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The Impact of Artificial Intelligence Adoption on Digital Marketing Capabilities and Firm Performance: Insights from SMEs in El Oued

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Declaration

We, the undersigned, hereby declare that this thesis, titled " The Impact of Artificial Intelligence Adoption on Digital Marketing Capabilities and Firm Performance: Insights from SMEs in El Oued," is our original work and has been completed under the guidance and supervision of Dr. Tamma Elhachemi and Dr. Bousbia Laiche Rabia.

In the preparation of this thesis, we utilized reliable resources to gather articles and books, ensuring the rigor and credibility of our research. These sources include, but are not limited to, Google Scholar, Elsevier, Emerald Publisher, Sage, Springer, ASJP (Algerian Scientific Journal Platform), Scite.ai/Assistant, and Consensus.app. Additionally, various artificial intelligence tools, such as OpenAI's ChatGPT-4 and AI Google Studio, were employed solely for writing assistance and proofreading purposes.

We have endeavored to accurately cite all sources and adhere to the highest standards of academic integrity. Any errors or omissions are solely our responsibility.

We confirm that this thesis has not been submitted, either in whole or in part, for any degree or diploma at any other university or institution.

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Dedication

I dedicate this modest effort of mine

To those who gave me life and hope, nurtured my passion for learning and knowledge, and taught me to climb the ladder of life with wisdom and patience:

To the steadfast support, the one with a noble character and enlightened mind, who was the primary reason for my attainment of higher education:

My beloved father, may Allah prolong his life.

To the one who set me on the path of life, sacrificed everything, and cared for me until I grew up, the source of unconditional love:

My dear mother, may Allah keep her by my side.

To those whom Allah blessed me with in my life, the strong bond who were a great help in my research journey:

My brothers and sister.

To my friends, companions of dreams and journey, the ones who are unwaveringly loyal, I take pride in having you as my lifelong companions.

To those who paved the way for us in the field of knowledge and learning:

Our esteemed professors.

-Basma-

Dedication

In the Name of Allah, the Most Gracious, the Most Merciful

"And the last of their call will be, 'Praise to Allah, Lord of the worlds.'" Surah Yunus, Ayah 10

Praise be to Allah, who facilitates beginnings, completes endings, and enables us to achieve our goals.

I would like to begin by expressing my deepest gratitude to my beloved parents, Mom and Dad, who have always been the light guiding me and giving me the strength to persevere and my dear sister and beloved brothers this graduation is as much yours as it is mine and to my grandfather, may he rest in peace, thank you all of you for always being there for me.

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Thank you to my family, friends and those who believed in me and supported me, your support has had the greatest impact on achieving this accomplishment.

-Imene-

Dedication

Who said, "I am for it," attained it. And I am for it. Even if it refuses, I will bring it. So, praise be to Allah who made the beginnings easy and enabled me to reach the ends by His grace and generosity.

(وآخر دعوانهم أن الحمد لله رب العالمين)

To my dear father, may Allah protect him, the light that illuminated my path and gave me the strength to continue my journey through his greatest sacrifices.

To my beloved mother, may Allah protect her, who granted me life and hope, and made hardships easier with her prayers. Without her, I would not have completed my journey.

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To my dear friends Awatef, Imene, and Basma, you are the light of my path and the pillar of my success. With your support and encouragement, I achieved this accomplishment.

Here I am today, having completed the fruit of my effort, and I dedicate this achievement to you all, by the grace of Allah. Praise be to Allah who guided me and made me blessed wherever I may be.

-Ilham-

Dedication

I dedicate this work to my parents, friends, teachers and colleagues, to those who have helped and supported me along the way, and most importantly, to the ones who will make use of it for the benefit of mankind.

-Khalifa-

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Stand for the teacher and honour him, as his reverence is almost like that of a messenger." With this profound saying, we acknowledge the deep respect and great appreciation for the role teachers play in building our future and guiding us towards success.

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We wish you continued success and prosperity in all your endeavours, and we look forward to continuing our cooperation and hard work with you in the future.

Abstract

This study examines the influence of Artificial Intelligence (AI) adoption on the digital marketing capabilities and overall firm performance (Small and Medium-sized Enterprises) operating within the service sector of El Oued City, Algeria. Addressing a critical gap in the existing literature, this study focuses on quantifying the effects of AI integration within an under-researched context – specifically, service sector SMEs in a developing economy – where empirical evidence remains scarce and the outcomes of technological adoption are not well documented. Employing a quantitative research methodology, the study collected data through structured surveys administered to senior executives across various service sector industries in El Oued. Data analysis was conducted using SPSS 29 and Smart PLS 4, enabling rigorous evaluation of the hypothesized relationships and ensuring the reliability and validity of the research findings. The analysis revealed a statistically significant relationship between AI adoption with digital marketing capabilities and AI adoption with firm performance. However, the effect of digital marketing capabilities on overall firm performance presented a not significant relationship. The study recommends further research to explore the mediating variables that influence the complex relationship between AI-enhanced digital marketing capabilities and the overall firm performance in similar contexts.

Keyword: digital marketing capabilities, artificial intelligence adoption, firm performance, SMEs of service sector, Eloued

ملخص

هذه الدراسة تستقصي تأثير اعتماد الذكاء الاصطناعي (AI) على قدرات التسويق الرقمي والأداء العام للمؤسسات الصغيرة والمتوسطة (SMEs) التي تعمل في قطاع الخدمات في مدينة الوادي بالجزائر. تتناول هذه الدراسة الفجوة البحثية في الدراسات الأدبية القائمة، حيث تركز على قياس تأثيرات دمج الذكاء الاصطناعي في سياق غير مبحوث بشكل جيد وتحديدًا، في قطاع الخدمات (SMEs) في اقتصاد نامي، حيث تبقى الأدلة التجريبية نادرة ولم تُوثق جيداً نتائج اعتماد التكنولوجيا. باستخدام منهجية بحث كمي، جمعت الدراسة البيانات من خلال توزيع استبيانات منظمة لكبار المسؤولين التنفيذيين في مختلف صناعات قطاع الخدمات في الوادي. تم إجراء تحليل البيانات باستخدام SPSS 29 و Smart PLS 4 ، مما يتيح التقييم الدقيق للعلاقات المفترضة وضمان موثوقية وصحة النتائج البحثية. كشف التحليل عن وجود علاقة ذات دلالة إحصائية بين اعتماد الذكاء الاصطناعي مع قدرات التسويق الرقمي واعتماد الذكاء الاصطناعي مع أداء الشركة. ومع ذلك، فإن تأثير قدرات التسويق الرقمي على الأداء العام للشركة لم يظهر على أنه ذو دلالة إحصائية. توصي الدراسة بإجراء بحوث إضافية لاستكشاف المتغيرات الوسيطة التي تؤثر على العلاقة المعقدة بين قدرات التسويق الرقمي المحسنة بواسطة الذكاء الاصطناعي والأداء العام للمؤسسات الصغيرة والمتوسطة في سياقات مماثلة.

