market dynamics. For SMEs to thrive in digital entrepreneurship, they must integrate AI-driven marketing tools, social media engagement, and data analytics while fostering organizational adaptability and responding to external trends. The TOE framework serves as a valuable tool for guiding SMEs toward sustainable digital transformation, ensuring they remain competitive in an evolving market. SMEs are essential to innovation, employment creation, and economic growth. In order to stay competitive, SMEs need to modify their business models as the digital transformation picks up speed. Digital entrepreneurship, driven by online marketing strategies, enables SMEs to connect with customers more effectively, streamline operations, and achieve scalable growth in competitive markets. But implementing digital tools and technologies calls for a methodical approach. According to [21], TOE framework provides a thorough framework for examining how SMEs incorporate digital solutions. With a focus on how SMEs can use technology, organizational capabilities, and environmental elements to their advantage, this study examines the useful contributions of the TOE framework to digital entrepreneurship and online digital marketing techniques. Their use of digital entrepreneurship improves financial sustainability, market expansion, and productivity. SMEs may compete globally, reach a wider audience, and improve consumer engagement by utilizing online marketing. Automation and AI-driven analytics are two examples of digital technologies that increase operational efficiency while lowering expenses and increasing income [22]. Through funding and training initiatives, government policies that support digital transformation also encourage the growth of SMEs. Although issues like market competitiveness and financial limitations still exist, SMEs' flexibility builds resilience. In the end, the

digital transformation of SMEs promotes technological advancement in both domestic and international markets for economic diversification, and higher employment rectification [23].

3. Research Objectives

This research aims to explore how the TOE framework supports SMEs in adopting digital entrepreneurship and online marketing strategies. The objectives include examining the role of emerging technologies in enhancing SMEs' digital marketing efforts, identifying organizational factors that influence successful adoption, and assessing external environmental forces such as market competition and government policies. This study seeks to provide SMEs with a comprehensive framework for effectively adopting digital entrepreneurship and online marketing approaches, using the TOE paradigm as its foundation. The study examines how organizational capabilities, technological innovations, and environmental dynamics collectively shape the digital transformation journey of SMEs. Internal organizational factors such as leadership commitment, employee expertise, and resource allocation are highlighted as critical enablers of successful digital adoption. At the same time, external drivers including artificial intelligence, automation, social media platforms, and e-commerce tools are identified as transformative technologies that enhance competitiveness and operational efficiency. The study also considers environmental influences such as evolving consumer behavior, regulatory requirements, and market competition, which significantly impact SMEs' ability to adapt and thrive in digital ecosystems. By integrating these dimensions, the TOE-based framework equips SMEs with strategies to strengthen their online presence, refine marketing approaches, and secure a competitive advantage in fast-changing digital markets. The findings emphasize that overcoming barriers to digital adoption requires innovation, strategic planning, and proactive engagement with emerging technologies. By evaluating challenges and opportunities, this research provides practical insights for SMEs to leverage digital tools effectively, ensuring sustainable business growth and long-term economic impact. The five research objectives of this paper are itemized as followed:

i.   Assess the technological adoption of digital entrepreneurship in SMEs, focusing on AI, automation, e-commerce platforms, and social media marketing tools.

ii.   Investigate the role of organizational readiness, leadership, financial investment, employee expertise, and strategic alignment in facilitating digital transformation in SMEs.

iii.   Analyze environmental factors such as market trends, competitive pressures, regulatory policies, and digital infrastructure that influence SMEs' online marketing adoption.

iv.   Evaluate the impact of digital marketing strategies on SME business growth, brand visibility, customer engagement, and long-term sustainability in competitive markets.

v.   Develop a TOE-based framework to guide SMEs in optimizing digital entrepreneurship and marketing strategies, ensuring effective resource utilization and scalability.

4. Research Questions

This study formulated five research questions examining how AI, digital marketing, and the integration of the TOE framework collectively influence digital transformation and contribute to the long-term sustainability of SMEs in evolving business environments.

How does AI adoption impact the digital transformation process for SMEs, and what are the key technological challenges they face?

What role does the TOE framework play in facilitating SMEs' successful integration of digital marketing strategies?

How do environmental factors (market competition, regulations, and consumer behavior) influence SMEs' digital transformation using AI-driven solutions?

What are the key organizational barriers SMEs encounter when implementing AI and digital marketing, and how can they be addressed using the TOE framework?

How can SMEs leverage AI-powered analytics within digital marketing to enhance customer engagement and optimize business growth strategies?

5. Theoretical Framework

Adopting the TOE framework enables SMEs to strategically advance digital entrepreneurship and online marketing, strengthening local industries while promoting sustainable business growth through effective technological integration, organizational preparedness, and adaptability to external environmental forces [5]. The TOE framework offers SMEs a systematic approach to digital transformation by examining the interplay of technology, organization, and environment, thereby guiding the adoption of innovative marketing tools and strategies. Advances such as AI-driven analytics, automation, and personalized campaigns enhance customer engagement and expand outreach, while organizational readiness, rooted in leadership commitment, skilled personnel, and effective resource management, dictates the success of these initiatives [12]. At the same time, external dynamics including market competition, shifting consumer behaviors, and regulatory demands shape adoption rates, collectively enabling SMEs to strengthen resilience, drive growth, and secure long-term relevance in the digital economy. According to [24], TOE framework streamlines digital marketing tools, boosts efficiency, and strengthens competitiveness, enabling SMEs to refine strategies, expand operations, and sustain growth in dynamic digital markets. The incorporation of artificial intelligence into digital marketing and data analytics has profoundly reshaped SME operations, driving smarter decision-making, enhancing efficiency, and revolutionizing customer engagement within competitive digital environments. According to [25], AI-powered marketing solutions enhance operational efficiency, refine advertising approaches, and strengthen customer loyalty, enabling businesses to achieve greater precision, effectiveness, and sustained engagement within increasingly competitive digital marketplaces. Artificial intelligence is anticipated to profoundly reshape digital marketing by delivering advanced personalization, dynamic customer engagement, and real-time analytics, empowering SMEs to sustain competitiveness and achieve growth within the rapidly evolving and increasingly ecommerce environment [26]. The emergence of digital entrepreneurship has reshaped the global economic paradigm, positioning digital marketing strategies as indispensable for the growth and long-term sustainability of small and medium-sized enterprises. Within this evolving landscape, the TOE framework has gained recognition as a robust analytical model for examining how businesses adopt and integrate technological innovations, particularly in relation to digital entrepreneurship and online marketing practices. For SMEs, the TOE framework offers a systematic lens to evaluate the interplay of technological capabilities, organizational preparedness, and external environmental pressures, thereby clarifying the drivers of digital transformation and marketing success. By harmonizing these dimensions, SMEs can strategically deploy digital tools to strengthen brand visibility, foster deeper consumer engagement, and accelerate business expansion while maintaining resilience in competitive and rapidly changing markets [27].