الكلمات المفتاحية: قدرات التسويق الرقمي، اعتماد الذكاء الاصطناعي، أداء المؤسسة، المؤسسات الصغيرة والمتوسطة في قطاع الخدمات، الوادي

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List of Abbreviation

No	Abbreviation	Meaning
01	AIDOP	Artificial Intelligence Adoption
02	DMC	Digital Marketing Capabilities
03	PRF	Firm Performance
04	SMEs	Small and Medium-sized Enterprises
05	AI	Artificial Intelligence

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Chapter One

Introduction

1. Background of Study

The field of digital marketing is witnessing a significant shift, largely influenced by the integration of Artificial Intelligence (AI) (Davenport & Ronanki, 2018). This change marks an important development in the way companies' approach marketing, leading to more customized, efficient, and interactive consumer interactions (Lemon & Verhoef, 2016). The role of AI in this transition involves using data to improve marketing tactics, streamline repetitive processes, and foster innovation in content creation (Kannan & Li, 2017), thereby establishing new benchmarks in digital marketing effectiveness (Saura et al., 2022).

The relevance of AI in marketing is highlighted by an increasing trend among business leaders to invest in AI solutions. According to a worldwide survey in 2023, 43% of CEOs were exploring options to adopt AI in the future, a sentiment shared by 39% of Chief Marketing Officers (CMOs). Interestingly, an equal percentage of both CEOs and CMOs (19%) were ready to start using AI technologies immediately, although this would initially be limited to certain areas of their business (Dencheva, 2024). This indicates a measured but forward-thinking approach to incorporating AI into business operations, showcasing its potential to improve efficiency and adaptability in the marketplace.

In the UK, the impact of AI on digital marketing is particularly evident. A survey by the Statista Research Department revealed that by early 2023, 94% of top brand marketers were using AI in their digital marketing campaigns. Moreover, 87% of those surveyed believed AI to be a key component of their marketing strategy, illustrating the widespread acceptance and essential role of AI in creating successful digital marketing strategies.

The use of Generative AI in marketing is a prime example of AI's transformative power. In the United States, 70% of marketers are using generative AI for a variety of purposes, such as creating content and tailoring advertising (Dencheva, 2024b). Collaborations like the one between WPP and Nvidia highlight the potential of generative AI to change how brand content is created. Also, Heinz's use of DALL-E 2 to produce brand-specific content shows the innovative use of generative AI in marketing. With projections indicating that the generative AI market in marketing could grow from \$1.9 billion in 2022 to \$22 billion by 2032, the significance of this technology is expected to increase significantly. Yet, consumer attitudes towards generative AI are mixed, showing differences in

acceptance based on demographics and concerns about the authenticity of AI-generated content.

Algeria's strategic focus on AI and digital marketing within its national and business strategies signals a wider move towards digitalization and technological advancement. This effort is backed by a comprehensive national AI strategy, as highlighted by Minister Abdelbaki Benziane (Digital Watch Observatory, 2022), aimed at boosting AI skills across major industries. This is supported by Algeria's increasing digital connectivity and mobile usage. These actions show the potential of AI to change marketing strategies and enhance efficiency in various sectors, including SMEs, tourism, and hospitality.

With these advancements, Algeria's e-commerce market is seeing considerable growth, with projections indicating a significant increase in Average Revenue Per User (ARPU) by 2029 (Statista Research Department, 2024). This confirms the widespread adoption of digital marketing. However, to advance in this digital journey, it's essential to overcome challenges such as improving ICT infrastructure and gaining stronger policy support. Despite Algeria's position in digital competitiveness in North Africa, its commitment to using AI and digital marketing for economic growth is clear. This scenario underscores the importance of comprehensive research into digital marketing in Algeria to understand its drivers and impacts fully, identifying challenges and opportunities, and establishing best practices for using AI in digital marketing and business improvement.

2. Problem statement

In the dynamic domain of digital marketing, the incorporation of AI marks a critical transition towards strategies that are both more effective and personalized. Serving as an indispensable mechanism for firms to connect with a global audience via online platforms, social media, and content-centric methods, digital marketing is undergoing a profound transformation due to the advent of AI technologies. These technologies bring to the forefront unparalleled capabilities for analysing intricate datasets, forecasting consumer behaviors, and executing customized marketing initiatives, thus ushering in an era characterized by heightened efficiency and tailored engagement (Huang & Rust, 2020). The potential of AI to substantially enhance digital marketing efforts and, in turn, contribute to notable improvements in firm performance, is broadly acknowledged. Nonetheless, there remains a significant shortfall in empirical research examining the specific effects of AI adoption on digital marketing capabilities and the consequent impact on firm performance.

Despite the expanding corpus of literature emphasizing digital marketing capabilities, an in-depth analysis focusing on the ramifications of AI adoption on these capabilities, and their subsequent influence on firm performance, is distinctly lacking. Scholars including Kaplan & Haenlein (2019), Li & Kannan (2019), Mogaji, E., Soetan, T. O., & Kieu, T. A. (2020), Van Esch, P., & Stewart Black, J. (2021), and Gao, B., Wang, Y., Xie, H., Hu, Y., & Hu, Y. (2023) have identified the transformative potential of AI in reshaping the digital marketing landscape. Yet, comprehensive empirical studies that clarify the direct relationship between AI adoption, the effectiveness of digital marketing practices, and ensuing firm performance are markedly rare.

Furthermore, the existing scholarship extensively explores digital marketing capabilities, yet investigations specifically delving into the impact of AI adoption in this realm remain sparse (Kietzmann et al., 2021). This research gap is particularly pronounced in the context of small and medium-sized enterprises (SMEs), which face distinct challenges and possess different opportunities compared to their larger counterparts. The inherent challenges of SMEs, such as limited resources and access to state-of-the-art technologies, could potentially be offset by strategic AI deployment, thus opening new paths for competitive advantage and market penetration. However, current research provides scant insights into how SMEs can strategically leverage AI within their digital marketing strategies to amplify firm performance, especially within the setting of developing countries (Dwivedi et al., 2021).

This paucity of research is even more evident when considering the context of developing economies, like Algeria. These environments feature unique market dynamics, technological infrastructures, and consumer behaviors that can significantly affect the adoption and success of AI in digital marketing (Nadeem et al., 2020). Despite the progressive increase in digitalization and internet penetration in Algeria, scholarly investigation into how Algerian SMEs utilize AI to enhance their digital marketing capabilities and, subsequently, firm performance, is remarkably absent. This gap indicates a crucial area for research, considering the capacity of AI to redefine business practices and the competitive landscape in such markets (Bilgihan & Wang, 2021).