By encouraging agility, scalability, and cost-effectiveness, this all-encompassing strategy enables companies to grow their online presence while remaining competitive in the ever-changing market [28]. Social media amplifies brand visibility, customer interaction, and targeted advertising, helping SMEs reach wider audiences cost-effectively. According to [29], digital marketing through SEO, content creation, and personalized advertising boosts growth, retention, and conversion rates. By integrating these elements, SMEs maximize agility, scalability, and competitive advantage, driving sustainable business development in the digital age. Digital transformation drives innovation in SMEs by integrating AI, digital marketing, and the TOE framework. AI enhances efficiency through automation, predictive analytics, and customer personalization, allowing SMEs to optimize decision-making and streamline operations. Digital marketing expands brand reach using SEO, targeted advertising, and social media engagement, helping SMEs connect with global audiences at lower costs [30]. Digital marketing expands brand reach using SEO, targeted advertising, and social media engagement, helping SMEs connect with global audiences at lower costs. According to [31], TOE framework supports structured adoption technology ensures access to cutting-edge tools, organization fosters leadership-driven digital readiness, and environment evaluates market trends and competition for informed strategic moves. By combining these elements, SMEs can scale operations, enhance customer experiences, and adapt swiftly to evolving market demands. This transformation fosters agility, competitiveness, and long-term growth, empowering SMEs to thrive in the digital economy. Through AI and digital strategies, businesses maximize efficiency while unlocking new revenue streams. The TOE framework essentially gives SMEs a systematic approach to digital entrepreneurship, guaranteeing long-term success and sustainable growth

in the digital economy [32]. By evaluating the interconnected dimensions of technology, organization, and environment, as depicted in Figure 1, SMEs can strategically refine digital strategies to achieve sustainable growth, strengthen brand recognition, and enhance customer engagement in competitive markets.
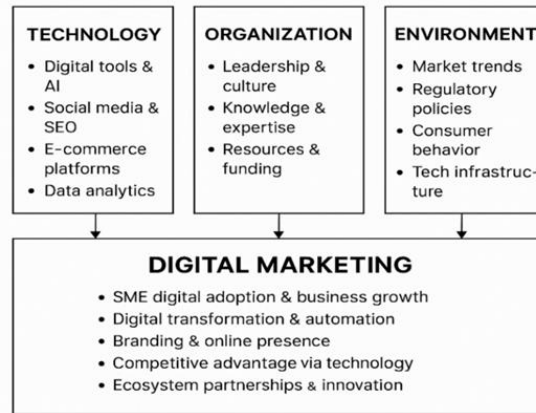
Figure 1. TOE Framework for Advancing Digital Marketing, Author Illustration

i.   **Technology:** Within the Technology dimension of the TOE framework, the focus lies on the digital infrastructure available to SMEs and its profound influence on entrepreneurial innovation and marketing performance. To remain competitive in the rapidly evolving digital marketplace, SMEs must strategically adopt advanced technologies that enable them to penetrate markets more effectively and sustain growth. Modern tools such as artificial intelligence and automation streamline marketing processes, while applications like chatbots, predictive analytics, and AI-driven customer insights foster personalized engagement and strengthen customer loyalty. Furthermore, the deployment of machine learning algorithms to analyze vast datasets enhances targeting precision, empowering SMEs to design impactful campaigns that resonate with consumer needs. Collectively, these technological capabilities serve as critical enablers of digital transformation, positioning SMEs to thrive in dynamic and competitive environments [11]. For SMEs striving to thrive in competitive digital markets, prioritizing search engine optimization is essential to amplifying online visibility and strengthening brand presence. AI-powered SEO tools enhance website rankings and improve discoverability, ensuring businesses are more easily found by potential customers. At the same time, social media algorithms expand outreach by tailoring content to specific audiences, fostering meaningful engagement and loyalty. Complementing these strategies, e-commerce platforms enable SMEs to broaden market reach, reduce reliance on physical storefronts, lower operational costs, and provide greater accessibility for diverse consumer segments.

ii.   **Organizational Dimension:** The organizational dimension of the TOE framework emphasizes the internal dynamics that shape how SMEs adopt and integrate digital technologies into their operations. Central to this process are factors such as financial investment, workforce readiness, leadership commitment, and the cultivation of an innovative culture that supports entrepreneurial growth. The strategic direction of SMEs in digital marketing largely depends on the vision and decisions of their executives, who must recognize the transformative potential of digital tools for expansion and competitiveness. Effective leadership ensures the allocation of resources toward staff training, infrastructure development, and fostering creativity within the organization. A digitally competent workforce is essential for managing complex tasks like data analytics, social media engagement, and AI-driven marketing campaigns [33]. However, many SMEs struggle with limited digital literacy, which hinders their ability to fully leverage advanced technologies. Investing in workshops, seminars, and online training programs strengthens digital skills, thereby enhancing marketing effectiveness and ensuring successful implementation of digital strategies [34]. Enterprises can maximize digital marketing effectiveness while avoiding excessive costs by strategically allocating resources, leveraging cloud-based platforms, targeted social media advertising, and affordable automation technologies to enhance outreach and operational efficiency [35]. Partnerships with technology vendors, reinforced by government funding programs, alleviate financial burdens, granting SMEs access to advanced tools,

enhancing digital proficiency, and fostering sustainable growth even within restrictive budgetary environments.

iii. **Environmental Dimension:** The environmental dimension of the TOE framework evaluates external influences, such as regulatory policies, shifting consumer behaviors, evolving industry dynamics, and competitive pressures, that collectively shape SMEs' adoption of digital technologies and critically determine the formulation and effectiveness of their digital marketing strategies [36]. In today's highly competitive digital environment, SMEs face mounting pressure to establish a robust online presence that distinguishes them from larger corporations with far greater marketing budgets. To remain relevant, these enterprises must embrace customer-centric approaches, personalized branding, and precisely targeted advertising strategies that highlight their unique value. Recognizing the critical role SMEs play in driving economic growth, many governments have introduced supportive policies, including tax incentives, technology investment subsidies, and digital training programs, to facilitate their transition into digital entrepreneurship. Such measures enable SMEs to adopt advanced tools and practices more seamlessly, reducing barriers to innovation. At the same time, evolving consumer preferences for online shopping, tailored experiences, and rapid delivery are reshaping marketing strategies, demanding agility and responsiveness. The rise of influencer marketing, mobile commerce, and AI-driven engagement has further transformed business-consumer interactions, compelling SMEs to adapt quickly [37]. By aligning with these shifts, SMEs strengthen market positioning and foster lasting customer loyalty.