Hence, although the potential for AI to revolutionize digital marketing is recognized, there is a significant gap in research specifically addressing its tangible effects on digital marketing capabilities and firm performance, particularly among SMEs in developing economies like Algeria. Bridging this gap with empirical research that explores the role of AI in enhancing digital marketing strategies and outcomes for SMEs in these settings is essential. Such investigations will not only deepen the academic conversation regarding the implications of AI in digital marketing but also provide practical guidance for

SMEs in developing regions on adopting AI technologies to improve their competitive stance and performance in the digital age (Chaffey & Ellis-Chadwick, 2020; Huang & Rust, 2020; Kietzmann et al., 2021; Dwivedi et al., 2021; Nadeem et al., 2020; Bilgihan & Wang, 2021).

From the aforementioned, we assume that there is a need to conduct a study. Therefore, we form the following main question: What is the impact of AI adoption on enhancing digital marketing capabilities and its subsequent effect on firm performance?

2.1. Research Questions:

- i. Does AI adoption has an impact on digital marketing capabilities?
- ii. What is the impact of digital marketing capabilities on firm performance?
- iii. To what degree does AI adoption directly influence firm performance, beyond its role in digital marketing capabilities?

2.2. Research Objectives

- i. To Examine the impact of AI Adoption on Digital Marketing Capabilities
- ii. To Analyse the Impact of Digital Marketing Capabilities on Firm Performance
- iii. To Investigate the Direct Relationship Between AI Adoption and Firm Performance

3. Hypotheses

H1: The adoption of Artificial Intelligence significantly impact on digital marketing capabilities in firms.

H2: Digital marketing capabilities significantly has an impact on firm performance.

H3: AI adoption directly and significantly influences performance of the firm

4. Study justification

The global business landscape is undergoing a rapid digital transformation, with organizations across both public and private sectors increasingly adopting digital technologies to enhance their capabilities and performance. This trend is also evident in developing economies like Algeria, where businesses are striving to integrate digital tools and strategies to remain competitive. However, existing research on digital transformation in developing markets remains scarce, with most studies focusing on developed economies. This gap in knowledge limits our understanding of the unique challenges and opportunities faced by businesses in developing countries as they navigate their digitalization journey.

Furthermore, the use of AI in digital marketing is a nascent yet rapidly evolving field, particularly in the context of SMEs. Existing research on this specific topic, especially in developing economies, is limited and often unreliable. This lack of robust data and analysis makes it difficult for SMEs to make informed decisions about AI adoption and its potential impact on their marketing efforts.

This study aims to address these critical gaps by providing a deep and reliable analysis of AI adoption in digital marketing among Algerian SMEs. Specifically, it will investigate the current state of AI adoption, identify the key factors influencing its implementation, and evaluate its effectiveness in terms of marketing performance. By focusing specifically on the Algerian market and providing much-needed insights into the intersection of AI and digital marketing within the SME sector, this research will contribute to both academic understanding and practical application.

5. Significance of the study

This study holds significant academic value by delving into the impact of AI adoption on digital marketing capabilities and subsequent company performance. It addresses existing gaps in knowledge and offers a fresh perspective on leveraging AI to optimize marketing effectiveness and drive organizational success. Notably, the research employs innovative methodologies, thereby deepening our comprehension of the multifaceted ways in which AI influences digital marketing practices.

Beyond academic contributions, the findings yield actionable insights for practitioners. Companies seeking to strategically implement AI within their digital marketing initiatives can glean valuable guidance from this research, ultimately leading to performance improvements. These insights also extend to policymakers operating within the economic and digital commerce domains, informing their decision-making processes and fostering an environment conducive to AI-powered marketing.

Finally, the study underscores the positive societal implications of AI adoption in marketing. These include contributions to economic and social development through enhanced company performance and the creation of new employment opportunities. By disseminating knowledge regarding the benefits of AI in this domain, the research endeavors to guide policymakers in adopting legislative and regulatory frameworks that promote the sustainable and effective utilization of this technology within the marketing landscape.

6. Scope of the study

The scope of this study encompasses a comprehensive examination of the impact of AI adoption on the digital marketing capabilities and firm performance in El Oued, Algeria. It will explore the extent to which AI technologies are being integrated by these enterprises to improve their digital marketing strategies and the resulting effects on their operational success. Key areas of focus include assessing the current rate of AI adoption, identifying the benefits and challenges associated with AI integration in SME operations, and analyzing its implications on digital marketing capabilities and overall business performance.

7. Methodology of the study

To examine the relationship between the study variables, we adopted a quantitative approach through the distribution of surveys among SMEs operating within the service sector in El Oued. This methodological choice enabled us to systematically gather and analyze data to understand the dynamics and challenges faced by these businesses.

8. Difficulties of the study

This study faced several challenges throughout its execution. One significant hurdle was identifying and securing participation from suitable respondents. Given the relative novelty of AI implementation in many companies, particularly within the context of developing economies, locating firms with sufficient experience and willingness to share insights proved difficult. This limited the pool of potential participants and required additional effort to identify and engage relevant organizations.

Another challenge stemmed from the geographically dispersed nature of the research team. Collaborating effectively across different time zones and with varying levels of access to resources presented logistical and communication obstacles. Coordinating tasks, ensuring clear communication, and maintaining consistent progress required careful planning and flexibility to accommodate diverse schedules and circumstances.

Furthermore, as non-native English speakers, the research team encountered difficulties in crafting the thesis. Expressing complex ideas and nuances in a language other than their native tongue demanded extra attention to grammar, syntax, and clarity of expression. This added an additional layer of complexity to the writing process and necessitated meticulous proofreading and editing to ensure the quality and accuracy of the final document.

Finally, the research team faced a multitude of general academic challenges inherent to thesis writing. Selecting a suitable and focused topic, identifying and accessing credible references, conducting efficient and comprehensive online searches, analyzing data rigorously, and managing time effectively throughout the research and writing process all presented significant hurdles. Overcoming these obstacles required discipline, perseverance, and effective teamwork to ensure the successful completion of the thesis.

9. Organization of the study

This study investigates the effects of AI adoption on digital marketing capabilities and overall firm performance. It is organized into four main chapters. The initial chapter serves as the introduction, covering the background of the study, statement of the problem, research questions, hypotheses, scope of the study, and its significance. The second chapter explores the theoretical framework, including a review of literature on digital marketing capabilities, AI adoption, and firm performance. It also examines the interactions between AI adoption and digital marketing capability, digital marketing capability and firm performance, and AI adoption and firm performance, alongside a summary of prior research in this area.

The third chapter details the research methodology, including the research design, design of the questionnaire, sampling methods, measurement instruments, assessment of reliability, procedures for collecting data, and multiple regression analysis. This is followed by a section that presents the research findings. The final chapter discusses the results and conclusions of the study, encompassing the interpretation of findings, conclusions, contributions to research, limitations, practical implications, and suggestions for future research.

CHAPTER TWO

LITERATURE REVIEW

1. Introduction

In Chapter Two, we present a literature review that explores the theoretical frameworks and empirical research surrounding digital marketing capabilities (DMCs), AI adoption, and firm performance. We delve into the intricacies of how AI influences DMCs, the impact of DMCs on firm performance, and the direct effects of AI adoption on business success. This synthesis of theoretical insights and previous studies aims to underscore the interconnectedness of these variables and highlight the significance of our research within the broader context of technological advancements and marketing strategies.

2. Theoretical framework for the variables

2.1. Digital Marketing Capabilities

2.1.1. *Traditional Marketing*

Traditional marketing, which dates back to the inception of advertising and marketing, is among the earliest and most established types of marketing. It encompasses all forms of promotional endeavors that do not utilize digital platforms. Additionally, consumers who discover your company via personal networks or word-of-mouth and subsequently make purchases are engaging in conventional marketing. Each individual is regularly exposed to this form of advertising, be it in the form of newspaper or outdoor displays. Conventional marketing approaches audience targeting via offline advertising modalities, including but not limited to print and broadcast advertisements, telemarketing, and outdoor promotion (Pankaj Kumar Bharti & Akhilesh Kumar, 2020).

2.1.2. **Digital marketing**

Digital marketing promotes products and services through the use of internet and online-based technologies, including desktop computers, mobile phones, and various digital media and platforms. Its development throughout the 1990s and 2000s revolutionized the way in which companies and brands employ technology for marketing purposes. Digital marketing campaigns have become pervasive due to the increasing preference of consumers for digital devices over physical stores and the integration of digital platforms into marketing strategies and daily life. A combination of content marketing, influencer marketing, content automation, campaign marketing, data-driven marketing, e-commerce marketing, social media

marketing, social media optimization, email direct marketing, display advertising, e-books, and digital games are frequently incorporated into these campaigns. Digital marketing is differentiated from online marketing by its incorporation of non-Internet channels that deliver digital media, including television, mobile phones (SMS and MMS), recall, and on-hold mobile ringtones (Ms. A. Lavanya & Mrs. M. Radhikamani, 2021).

Digital marketing, as defined by Ni Nyoman Kerti Yasa, Gusti Ayu Ketut Giantari, Putu Laksmi Ewi Rahmayanti, and Herkulanus Bambang Suprasto (2022), is the promotion of products via the internet or digital media with the objective of rapidly attracting consumers and potential customers (Park et al., 2018; Ritz et al., 2019). In light of the pervasive adoption of technology and the internet, numerous businesses have begun to prioritize digital marketing. Six prevalent forms of digital marketing are utilized by organizations:

- i. **Websites:** Websites are crucial for showcasing a company's professionalism, helping consumers learn about the business, facilitating promotions, and serving as an easy business medium.
- ii. **Search Engine Marketing:** This involves making a company's website easy to find in search engine results. It is divided into SEO (done internally and cost-effectively over time) and SEM (paid but faster).
- iii. **Social Media Marketing:** Platforms like Instagram, Facebook, and Twitter can be used with minimal or no cost to enhance the company's image.
- iv. **Online Advertising:** This involves promoting through online media beyond the types mentioned above.
- v. **Email Marketing:** Companies use email to share the latest information about ongoing promotions, new products, or services.
- vi. **Video Marketing:** MSMEs use videos to explain their business, showcase products, demonstrate usage, and share customer testimonials.

2.1.3. Digital Marketing Capabilities

Digital marketing capabilities (DMCs) are critical intelligent systems that aid organizations in comprehending decision-making, work processes, and achievement mechanisms, thereby enhancing their capacity to anticipate future strategic directions. Modern approaches to data collection and analysis for industrial organizations comprise these systems (Emad Tariq, Muhammad Alshurideh, Iman Akour, and Sulieman Al-Hawary, 2021).

Homburg and Wielgos (2022) define DMCs as the capacity of an organization to engage with consumers and partners through the efficient utilization of digital technology-enabled processes. This encompasses integrated, measurable, and

targeted strategies that generate value irrespective of temporal or spatial limitations. DMCs meet marketing objectives and increase consumer engagement through the utilization of a variety of digital platforms and tools, including social media, mobile marketing, content marketing, search engine marketing, web analytics, marketing automation, and email marketing. By capitalizing on these functionalities, organizations can enhance their comprehension of the target demographic, tailor marketing initiatives to individual preferences, and attain exceptional operational outcomes.

A company's digital marketing capability pertains to its capacity to conceive and execute digital marketing strategies. This comprises the protocols, frameworks, and expertise that constitute the fundamental resources of an organization, facilitating triumph in the era of digitalization. Digital marketing capability additionally pertains to an organization's aptitude for leveraging the internet and other information technologies to foster substantial engagements with clients, granting them entry to company resources and data while amassing consumer insights. Hence, digital marketing encompasses more than mere technology adoption; it also necessitates strategic planning, execution, and oversight of digital marketing initiatives with the aim of enhancing organizational performance (Agus Masrianto, Hartoyo Hartoyo, Aida Vitayala S. Hubeis, and Nur Hasanah, 2022).

Digital marketing capabilities, as defined by Gheorghe Minculete and Polixenia Olar (2018), comprise a multitude of facets pertaining to the realm of online marketing.

- I. **Affiliate Marketing:** This involves a trader or sponsor who creates the affiliate program, an intermediary who accepts the program's conditions, and the network owner (affiliates). The intermediary meets the affiliate marketing requirements set by the trader and earns a commission for each visitor to the company's site.
- II. **Content Marketing:** Initially focused on SEO, content marketing has evolved to emphasize the importance of well-developed content for increasing online presence.
- III. **Email Marketing:** Despite the rise of social media, email remains a key tool for converting visitors into customers by sending newsletters, offers, and other communications.
- IV. **Mobile Marketing:** With a significant portion of website traffic coming from mobile users, mobile marketing involves creating mobile-compatible content and ads. This method reduces costs and increases coverage but may be limited by the ease with which users can ignore ads.
- V. **Video Marketing:** Adding videos to websites can boost traffic and engage the target audience by meeting their needs with relevant content.

- VI. **Corporate Video:** This method enables interactive online business actions, effectively delivering messages to a global audience at a low cost.
- VII. **Blogging:** Blogging allows the public to express views and provides marketers with opportunities to leverage business opportunities at minimal cost.
- VIII. **Online Advertising:** This involves using virtual space to convey marketing content on web pages, attracting internet users' attention and promoting sales.
- IX. **Banner Advertising:** Banners, found on websites, mobile sites, apps, search engines, and social media platforms, are used by digital marketers to promote products or services.
- X. **Search Engine Marketing (SEM):** SEM includes SEO (improving search engine rankings) and Paid Search Advertising (PSA), such as Pay Per Click (PPC) ads. Google AdWords is a popular PSA tool.
- XI. **Social Media Marketing (SMM):** SMM uses internet-based applications to create and share user-generated content, involving text, images, and videos for business partners.