5.1. Artificial Intelligence Revolutionizing Digital Marketing for SMEs

Artificial intelligence is reshaping entrepreneurship and digital marketing by equipping SMEs with cutting-edge technologies, fostering organizational development, and enhancing adaptability to dynamic markets, all strategically structured through the integrative TOE framework [38]. AI-driven solutions refine data analytics, streamline automation, and advance personalization, empowering SMEs to strengthen digital marketing strategies with greater precision and efficiency. Successful integration requires visionary leadership, strategic financial planning, and workforce reskilling, while adherence to regulations, competitive analysis, and consumer-focused personalization enable SMEs to navigate environmental pressures, ensuring adaptability, resilience, and sustainable growth in an increasingly dynamic digital marketplace [39]. Although technological challenges persist, artificial intelligence presents unmatched opportunities for growth, redefining the future of entrepreneurship and digital marketing. SMEs that integrate AI through TOE-based strategies strengthen their competitive positioning, build consumer trust, and achieve sustainable success in the dynamic digital economy. By reshaping entrepreneurial possibilities within online marketing, AI enhances the synergy of technological, organizational, and environmental dimensions, driving innovation and adaptability. Intelligent automation and advanced analytics boost productivity, reduce operational costs, and refine personalized marketing approaches, while AI-driven agility streamlines workforce training, accelerates digital adoption, and supports informed decision-making. This adaptability enables SMEs to respond effectively to shifting market conditions, regulatory requirements, and evolving consumer expectations, ensuring resilience and long-term growth in competitive digital landscapes [40]. By embedding artificial intelligence within the TOE framework, SMEs expand scalability, strengthen competitive advantage, and deepen customer engagement, ensuring resilience and long-term success in dynamic digital landscapes. AI accelerates entrepreneurial growth, strategic marketing, and innovation, amplifying the reach and accessibility of digital transformation while enhancing efficiency, precision, and data-driven accuracy within the technological dimension of TOE [41]. The organizational component evaluates how SMEs integrate AI into leadership structures, workforce training, and financial planning, emphasizing that digital readiness and employee competencies are pivotal to successful adoption in marketing and entrepreneurship. Strong organizational preparedness, coupled with a culture of innovation, determines the effectiveness of AI-driven initiatives and the ability to sustain competitive positioning. Meanwhile, the environmental dimension examines external influences, consumer trends, regulatory frameworks, and market competition, which shape AI-enabled strategies. By leveraging predictive analytics, SMEs can anticipate industry shifts, adapt business models to evolving supply-demand dynamics, and align operations with external pressures, fostering sustainable growth [42].
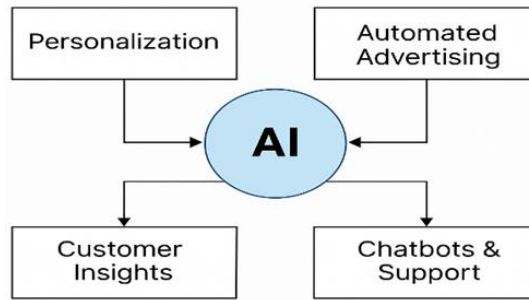
Figure 2. AI-Driven Evolution of SME Digital Marketing within the TOE Framework, Author illustration.

As illustrated in Figure 2, artificial intelligence is revolutionizing digital marketing by enabling seamless automation, tailored customer experiences, and strategic decision-making powered by advanced data analytics and predictive insights [43]. Artificial intelligence harnesses massive volumes of consumer data, allowing SMEs to sharpen audience segmentation, refine marketing approaches, and predict behavioral patterns with remarkable accuracy. AI-driven recommendation engines generate personalized product suggestions and tailored content, while advanced chatbots deliver immediate customer support, strengthening engagement and satisfaction [44]. Through machine learning, programmatic advertising optimizes ad placements, ensuring campaigns achieve greater efficiency and improved returns on investment. At the same time, AI accelerates search engine optimization and enables the production of high-quality, large-scale digital content that enhances visibility and brand presence. The rapid expansion of social media platforms, combined with innovative digital marketing strategies, has significantly influenced the rise of digital entrepreneurship, fostering creativity, adaptability, and competitiveness among SMEs in the evolving marketplace [45]. Entrepreneurs in today's digital economy rely on online tools to expand their reach, engage audiences, and build scalable businesses. These advancements have reshaped traditional marketing models, introducing both fresh opportunities and complex challenges. Modern digital strategies now prioritize data-driven approaches, enabling highly targeted advertising campaigns that maximize efficiency and impact. With the help of big data analytics and AI, business owners gain deeper insights into customer behaviors, preferences, and patterns, fueling personalized marketing that strengthens loyalty and engagement. Essential techniques such as SEO, pay-per-click advertising, email marketing, and content creation have become critical for visibility in competitive markets. Meanwhile, social platforms like Facebook, Instagram, Twitter, LinkedIn, and TikTok have revolutionized interaction, offering cost-effective ways to foster communities, promote brands, and connect directly with consumers. Features such as live streaming, storytelling, and influencer collaborations further empower businesses to craft compelling narratives and maintain real-time communication with their audiences.

5.2. The Economic Sustainability Impact of SMEs

SMEs are vital to economic sustainability because they promote financial inclusion, employment, and innovation. In the digital economy, efficiency and competitiveness are made possible by their capacity to adjust to new developments in technology. Small businesses generate employment, which lowers unemployment and promotes a more equitable distribution of income. Decentralized economic growth is promoted by their investments in area development and support for local suppliers. As SMEs have access to alternate funding sources, microfinance, and digital banking, financial inclusion is improved and long-term stability is guaranteed. They prevent monopolization and guarantee a variety of customer options while making a substantial contribution to GDP through innovation and market competition. Sustainable business practices, including ethical labor policies and eco-friendly operations, align SMEs with global sustainability goals. Their resilience to economic fluctuations enables recovery from financial crises, reinforcing long-term viability. Governments and stakeholders should continue supporting SMEs through policies and digital infrastructure, ensuring their ongoing contribution to stable and inclusive economic development. SMEs are integral to economic sustainability, driving employment, innovation, GDP growth, financial resilience, and responsible business practices. Their adaptability allows them to navigate market changes while fostering inclusive and stable economic development. In specific terms, the contribution of SMEs to the economy include;

i.   **Employment and Income Distribution:** SMEs significantly impact employment by generating jobs across various sectors, reducing unemployment, and ensuring more balanced income distribution. Their decentralized operations provide opportunities for local workers, preventing excessive migration to urban centers and strengthening regional economies. This employment diversity fosters inclusivity, empowering marginalized groups and contributing to social stability.

ii.   **Innovation and Competitive Growth:** SMEs are at the forefront of technological advancement, swiftly adopting digital tools to enhance productivity and market competitiveness. Leveraging digital marketing, e-commerce, and automation, they optimize resource utilization, improve service delivery, and contribute to industry innovation. Their agility allows them to adapt to shifting consumer trends, ensuring long-term sustainability in a dynamic economic landscape.

iii.   **Contribution to GDP and Market Development:** SMEs collectively account for a substantial portion of national GDP, stimulating economic activity and increasing market competitiveness. By preventing monopolization, they foster innovation, improve product quality, and offer diverse consumer choices. In addition, their involvement in international trade broadens economic opportunities, driving export growth and contributing to balanced global commerce.

iv.   **Financial Resilience and Inclusivity:** SMEs enhance economic resilience through financial inclusivity, benefiting from digital banking, microfinance, and alternative funding sources. Their ability to access capital through fintech solutions enables growth, crisis recovery, and operational sustainability. Their financial agility ensures long-term stability, preventing market stagnation and contributing to broader economic development.

v.   **Sustainability Practices and Social Responsibility**: Many SMEs integrate eco-friendly production, ethical labor policies, and sustainable business practices, aligning with environmental and social responsibility goals [11]. As consumer preferences shift toward sustainability, SMEs adopting green initiatives foster brand loyalty, strengthen customer engagement, and contribute to environmental conservation. Their commitment to sustainability ensures long-term business viability while promoting responsible resource management.

SMEs are recognized as the engines driving economic development globally, serving as stepping stones to industrialization in both developed and developing economies. They represent almost 90% of all businesses in these economies and contribute significantly through job creation, employment, and tax provision, as well as to the GDP. In developing countries, SMEs comprise 99% of all businesses, underlining their immense importance. In Africa, SMEs are particularly crucial, accounting for over 90% of all firms and contributing approximately 50% to the Gross National Product (GNP). They are a primary source of employment and income for about 80% of the world's population [46]. Specific contributions vary by country; for example, in Kenya, SMEs contribute 40%-50% of the GDP and employ 80% of the workforce, while in Ghana, they make up 70% of all businesses and 49% of GDP, employing 70% of the total workforce. Beyond these direct economic metrics, SMEs play a vital role in reducing poverty, offering affordable goods and services, and stimulating demand for goods, investment, and trade, thereby creating wealth. They are also significant for inventing and innovating new ideas and technologies, providing a platform for developing and commercializing new products. In general, SMEs are crucial for sustainable growth, economic development, and poverty reduction across African countries. SMEs are a major source of employment and income for about 80% of the global population. Specifically, micro businesses account for 30% of employment, small businesses 20%, while medium businesses provide 10%. In Africa, SMEs represent more than 90% of businesses and contribute approximately 50% to the GDP. For example, in Kenya, SMEs contribute 40% of the GDP, generate over 50% of new jobs, and account for 80% of the workforce. In 2003, SMEs provided employment to 3.2 million Kenyans [47].

Similarly, SMEs accounted for 70% of Nigerian industrial jobs and 95% of the manufacturing sector, while in Ghana they represent 70% of all businesses and employ 70% of the total workforce [48]. In Zambia, the sector comprises 97% of businesses and 18% of the workforce. It is also notable that more than 50% of employment in low and lower-middle-income countries comes from businesses with fewer than 100 employees. Table 1 demonstrates SMEs' contributions to GDP and employment across various countries in Africa. SMEs are active in every area of industrial development, including manufacturing, mining, services, agriculture, fisheries, and climate change. Nonetheless, the majority of SMEs are employed in the service sector, which makes about two-thirds of the workforce. SMEs also give Africa a platform to grow by serving as the bridge between small industries to huge, highly developed, and sophisticated industries. Through the provision of services and inputs to other industries and the direct delivery of goods and services to consumers, the industries play a crucial role in facilitating development. As a result, SMEs keep driving the economic development and sustainable expansion of African nations

[49]. While SMEs are important for economic development, their role is rarely formally spell-out with thousands of micro businesses still operating as informally and not recognized as economically viable.

Table 1: Selected African SMEs contributions to employment and GDP [50].

Countries	SMEs Contribution to the GDP(%)	SMEs Contributions to Employment (%)	SMEs Economic Significance
Ethiopia	3.4%	90%	In Ethiopia, SMEs play a vital role in economic development, contributing significantly to employment and GDP [51]. They account for over 90% of businesses and generate around 90% of employment. Their impact spans income generation, poverty reduction, and industrialization, positioning them as key drivers of national growth and sustainability.
Ghana	70%	49%	SMEs in Ghana are vital to the economy, contributing approximately 70% to the country's GDP and providing about 85% of manufacturing employment [52]. They dominate the informal sector, drive innovation, and serve as key engines for job creation, poverty reduction, and sustainable economic growth across diverse industries and communities.
Kenya	40-50%	80%	In Kenya, SMEs contribute approximately 40% to the national GDP and account for over 80% of employment [53]. They play a pivotal role in job creation, poverty reduction, and economic empowerment, especially within the informal sector. Their widespread presence across industries makes them essential drivers of sustainable development and innovation.
Nigeria	50%	70%	In Nigeria, SMEs contribute approximately 48% to the national GDP and account for about 84% of employment [54]. They form the backbone of the economy, driving innovation, entrepreneurship, and income generation. Their widespread presence across sectors makes them essential for economic diversification, poverty reduction, and sustainable national development.
Rwanda	20.5%	60%	In Rwanda, SMEs account for over 98% of all businesses, contribute approximately 33% to the national GDP, and employ more than 2.5 million people [55]. They are central to job creation, poverty reduction, and economic resilience, driving innovation across sectors such as agriculture, services, and technology.
South Africa	50-60%	60%	In South Africa, SMEs contribute approximately 34% to the national GDP and employ between 50% and 60% of the workforce [56]. Representing over 98% of all businesses, they are vital to job creation, innovation, and inclusive economic growth, especially within underserved communities and emerging sectors like retail, manufacturing, and services.
Tansania	60%	20%	In Tanzania, SMEs contribute between 27% and 35% to the national GDP and employ over 5 million people, representing around 50% of the workforce [57]. Comprising over 90% of all businesses, they drive growth across agriculture, manufacturing, and services, making them essential to economic development, job creation, and poverty reduction.
Zambia	70%	90%	In Zambia, SMEs represent 97% of all businesses, contribute approximately 70% to the national GDP, and account for 88% of employment [58] They are essential to economic diversification, job creation, and poverty reduction, playing a central role in driving inclusive growth across sectors such as agriculture, manufacturing, and services.
Uganda	75%	90%	In Uganda, SMEs account for over 90% of the private sector, contribute approximately 75% to the national GDP, and employ more than 3 million people [59]. They are central to entrepreneurship, job creation, and inclusive growth, driving innovation and resilience across diverse industries despite facing systemic challenges in finance and infrastructure.
Zimbabwe	40%	75%	In Zimbabwe, SMEs contribute over US$8.6 billion to the national GDP and employ approximately 4.8 million people, accounting for more than 75% of the workforce [60]. They dominate the business landscape, drive entrepreneurship, and serve as key engines of economic growth, poverty reduction, and inclusive development across diverse sectors.