DMCs are vital for understanding investigation, action, and decision-making mechanisms, crucial for anticipating an organization's future strategic direction. These capabilities involve data collection and analysis, enhancing marketing processes, and enabling deep customer interactions, which are essential for improving business performance.

2.1.4. The Importance of DMCs:

The contemporary business landscape, characterized by rapid technological advancements and evolving consumer behaviors, necessitates that organizations cultivate robust DMCs to maintain competitiveness and achieve sustained success. DMCs encompass a firm's ability to effectively leverage digital technologies and platforms for engaging with customers, analyzing market trends, and optimizing marketing strategies.

firstly, DMCs facilitate enhanced customer engagement and reach by enabling organizations to interact with their target audience through diverse digital channels. This allows for personalized communication and content delivery, fostering stronger customer relationships and loyalty (Homburg and Wielgos, 2022). Moreover, DMCs empower businesses to extend their reach beyond geographical limitations, accessing a broader customer base and expanding market penetration.

Secondly, the data-driven nature of DMCs provides organizations with valuable insights into customer behavior and market dynamics. By employing analytics tools and techniques, firms can gain a deeper understanding of customer preferences, needs, and purchase patterns (Wang, 2020). This granular level of understanding enables data-informed decision-making regarding marketing initiatives, resource allocation, and campaign optimization, leading to improved marketing effectiveness and return on investment.

Thirdly, DMCs contribute to organizational agility and adaptability within the dynamic digital ecosystem. The rapid pace of technological change and evolving consumer expectations require businesses to be responsive and flexible (Herhausen et al., 2020). DMCs equip organizations with the ability to swiftly adapt to changing market conditions, adjust marketing strategies in response to emerging trends, and embrace novel technologies to maintain a competitive edge.

Furthermore, DMCs serve as a source of competitive advantage by enabling organizations to differentiate themselves from competitors. By leveraging digital tools and platforms effectively, firms can create unique customer experiences, deliver personalized value propositions, and build strong brand identities, thereby attracting and retaining customers in a crowded marketplace (Apasrawirote et al., 2022).

Finally, DMCs foster innovation and value creation by encouraging experimentation with new digital technologies and marketing approaches. This allows organizations to explore novel ways of engaging with customers, delivering products and services, and creating value, ultimately driving growth and enhancing market competitiveness (Morgan-Thomas et al., 2020).

In conclusion, the cultivation of strong DMCs is no longer a luxury but a necessity for businesses operating in the digital age. These capabilities are essential for building customer relationships, making data-driven decisions, fostering agility, gaining a competitive advantage, and driving innovation, ultimately leading to enhanced business performance and sustainable success.

2.1.5. Objectives of DMC

Developing and owning robust digital marketing capabilities serves several key objectives for businesses in the modern digital landscape:

I. *Achieving Superior Business Performance:*

Ultimately, the primary aim of cultivating DMCs is to achieve superior business performance. This encompasses various aspects, including increased sales and revenue, improved profitability, greater market share, and enhanced brand equity (Chinakidzwa and Phiri, 2020).

By leveraging DMCs effectively, companies can optimize marketing campaigns, reach a wider audience, and convert leads into customers more efficiently, contributing directly to bottom-line results.

II. Building Strong Customer Relationships:

DMCs enable personalized and targeted communication with customers through various digital channels, fostering deeper engagement and building stronger relationships (Apasrawirote et al., 2022).

This focus on customer-centricity leads to increased customer satisfaction, loyalty, and advocacy, creating a sustainable competitive advantage.

III. Gaining Actionable Customer Insights:

Through data analytics and insights derived from digital platforms, DMCs allow organizations to gain a comprehensive understanding of customer behavior, preferences, and needs (Wang, 2020).

This valuable information enables firms to tailor their marketing strategies, personalize product offerings, and improve customer experiences, leading to better customer acquisition and retention.

IV. Enabling Effective Brand Building:

DMCs provide powerful tools for building and managing brand reputation in the digital space. Through strategic content marketing, social media engagement, and online reputation management, companies can shape brand perception, establish thought leadership, and connect with their target audience on a deeper level (Rauschnabel et al., 2019).

V. Fostering Innovation and Adaptability:

Owning DMCs encourages a culture of innovation and adaptability within organizations. By leveraging digital technologies and experimenting with new marketing approaches, companies can stay ahead of the curve, respond effectively to evolving market trends, and continuously improve their marketing efforts (Herhausen et al., 2020).

2.2. AI Adoption

Artificial intelligence is characterized by "the system's competence in accurately comprehending external data, acquiring knowledge from it, and employing that acquired knowledge to accomplish particular objectives and tasks through adaptable adjustment." Throughout the last decade, AI has made substantial strides in numerous domains. AI advancements in image recognition, natural language processing, and other domains are attributable to the robust data aggregation capabilities of big data analytics systems and cloud platforms. Additionally, there are wider opportunities for the expansion of business

operations. As an illustration, Microsoft has integrated its GPT-4 model with the Bing search engine in an effort to foresee the future of search engine development, ever since OpenAI introduced the natural language model ChatGPT. A multitude of Internet corporations, Google being one, have made substantial investments in R&D and subsequently introduced their own AI natural language models (Zehao Li, 2024).

Adoption of AI necessitates the incorporation of diverse and novel information via the development of new competencies, technologies, and training programs. The process of AI implementation and diffusion encompasses several stages: organizational readiness, trial usage, user adoption of the innovation, and integration of the technology into the organization's daily operations (Rohit Madan & Mona Ashok, 2022).

AI teaches computers to comprehend and imitate human behavior and communication. On the basis of the data provided, AI has developed intelligent machines capable of cognition, action, and reaction similar to those of humans. AI is capable of performing a wide range of specialized and technical tasks, including problem-solving, speech and image recognition, and natural language processing. It is a compilation of technologies with the capacity to perform duties that ordinarily demand human intelligence. When implemented in routine business operations, these technologies are capable of learning, acting, and performing with an intelligence comparable to that of humans. In business transactions, AI that emulates human intelligence in machinery conserves both time and money. It concentrates on developing intelligent machines capable of human-like thought and action, thereby creating extraordinary opportunities for numerous industries. It is believed that AI, which has been dubbed the "next step" in the industrial revolution, possesses the answers to a great number of contemporary issues. In addition, AI can facilitate the development of novel technologies, industries, and environments and aid in the prediction of future problems. AI essentially replicates human cognitive processes, such as reasoning, self-correction, and learning, within a machine. AI is capable of analyzing, comprehending, and making decisions regarding user data that already exists, thereby predicting market trends and user behavior. Organizations across the globe utilize this data forecast to enhance and optimize their sales and marketing strategies. Presently, machine learning is employed in the majority of AI marketing applications, including but not limited to constructing superior customer groups, determining the most effective promotion channels, and personalizing product recommendations and churn rate or customer lifetime value (Abid Haleem, Mohd Javaid, Mohd Asim Qadri, Ravi Partap Singh, Rajiv Suman, 2022).