While the global success of SMEs has been widely documented, their challenges, particularly in Africa, remain underexplored, leaving many entrepreneurs without crucial support [61]. As a result, these businesses face persistent obstacles that threaten their growth, with a high failure rate often occurring within the first year of operation. In many African countries, the mortality rate of SMEs remains very high, with a significant number of new businesses failing within their first year. For example, in Uganda, one-third of startups do not last beyond twelve months, while in South Africa, failure rates range from 50% to 95%, depending on the industry [62]. Chad also experiences high failure rates and is considered one of the most difficult countries for business due to unfavorable regulatory conditions [63]. Although Africa has made notable improvements in its business environment over the past decade, attracting investments from around the world, it remains one of the most challenging regions for SMEs. Entrepreneurs often face hostile legal requirements, high taxation, inflation, and unstable exchange rates, all of which make profitability and sustainability difficult. Compared to other global regions such as Eastern Europe, Central Asia, East Asia and Pacific, Middle East and North Africa, Latin America, and South Asia, Africa ranks lowest in ease of doing business for SMEs [64].

Transforming traditional SMEs into online digital SMEs has a profound impact on Africa's GDP [65]. By embracing digital tools such as e-commerce platforms, mobile banking, and cloud-based services, SMEs can expand their market reach, improve operational efficiency, and boost revenue generation [32]. This digital shift enables businesses to transcend geographic limitations, connecting with national and international customers, which drives export potential and foreign exchange earnings. Digital SMEs contribute to formalizing the informal sector, increasing tax compliance and broadening the fiscal base. Enhanced access to financial services through fintech and mobile money platforms allows SMEs to secure credit, invest in growth, and create jobs stimulating consumer spending and economic activity. Moreover, digitalization fosters innovation and competitiveness, encouraging entrepreneurship and attracting investment into emerging sectors like agritech, edutech, entertainment and healthtech in Sub-Saharan Africa. The cumulative effect is a more dynamic and inclusive economy. As more SMEs transition online, productivity rises, supply chains become more efficient, and digital literacy improves across the workforce. However, to fully realize these gains, governments must invest in digital infrastructure, cybersecurity, and education. In essence, the digital transformation of SMEs is not just a business upgrade it's a strategic engine for accelerating Africa's GDP growth and unlocking long-term economic resilience.

5.3. Digital Entrepreneurship and Digital Banking Inclusion in SMEs

Digital entrepreneurship marketing and banking inclusion are transforming the landscape of SMEs in Nigeria and Africa. With the proliferation of mobile technology and internet access, entrepreneurs are leveraging digital platforms such as social media, e-commerce sites, and mobile apps to reach wider audiences, reduce marketing costs, and build brand visibility. Digital banking inclusion empowers Nigerian SMEs by integrating them into the formal financial system through mobile apps, and fintech platforms [66]. It enables easy access to payments, savings, loans, and financial management tools, especially in underserved areas. SMEs benefit from improved cash flow, credit history building, and expanded customer reach. Platforms like Paystack and Flutterwave support digital transactions and business growth. Digital banking drives financial resilience, innovation, and sustainable economic development in Sub-Saharan Africa SMEs [67], which has enabled SMEs to compete more effectively in both local and global markets. Its inclusion is bridging financial gaps for underserved businesses where Mobile money services, online banking, and fintech solutions are providing SMEs with access to credit, savings, and payment systems that were previously out of reach. These tools enhance financial transparency, reduce transaction costs, and facilitate faster business operations. For rural and informal sector entrepreneurs, digital banking offers a lifeline to formal financial systems, enabling growth and sustainability. As a matter of fact, digital marketing and banking inclusion empower Nigerian SMEs to innovate, scale, and contribute meaningfully to economic development.

As the digital economy evolves, SMEs increasingly rely on online platforms to market their products and services. Digital entrepreneurship marketing leverages on the social media, e-commerce, email campaigns, and SEO that offers SMEs unprecedented reach and visibility [68]. However, this digital exposure also introduces significant cybersecurity risks. A robust cybersecurity infrastructure is essential to safeguard sensitive data, maintain customer trust, and ensure uninterrupted business

operations [69,70]. Cybersecurity infrastructure for SMEs in digital marketing encompasses a multi-layered approach that begins with network security, including firewalls, intrusion detection systems, and secure Wi-Fi configurations to prevent unauthorized access [71]. Endpoint protection ensures that devices used for marketing such as laptops and smartphones are shielded from malware and phishing attacks. Data encryption is vital for protecting customer information, especially during transactions and communications [72]. Access control mechanisms, such as multi-factor authentication and role-based permissions, help limit exposure by ensuring only authorized personnel can access marketing platforms and analytics [72]. SMEs must also implement secure content management systems and regularly update plugins and software to patch vulnerabilities. Cloud security is anotherr critical component, especially for businesses using SaaS, platform as a service (PaaS) and infrastructure as a service (IaaS) tools for email marketing, CRM, and automation [18]. Investing in cybersecurity not only protects digital marketing assets but also enhances brand credibility that grantees customers engagement with businesses and platforms that demonstrate a commitment to data protection [14,33]. For SMEs, a strong cybersecurity framework is essential, not optional for sustaining digital entrepreneurship, protecting data, ensuring trust, and enabling secure growth in today's increasingly connected and threat-prone business environment. Strategic partnerships between government, private sector, and development agencies are essential to foster a thriving digital entrepreneurial ecosystem with sustainable cybersecurity implementation.

6. Research Design and Methodology

This study adopted a structured methodological approach, systematically gathering and analyzing relevant literature to construct a theoretical framework on the role of digital marketing in SME-driven digital entrepreneurship. The Nigerian Small and Medium Enterprises Development Agency (SMEDAN, 2018) has revealed that a significant proportion of SMEs in Nigeria collapse within their first five years of existence, largely due to persistent barriers such as insufficient financing and infrastructural inadequacies [73]. Similarly, the Corporate Affairs Commission (CAC, 2022) records numerous new business registrations annually but also reports a troubling rate of deregistration, reflecting widespread enterprise failures [74]. This recurring pattern of collapse is not a temporary phenomenon; rather, it endures across different economic cycles and policy reforms, underscoring deep-rooted structural and systemic weaknesses that undermine SME sustainability. Extensive studies, surveys, and reports from both governmental and non-governmental organizations consistently emphasize the high incidence of SME failure, highlighting the urgent need for reforms to strengthen resilience and long-term viability [75].To achieve its empirical objectives, this study utilized qualitative data analysis combined with a survey method, focusing on SMEs in the Nasarawa Local Government Area of Kano State, North West Nigeria, where the digital entrepreneurship model has been embraced. Respondents, all SME operators, were randomly selected, and data collection was conducted through field surveys emphasizing digital entrepreneurship. Due to time limitations, a four-point Likert scale questionnaire and one-on-one interviews based on key SME-related questions were administered. Out of a population of 500 SMEs, 450 respondents were chosen through random sampling, with nearly 90% of the questionnaires successfully retrieved and deemed valid for analysis. Findings revealed that 24% of SMEs were partnerships, 27% limited liability firms, and 49% sole proprietorships. Furthermore, turnover data indicated that 47% earned below 1million naira annually, 33% between 1million to 2.5 million, 16% between 3million to 4.5 million, and 4% above 4.5 million prior to adopting digital marketing.