Adoption of AI necessitates the incorporation of diverse and novel information via the development of new competencies, technologies, and training programs. The process of AI implementation and diffusion encompasses several stages: organizational readiness, trial usage, user adoption, and integration of the innovation into the organization's daily operations (Rohit Madan & Mona Ashok, 2022).

The implementation of AI in diverse industrial and service sectors entails the utilization of technologies including intelligent computing, big data analytics, and machine learning in order to optimize operations and boost productivity. AI empowers computers to comprehend and emulate human interactions, thereby facilitating data-driven decision-making.

2.2.1. The Importance of AI adoption

Data-Driven Decision Making: AI enables marketers to analyze large volumes of data from sources like customer interactions, market trends, and social media. This helps extract valuable insights that guide strategic decision-making (Mogaji et al., 2020). This data-driven approach improves targeting accuracy, personalizes messaging, and optimizes campaign performance.

Enhanced Customer Experience: AI enhances personalized customer experiences by using individual preferences and behaviors to tailor marketing messages, product recommendations, and customer service interactions (Dwivedi et al., 2019). This personalization strengthens customer relationships, boosts satisfaction, and increases brand loyalty.

Increased Efficiency and Productivity: AI automates repetitive tasks such as data analysis, campaign management, and content creation, freeing up marketers' time and resources for more strategic activities (Davenport and Ronanki, 2018). This automation improves efficiency, boosts productivity, and allows marketing teams to focus on high-value tasks.

Competitive Advantage: Adopting AI gives businesses a competitive edge by enabling them to anticipate market trends, respond more effectively to customer needs, and develop innovative marketing strategies (van Esch et al., 2019). This differentiation helps companies stand out in the market and achieve better business outcomes.

2.2.2. Main Objectives of AI Adoption in Marketing

Personalization and Customer-Centricity: AI enables personalized marketing by customizing messages, offers, and recommendations based on each customer's

preferences and behaviors (Kumar et al., 2019). This approach strengthens relationships and boosts engagement.

Predictive Analytics and Forecasting: AI algorithms analyze historical data to identify patterns and predict future customer behavior, market trends, and campaign performance (Overgoor et al., 2019). This predictive ability allows for proactive marketing strategies and better decision-making.

Marketing Automation and Efficiency: AI automates repetitive marketing tasks like email marketing, social media posting, and ad campaign management, which streamlines processes and enhances efficiency (Sterne, 2017).

Improved Customer Service: AI-powered chatbots and virtual assistants offer 24/7 customer support, answer questions, and resolve issues, thereby improving customer satisfaction and loyalty (Ngai et al., 2021).

Enhanced Marketing ROI: By optimizing targeting, personalizing messaging, and automating tasks, AI can greatly increase marketing return on investment (ROI), leading to higher revenue and profitability (Mogaji et al., 2020).

2.3. Firm Performance

Firm performance (PRF) pertains to the comprehensive accomplishment of a corporation in attaining its strategic objectives, as delineated in its mission, vision, and strategy. Performance is evaluated by assessing the success of business activities in accordance with predetermined criteria and standards. It is the outcome of efficient resource utilization by management. This evaluation assists in ascertaining the extent to which the organization achieves its objectives and detects any shortcomings that may be remedied via ongoing enhancements (Ekadajaja, Wijaya, & Vernetta, 2021).

Furthermore, on the basis of key performance indicators (KPIs) including market share, growth rate, profitability, and innovation, firm performance is evaluated in relation to its primary competitors. This enables a thorough comprehension of the organization's competitive position and overall efficacy within its sector (Mikalef et al., 2023). This comparison is critical because it provides insight into the relative success and efficacy of the firm, thereby ensuring that it remains competitive and efficient. As a result, firm performance is a composite metric that evaluates not only the competitor success of an organization but also its efficacy in attaining its internal strategic objectives. It entails the assessment of a multitude of key performance indicators (KPIs), such as innovation, market share, growth, profitability, and the achievement of the organization's vision, mission, and strategic goals. Organizations can secure sustained success in their respective sectors and preserve their competitive advantage by consistently assessing and enhancing these factors.

3. Previous studies

3.1. Local studies

3.1.1. Studies on Digital marketing in Algeria

The Algerian digital marketing landscape exhibits a diverse and dynamic approach to adoption across various key industries. Recent research offers valuable insights into the implementation of digital marketing strategies and the associated challenges within these sectors.

Focusing on Algerian small and medium enterprises (SMEs), Diouani, Graa, & Bechelaghem (2023) investigated the determinants influencing digital marketing adoption. Their findings emphasize the significance of factors such as accessibility, cost-effectiveness, time savings, and subjective norms. This reinforces the Technology Acceptance Model (TAM) as a valuable framework for comprehending the dynamics of digital marketing adoption within this sector.

In the tourism sector, BENMIR & Mesnadi (2023) examined the impact of digital gateways like Algeriatours.dz and the implementation of the new investment law No. 18-22. Their research underscores how digital initiatives can significantly enhance the promotion of domestic tourism and attract tourists through sophisticated online platforms.

Nadir & Bouacha (2019) conducted an analysis of 13 hotels in Constantine Province, highlighting the growing importance of digital marketing strategies for enhancing competitiveness and customer engagement within the hospitality industry.

Messiliti, Benzaama, & Benzidane (2019) offer a critical overview of the challenges and prospects facing the digital economy in Algeria. Their analysis acknowledges the significant efforts made since the early 2000s to develop information and communication technology (ICT) and digital transformation strategies. However, they also highlight the stagnation of initiatives like e-Algeria, emphasizing the need for strong political will to propel the digital economy forward.

Collectively, these studies provide a comprehensive understanding of the evolving role of digital marketing across various industries in Algeria. While they demonstrate a positive trend towards digital adoption, they also reveal existing challenges that must be addressed to fully harness the potential of digital marketing. Overcoming these obstacles will be crucial for Algerian businesses to remain competitive in the increasingly digital global marketplace.

3.2. Foreign studies

3.2.1. The Relationship between AI Adoption and Digital Marketing Capabilities

The convergence of artificial intelligence and digital marketing capabilities represents a pivotal area of inquiry within the marketing discipline. This intersection presents transformative opportunities while simultaneously raising critical challenges. Existing research emphasizes AI's potential to revolutionize digital marketing strategies by driving efficiencies, enhancing personalization, and providing strategic insights. However, navigating the ethical landscape associated with advanced technological integration remains a crucial consideration.

Basha (2023) and George et al. (2024) establish a foundational understanding of AI's role in marketing, highlighting its ability to improve marketing performance through data analysis, personalization, and automation. These studies demonstrate how AI adoption not only enhances operational efficiency but also significantly bolsters competitive advantages and profitability across diverse market sectors.

Mogaji, Soetan, and Kieu (2020) address the ethical considerations of AI in marketing, particularly its impact on vulnerable customers. They underscore the importance of balancing technological innovation with ethical considerations and human oversight. Their work suggests that while AI can effectively personalize marketing efforts, a cautious approach is necessary to avoid exacerbating customer vulnerabilities.

Exploring AI's integration into marketing communications, Durmus Senyapar (2024) emphasizes its role in enhancing personalization, efficiency, and strategic insights across various marketing domains, such as content creation and customer service. This highlights AI's transformative potential in redefining customer engagement strategies.

Furthermore, the literature examines the spectrum of AI integration into marketing strategies, ranging from supporting human decision-making processes to making autonomous strategic decisions. Eriksson, Bigi, and Bonera (2020) discuss this spectrum, revealing the need for businesses to adapt their culture and organizational models to fully leverage AI's capabilities, particularly in strategic marketing decision management.

Research also extends into the domain-specific impacts of AI on marketing capabilities. Thakur and Kushwaha (2023) provide a bibliometric analysis of AI in marketing research, mapping the scientific landscape and identifying future research directions. This study emphasizes the dynamic interplay between AI adoption and digital marketing capabilities.

Specific attention is given to AI's role in enabling innovation within B2B marketing. A bibliometric analysis by an unspecified group of authors examines AI's strategic importance in enhancing competitive advantages within this domain. Synthesizing findings from extensive literature, this study underscores the necessity for businesses to embrace AI to realize effective digital marketing innovation strategies.

Additionally, Huang and Rust (2021) develop a conceptual framework for collaborative AI in marketing, offering guidance for integrating AI with human intelligence (HI) to enhance marketing effectiveness. This framework proposes a synergistic collaboration that optimizes the timing and mix of AI-HI integration, highlighting the profound implications for retailing, which serves as the interface between marketers and consumers.

Similarly, Arslan (2022) focuses on the strategic role of AI in e-commerce, emphasizing how AI technologies bolster competitive advantages by improving customer experiences and operational efficiencies. This study stresses the importance of continuous investment in AI technologies for sustaining a competitive edge in the digital marketplace.

Collectively, these studies provide a comprehensive view of AI's impact on digital marketing capabilities, underscoring its transformative potential while acknowledging the associated challenges. Integrating AI into marketing strategies necessitates an adaptive approach that considers data privacy, system integration challenges, and the need for an ethical framework guiding AI's application in marketing.

Table 2.1: Previous Studies on AI Adoption with Digital Marketing

#	Focus	Authors	Method	Key Findings	Year
1	AI's Role in Marketing Strategies	Dr. Sajan M. George et al.	Mixed-Method	Data-Driven Decisions, Personalized Experiences, Operational Efficiency	2024
2	AI's Impact on Marketing Communication	Hafize Nurgul Durmus Senyapar	Evaluation Research	Personalized Engagement, Content Customization, Strategic Insights	2024
3	AI Revolutionizing Marketing	Dr. Sajan M. George et al.	Mixed-Method	Increased Efficiency, Personalization, Data-Driven Decisions	2024
4	AI Transforming Marketing Communication	Hafize Nurgul Durmus Senyapar	Evaluation Research	Personalized Interactions, Real-Time Engagement, Targeted Advertising	2024
5	AI's Impact on Sustainable Marketing	Erik Hermann	Advocacy Perspective	Potential for Sales & Sustainable Practices	2023
6	AI for Competitive Advantage in E-Commerce	. Ahmad Arslan	Qualitative Analysis (Case Studies)	Enhanced Customer Experiences, Operational Efficiency, Innovation	2022

7	AI's Expanding Role in Marketing	Vlačić et al	Systematic Lit. Review	Research Needed: Adoption, Ethics, Data Protection	2021
8	AI Applications in Marketing	Anoop MR	Secondary Data Review, Interviews	Predictive Analytics, Customer Modeling, Personalized Experiences	2021
9	Ethical Considerations of AI in Marketing	Mogaji et al.	Lit. Review, Analysis	Potential for Personalization, Risk of Exacerbating Vulnerabilities	2020
10	AI's Potential & Challenges in Marketing	De Bruyn et al.	Lit. Review, Analysis	Enhanced Strategies, Ethical Concerns (Bias, Explainability)	2020
11	Future of Marketing with AI	Davenport et al.	Lit. Review, Practitioner Interactions	Predictive Analytics, Personalization, Ethical Considerations	2020
12	AI in Marketing Strategy Formulation	Theresa Eriksson et al.	Qualitative Research (Interviews)	Spectrum of Integration: Data Analysis to Autonomous Decisions	2020
13	Future of Marketing with AI	Davenport et al	Lit. Review, Practitioner Interactions	Predictive Analytics, Personalization, Ethical Considerations	2020

3.2.2. The Relationship between Digital Marketing Capabilities and Firm Performance

The burgeoning relationship between digital marketing capabilities and firm performance has become a focal point of contemporary research, highlighting the transformative potential of digital strategies across diverse business contexts.

Erhan et al. (2023) explore this relationship through the lens of upper echelon and attention-based views, demonstrating that digital marketing innovation, particularly during disruptive events like pandemics, significantly enhances organizational performance. This enhancement hinges on the comprehensiveness of top management team decision-making and the dynamic nature of the business environment, emphasizing the critical role of strategic decision-making in leveraging digital marketing innovation for organizational stability and success.

Similarly, Wu, Botella-Carrubi, and Blanco-González-Tejero (2024) investigate the impact of digital marketing strategies on firm performance. They identify key organizational attributes such as innovativeness, proactiveness, and managerial capabilities as crucial facilitators, underscoring the direct and positive influence of digital marketing strategies on organizational performance. This suggests that digital marketing transcends its operational function and serves as a strategic asset capable of significantly shaping a firm's success and effectiveness in the competitive digital landscape.

Broadening the scope, Ardakani et al.'s study on e-commerce and digital marketing adoption reveals their positive and significant influence on both firm performance and sustainability. This underscores a more holistic perspective, where digital marketing strategies contribute not only to financial performance but also to a firm's sustainability efforts, demonstrating a synergistic relationship between digital adoption and enhanced performance and sustainability.

Ranjan (2023) further enriches this discourse by highlighting the importance of IT-related resources in developing digital marketing capabilities, which subsequently impact business performance positively. The study also reveals the moderating effects of digital orientation and technological turbulence, suggesting that the strategic integration of IT resources with digital marketing efforts can amplify a firm's performance, particularly in volatile technological environments.