After adopting digital marketing strategies, a significant proportion of SMEs (24%) reported annual turnovers ranging between 1.5 and 3.5 million Naira, reflecting a notable increase compared to the previous year when interactive digital platforms were not utilized. This transformation has enabled entrepreneurs to engage more effectively with their target audiences through search engines, social media, email services, and e-commerce payment gateways [76]. Descriptive analysis further revealed that 18% of SMEs still generate less than 1.5 million Naira annually, yet the adoption of digital entrepreneurship provides networks that enhance their ability to expand sales of goods and services. Economically, SMEs with turnovers above 1.5 million but below 6 million Naira experienced substantial growth, with 24% and 33% increases recorded in respective ranges. Moreover, sales exceeding 6 million Naira demonstrated greater profitability compared to pre-digital marketing levels. Business experience analysis

showed that 89% of respondents had operated for over six years, 9% for at least five years, and 2% for four years, highlighting strong SME maturity alongside digital adoption.

Table 2. Analysis of SMEs' Digital Entrepreneurship Characteristics in the Research Area

SMEs Digital Entrepreneurship Features	SMEs Descriptions	Frequency	Percentage (%)
Investment Classification	Sole Proprietorship	221	50%
	Partnership	111	24%
	Limited Liability Company	118	26%
	Total	**450**	**100**
Manpower Capacity	Less than 5 Workers	215	48%
	Between 5 and 21 Workers	145	32%
	Between 22 and 41 Workers	85	19%
	More than 41 Workers	5	1
	Total	**450**	**100**
SMEs Annual Returns Prior to Digital Marketing Implementation	Bellow 1Million	210	47%
	Between 1 Million and 2.5Million	150	33%
	Between 3 Million and 4.5Million	70	16%
	Above 4.5 Million	20	4%
	Total	**450**	**100**
SMEs Annual Returns after Digital Marketing Implementation	Less than 1.5Million	80	18%
	Between I.5million and 3.5million	110	24%
	Between 3.5Million and 6Million	150	33%
	More than 6Million	110	24%
	Total	**450**	**100**
Number of SMEs Investment Life Cycle	Bellow 2 Year	2	0
	Between 2year and 4years	8	2
	Between 5year and 6years	40	9
	Above 6years	400	89
	Total	**450**	**100**

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6.1. Distribution of the Sample Population in the Study

The study was conducted with a research population of 500 SMEs situated in the Nassarawa business district of Kano, North West Nigeria. Nasarawa Local Government Area of Kano State was selected as the study area because it represents one of the most vibrant commercial hubs in northern Nigeria, hosting a diverse range of SMEs across trade, services, and light manufacturing. Its accessibility and concentration of businesses make it a practical site for empirical research, while its sectoral diversity mirrors the broader Nigerian SME landscape. Nasarawa's SMEs contribute significantly to employment and income generation, aligning with the national role of SMEs in driving economic growth. The urban-rural linkages in Nasarawa, where enterprises serve both city consumers and rural suppliers, further enhance its representativeness. Thus, studying SMEs activities in Nasarawa provides insights that are both locally grounded and nationally relevant to understanding Nigerian SMEs. Within this population, the research concentrated on SMEs that had established structured digital marketing systems, as these enterprises represented the central focus of the digital entrepreneurship model being examined. To achieve this, a deliberate sampling strategy was adopted, relying on purposeful selection rather than

random techniques, ensuring that only cases most relevant to the study's objectives were included. This approach involved carefully identifying businesses capable of providing meaningful insights, with the selection process shaped by factors such as the overall size of the SME population, the logistical challenges of reaching enterprises actively engaged in digital marketing, and the specific nature of the research questions being addressed. Participants were required to be owners or managers of retail SMEs located in Kano who demonstrated clear intentions to implement e-commerce systems, thereby reflecting the characteristics of the digital entrepreneurial economy. Purposeful sampling was therefore employed to guarantee that the chosen cases aligned closely with the study's objectives, producing data that was both reliable and directly relevant. This method ensured that the research captured the experiences of SMEs most representative of digital entrepreneurship, thereby strengthening the validity and applicability of the findings to the broader context of SME digital transformation.

6.2. Methods of Data Collection

This study employed primary data collection methods, specifically interviews and questionnaires, to obtain information directly relevant to its objectives. The initial approach centered on conducting a survey that explored the influence of digital marketing on the digital entrepreneurship economy, while also assessing how SMEs utilize managerial strategies to achieve organizational goals such as revenue growth. To capture these dynamics, the research distributed a structured questionnaire to 500 SMEs within the study area, focusing on the role of social media, email, search engines, and mobile marketing in enhancing business productivity. These tools were selected because they represent the most widely adopted digital marketing practices among SMEs and provide measurable insights into their effectiveness. Of the questionnaires administered, 450 were successfully completed and returned, yielding a strong 90% response rate. This high level of participation ensured that the data collected was both reliable and representative, strengthening the validity of the study's findings.

6.3. Method of Data Analysis

Data analysis represents an extensive process that involves examining, cleaning, manipulating, and modeling information to reveal insights, establish relevance, and guide effective decision-making through systematic evaluation and interpretation of complex datasets for meaningful outcomes [77]. The data analysis approach in this study is primarily grounded in the interpretation of primary data through descriptive statistical techniques, which allow researchers to summarize, organize, and present information in a meaningful way. By employing tools such as frequency distributions, percentages, and pie chart distribution, the analysis highlights patterns and trends within the dataset, enabling clearer insights into the research objectives while ensuring that complex information is simplified for effective understanding, comparison, and decision-making in the context of SMEs' digital practices. SMEs remain central to the Nigerian economy due to their substantial contribution to the nation's GDP, as their role in fostering long-term economic growth has been widely acknowledged, particularly in areas such as job creation, wealth distribution, and poverty reduction across the country [78]. Despite the growing influence of globalization, the rapid expansion of ICT across occupational sectors, and the rise of digital entrepreneurship, there is still no unified agreement among scholars, researchers, and economists regarding the precise definition of SMEs in Nigeria, as academic studies reveal differing criteria, including workforce size, asset base, and annual turnover, applied inconsistently by institutions and policymakers [79]. Notwithstanding the definitional debates, no opinion has ever diminished the undeniable impact of SMEs, whose contributions are often measured through their revenue generation and their ability to sustain economic activity. These enterprises are especially vital for Nigeria's low and middle-income citizens, offering employment opportunities and income streams that support livelihoods and strengthen community resilience as shown in Figure 3.
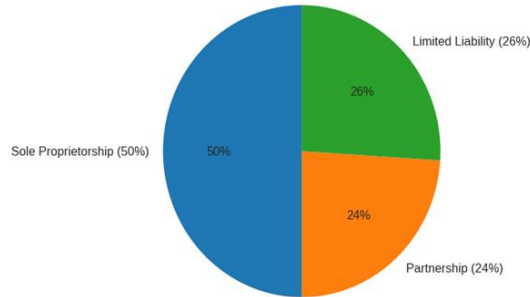
Figure 3. Investment Classification in the Study Area

The investment classification data reveals that sole proprietorship dominates with 50%, reflecting the preference of many Nigerian entrepreneurs for simple ownership structures that require minimal capital and fewer regulatory hurdles. Partnerships account for 24%, showing that collaborative ventures remain relevant, though less common, as they allow resource pooling and shared responsibilities. Limited liability companies represent 26%, highlighting a growing awareness among business owners of the need for legal protection and sustainability through more formalized structures. Taken as a whole, the distribution underscores the diversity of business models in Nigeria, where entrepreneurs balance ease of entry, collaboration, and risk management, while the gradual rise of limited liability firms suggests a shift toward more structured enterprises capable of long-term growth and resilience. The 2025 Digital Transformation Center Nigeria (DTC Nigeria) report emphasizes the central role of SMEs and Micro, Small, and Medium Enterprises(MSMEs) in driving Nigeria's economy, accounting for the majority of employment, business activity, and industrial output [80]. Despite their importance, they face persistent challenges such as limited access to finance, infrastructure deficits, and regulatory hurdles. The report highlights the growing impact of digital transformation, noting that widespread smartphone adoption and social media usage are reshaping SME operations. Digital maturity is identified as a critical factor for competitiveness, sustainability, and growth, with technology-driven marketing strategies enabling SMEs to expand market reach, enhance resilience, and strengthen their long-term economic relevance. In Figure 4, the breakdown of SME sector distribution in Nigeria study area shows that distribution, at 38%, and manufacturing, at 29%, dominate the landscape, underscoring their pivotal role in sustaining trade and industrial growth. Agriculture, accounting for 22%, highlights the importance of SMEs in food production and rural development, while other services at 11% reflect diverse contributions in areas such as education, hospitality, and professional support. This distribution illustrates how SMEs collectively drive commerce, industry, and community resilience, with the dominance of distribution and manufacturing emphasizing their centrality to Nigeria's economic structure, while agriculture and services provide essential balance and broaden the scope of national development.
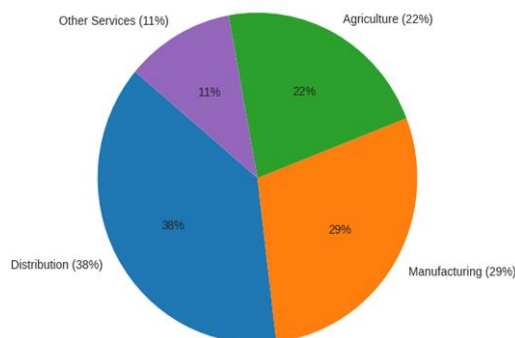
Figure 4. SMEs Distribution in the Study Area.

The **Table 3** presents the applicability of various digital marketing platforms among 450 SMEs, offering insight into their adoption patterns. Facebook emerges as the most dominant tool, with 97.8% of SMEs utilizing it, reflecting its widespread influence in customer engagement and brand promotion. Electronic mail services and LinkedIn follow closely, both at 86.7%, highlighting their importance in professional communication and networking. Bulk SMS (77.8%), Instagram (77.8%), and Business WhatsApp (75.6%) also show strong adoption, indicating SMEs' preference for direct, personalized communication channels. Google Analytics (71.1%), YouTube (70%), and podcasts (70%) demonstrate

significant use, suggesting SMEs are increasingly embracing data-driven insights and multimedia content to reach broader audiences. Twitter, at 64.4%, and corporate websites, at 66.2%, remain relevant but slightly less dominant compared to social media platforms. Blog platforms, with 57.8% adoption, show moderate relevance, possibly due to higher content creation demands. Taken as a whole, the data reveals that SMEs prioritize platforms offering immediacy, accessibility, and broad reach, with social media leading the way. The high reliance on Facebook, WhatsApp, and LinkedIn underscores their role in building relationships and expanding market presence [81]. Meanwhile, analytics and multimedia tools highlight a growing shift toward digital sophistication and strategic marketing practices.

Table 3. Digital Marketing Channels for SMEs

SME-Oriented Online Marketing Platform	Applicable	Not Applicable	Total
You Tube Media handle	315 (70.0%)	135 (30.0%)	450 (100%)
Facebook Social Media Platform	440 (97.8%)	10 (2.2%)	450 (100%)
LinkedIn Social Media Platform	390 (86.7%)	60 (13.3%)	450 (100%)
Blog Media Platform	260 (57.8%)	190 (42.2%)	450 (100%)
Instagram Social Media Platform	350 (77.8%)	100 (22.2%)	450 (100%)
Podcast Social Media Broadcast	315 (70.0%)	135 (30.0%)	450 (100%)
Google Analytics	320 (71.1%)	130 (28.9%)	450 (100%)
Electronic Mail Services	390 (86.7%)	60 (13.3%)	450 (100%)
Corporate Websites	298 (66.2%)	152 (33.8%)	450 (100%)
Bulk SMS	350 (77.8%)	100 (22.2%)	450 (100%)
Business WhatsApp Platform	340 (75.6%)	110 (24.4%)	450 (100%)
Twitter Social Media Platform	290 (64.4%)	160 (35.6%)	450 (100%)

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Social media engagement through Facebook, WhatsApp, Instagram, and LinkedIn has proven to boost SMEs' profit margins by 15%–25%, largely due to reduced marketing costs and improved customer retention [82]. Thus, the TOE model demonstrates how integrating technology, organizational capacity, and environmental support transforms engagement into measurable revenue growth. This engagement fosters trust and community, encouraging repeat patronage and referrals. The impact on revenue is substantial: SMEs reduce marketing costs while expanding reach, often achieving profit margin increases through improved customer acquisition and retention. By leveraging analytics, targeted advertisements, and consistent content, SMEs convert engagement into measurable growth, strengthening competitiveness in local and global markets [83].

7. Discussion of Research Findings

This study examined the application of the TOE framework in online marketing and digital entrepreneurship for SMEs offers valuable insights into their evolving practices. Findings reveal that the adoption of technology is not uniform but depends largely on the digital readiness of each enterprise. Tools such as automation and AI-driven analytics are particularly promising, as they enhance efficiency, improve decision-making, and support customer engagement. Organizational characteristics also play a decisive role in digital integration, with factors such as digital literacy, leadership commitment, and employee adaptability shaping the success of implementation. Environmental influences further determine how SMEs craft their digital strategies. Consumer behavior, competitive market dynamics, and regulatory frameworks all contribute to shaping the extent and direction of digital adoption. The study emphasizes that the success of digital entrepreneurship lies in the interplay of technology, organizational capacity, and environmental conditions, with flexibility serving as a critical enabler of resilience and growth [32]. SMEs that align their strategies with the TOE framework often experience expanded market reach, stronger digital presence, and improved competitiveness. To maximize transformation and marketing performance, SMEs must adopt a balanced approach across all three dimensions of the TOE model. This is particularly important given their substantial contribution to national GDP and the global economy, where performance remains a central issue in economic discourse. The success of SMEs in digital entrepreneurship is typically evaluated through performance metrics over defined periods, reflecting their ability to adapt and grow. In the long run, supply and demand conditions shape SMEs' strategies for achieving financial goals and operational efficiency. By leveraging the TOE

framework, SMEs can better align resources, strengthen customer engagement, and generate sustainable revenue, ensuring their continued relevance in an increasingly digital marketplace.

On the assessment of the performance of SMEs using a blend of financial and non-financial indicators, including competitive strength, employee development, customer satisfaction, and corporate sustainability. These criteria serve as essential measures of productivity and are strategically applied to evaluate investment priorities, particularly in relation to digital marketing campaigns aimed at achieving economic sustainability. The analysis of ownership structures revealed that 49% of the enterprises surveyed operate as sole proprietorships, 24% as partnerships, and 27% as limited liability corporations, reflecting the diverse organizational forms within the SME sector. Sales performance data provided further insights into the financial standing of these businesses. Results showed that 47% of SMEs reported annual sales below one million naira, 33% achieved between one million and 2.5 million naira, 16% recorded sales ranging from 3million to 4.5 million naira, while 4% exceeded 4.5 million naira. Interestingly, many SMEs had already surpassed one million naira in sales before adopting digital marketing strategies. Following implementation, however, revenue growth became more pronounced, with 36% of SMEs generating between 1.5 million and 6 million naira annually, surpassing their pre-digital marketing figures. A closer examination of sales improvements revealed that 18% of SMEs continued to earn above 1.5 million naira annually after adoption, suggesting impact of digital marketing at lower transaction levels. On the other hand, firms with sales above 3.5 million naira but not exceeding 6 million naira experienced significant growth, highlighting the stronger influence of digital tools on mid-range revenue brackets. Moreover, SMEs with sales between 1.5 million and 3.5 million naira recorded a 4% increase compared to their earlier 33% share, while those exceeding 3.5 million naira demonstrated value shifts of over 20%, underscoring the transformative effect of digital adoption. This study also examined years of operational experience, revealing that 89% of respondents had been in business for more than six years, 9% between one and five years, and only 2% fewer than four years. This suggests that more established SMEs are better positioned to leverage digital marketing strategies, translating their experience into improved competitiveness, customer engagement, and revenue growth.

8. Future Research Focus

Future research on digital transformation with AI, digital marketing, SMEs, and the TOE framework should explore several critical areas. First, investigating AI-driven automation and predictive analytics can uncover ways SMEs can optimize operations and customer engagement. Second, research should assess how digital marketing strategies such as personalized content and AI-powered advertisements enhance SME competitiveness. Third, understanding the TOE framework's role in overcoming organizational barriers and fostering technological adoption is essential. Fourth, examining the environmental impact, including market trends and regulatory shifts, will provide insights into SMEs' adaptive strategies. Lastly, future studies should explore ethical concerns, data security, and AI governance in digital marketing transformation. By addressing these focus areas, researchers can provide SMEs with practical strategies for sustainable growth, leveraging AI and digital marketing within a structured framework for innovation and scalability

9. Recommendation

Drawing from insights provided in this study, five strategic recommendations have been outlined to enhance the resilience, competitiveness, and sustainability of SMEs in Nigeria, addressing critical challenges while leveraging opportunities for digital transformation.

i.   Enhance Digital Adoption: SMEs should integrate affordable digital tools such as e-commerce platforms, mobile payment systems, and social media analytics to improve efficiency, customer engagement, and competitiveness.

ii.   Capacity Building: Continuous training programs for employees and entrepreneurs are essential to build digital literacy, foster innovation, and ensure adaptability to emerging technologies.

iii. Access to Finance: Policymakers and financial institutions should expand credit facilities and digital financing options to help SMEs overcome capital constraints and invest in growth.

iv. Infrastructure Development: Addressing deficits in power supply, internet connectivity, and logistics will create an enabling environment for SMEs to thrive in both local and global markets.

v. Collaborative Ecosystems: SMEs should leverage partnerships with industry associations, digital hubs, and government initiatives to access shared resources, mentorship, and networking opportunities.

10. Conclusion

The findings indicate that 52 percent of SMEs experienced a notable rise in annual revenues, reaching between 3 million and 5 million Naira after embracing digital marketing strategies, a significant improvement compared to their lower earnings before implementation of digital marketing and TOE model. This growth underscores the transformative impact of digital tools, as enhanced customer engagement, broader market reach, and cost-effective promotional methods enabled SMEs to strengthen competitiveness, improve profitability, and achieve more sustainable financial outcomes within a relatively short period of adoption. The study effectively addressed the five research questions by demonstrating how AI adoption, digital marketing strategies, and the TOE framework collectively enhance SMEs' digital transformation, overcoming technological, organizational, and environmental challenges. Findings revealed that SMEs leveraging AI-powered analytics and social media engagement achieved stronger customer relationships, improved competitiveness, and revenue growth, while the TOE framework provided a balanced structure for integrating technology, organizational readiness, and external market forces, ultimately ensuring long-term sustainability and measurable performance improvements in evolving business environments. SMEs continue to serve as the backbone of Nigeria's economy, contributing significantly to GDP, employment creation, and industrial output. Their ability to adapt to changing market conditions has been enhanced by the adoption of digital entrepreneurship and online marketing strategies, particularly when guided by the TOE model. The TOE framework enables SMEs to integrate affordable technological tools, strengthen organizational capacity, and align with supportive environmental factors such as government policies and digital ecosystems. This structured approach allows SMEs to overcome persistent challenges like limited financing and infrastructural deficits while positioning themselves for sustainable growth. The economic impact of online digital marketing strategies is evident in the measurable improvements SMEs achieve in profitability, customer engagement, and market expansion. By leveraging social media platforms, SMEs can build brand awareness, interact with customers in real time, and foster long-term loyalty. This study findings indicate that SMEs applying digital media strategies under the TOE framework experience profit margin increases ranging between 15% and 25%, largely due to reduced marketing costs, wider market reach, and improved customer retention. This profitability boost underscores the transformative potential of digital adoption in strengthening resilience and competitiveness. In the long run, the synergy between SMEs' economic contributions and digital entrepreneurship highlights a pathway toward inclusive and sustainable development. Online marketing strategies, when embedded within the TOE model, not only enhance visibility but also drive innovation, efficiency, and profitability. This study conclude that as Nigeria's digital economy continues to expand, SMEs that strategically adopt online digital marketing practices will remain central to economic growth, job creation, and poverty reduction, ensuring their long-term relevance in both local and global markets.

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