Focusing on the micro-entrepreneurial sector in Jakarta, Yusuf, Astuti, and Ariani (2022) investigate the influence of digital marketing mix strategies and customer relationship management (CRM) on marketing performance during the COVID-19 pandemic. Their findings reveal that digital marketing mix strategies significantly impact CRM and, consequently, marketing performance, emphasizing the crucial role of digital marketing in navigating economic challenges and enhancing performance during crises.

In the educational sphere, Purwanti et al. (2021) examine the influence of digital marketing and innovation on school performance. While innovation directly impacts performance, digital marketing plays a critical role in facilitating innovative practices, suggesting that its strategic use can significantly contribute to performance improvements in educational settings.

Adopting a dynamic capability perspective, Wang and Kim (2017) explore how social media marketing can enhance CRM capabilities and PRF. Their findings demonstrate that social CRM capabilities fostered by social media use significantly boost customer engagement and, subsequently, PRF. This highlights the strategic value of integrating social media into CRM strategies for achieving business success.

Collectively, these studies offer compelling evidence of the strategic importance of DMCs in enhancing PRF across diverse sectors and contexts. Whether through the lens of decision-making comprehensiveness, IT resource integration, or the adoption of e-commerce and social media strategies, digital marketing emerges as a pivotal factor in driving organizational success and competitiveness in the digital era.

Table 2.2: Previous Studies on the Relationship between Digital Marketing Capabilities and Firm Performance

Number	Title	Authors	Year	Variables	Methods	Results
1	The empirical study of digital marketing strategy	Chih-Wen Wu et al.	2024	- Innovativeness - Proactiveness - Managerial capabilities - Digital marketing strategies - Organizational performance	- SEM & fsQCA (148 SMEs)	- Innovativeness, proactiveness, and managerial capabilities influence digital marketing strategies. - Digital marketing strategies influence organizational performance.
2	Digital Marketing and Business Performance of Selected Micro-Enterprises in China	Wang Shaohua et al	2024	- Digital marketing - Business performance (customer acquisition, profitability, sales, revenue)	- Descriptive correlational approach	- Digital marketing plays a crucial role in improving business performance for micro-enterprises in China. - Digital marketing strategies lead to better customer acquisition
3	IT-related resources, digital	Piyush Ranjan	2023	- IT advancement (ITAD) - IT	- Online survey (388 SMEs) -	- ITAD & ITAG contribute to

	marketing capabilities...			alignment (ITAG) - Digital marketing capabilities (DMCs) - Business performance (BP) - Digital orientation (DO) - Technological turbulence (TT)	Moderated hierarchical regression analysis	DMCs, which improve BP. - DO strengthens ITAD & ITAG's effect on DMCs. - DMCs' impact on BP is stronger in turbulent environments.
4	The Relationship Between Digital Marketing Strategies and Firm Performance In Selected Hospitals In Beijing China	Zhao Shi Tao et al	2023	- Digital marketing strategies (social media marketing, email marketing) - Hospital performance	- Cross-sectional survey research design	. - Positive correlation between hospital performance and social media marketing & email marketing. - Email marketing shows the strongest positive association. - Digital marketing strategies significantly contribute to hospital performance
5	Digital marketing innovation and firm performance...	Trihadi Pudiawan Erhan et al	2023	- Digital marketing innovation - Decision-making comprehensiveness - Environmental	- Survey (143 firms) - Hierarchical regression analysis	- Digital marketing innovation positively affects firm performance. - Decision comprehensiveness

				dynamism - Firm performance		s moderates the relationship
6	The Value Relevance of Digital Marketing Capabilities to Firm Performance	. Christian Homburg, Dominik M. Wielgos	2022	- Digital marketing capabilities (DMCs) - Classic marketing capabilities (CMCs) - Firm profitability - Customer orientation (moderating variable) - Competitor orientation (moderating variable) - Environmental dynamism (moderating variable)	- Mixed-methods (interviews & multi-source data)	- DMCs enhance firm profitability beyond CMCs. - Customer orientation strengthens the positive effect of both DMCs and CMCs on profitability. - Competitor orientation and environmental dynamism require careful management to leverage the full benefits of marketing capabilities
7	The Effect of Digital Marketing Mix Strategy...	Alvina Mumtaza Yusuf et al.	2022	- Digital marketing mix strategy - Customer relationship management (CRM) - Marketing performance	- Survey (231 MSMEs) - Structural Equation Modeling (SEM)	- Digital marketing mix strategy influences CRM in MSMEs. - CRM positively affects marketing performance

8	Digital Marketing in the Hospitality Industry	Dr. Antoneta Njeri Kariru	2022	- Digital marketing		
9	The Influence Of Digital Marketing & Innovation On The School Performance	Yanti Purwanti et al	2021	Digital marketing - Innovation - Teacher performance	SEM (150 teachers)	Innovation affects teacher performance, but digital marketing does not directly. - Digital marketing influences innovation
10	The Role of Digital Marketing in Business Performance with the Moderating Effect of Environmental Factors Among SMEs of UAE	Mohammed T. Nuseir, Ahmad Ibrahim Aljumah	2020	- Digital marketing - Business performance - Environmental factors (moderating variable)	- SMART-PLS analysis, questionnaires	- Digital marketing positively influences business performance for SMEs in the UAE. - Environmental factors do not significantly moderate this relationship.
11	Digital Marketing Strategies, Online Reviews, and Hotel Performance	Patrick De Pelsmacker et al.	2018	- Digital marketing strategies - Online reviews (volume & valence) - Hotel performance (room occupancy & RevPar)	- Study in 132 Belgian hotels	- Digital marketing strategies influence online reviews, which in turn affect hotel performance. - Effects are stronger for chain hotels and higher-star hotels.

12	Firm Performance among Internationalized SMEs...	Sanna Joensuu-Salo et al.	2018	- Market orientation - Marketing capability - Digitalization - Firm performance	- Path analysis (101 SMEs)	- Marketing capability mediates market orientation's effect on performance for all firms. - Digitalization affects performance only for domestic firms.
13	Can Social Media Marketing Improve Customer Relationship...	Zhan Wang & Hyun Gon Kim	2017	- Social media marketing - Social CRM capabilities - Customer engagement - Firm performance	- Analysis of social media data & financial data	- Social CRM capabilities enhance customer engagement, leading to better firm performance. - Social media use strengthens the impact.
14	. The Relative Impact of Marketing, Research-and-Development...	Alexander V. Krasnikov & Satish Jayachandran	2008	Marketing capability - R&D capability - Operations capability - Firm performance	Meta-analysis	. - Marketing capability has a stronger influence on firm performance than R&D and operations capabilities.
15	Marketing Performance Measurement Ability and Firm Performance	Don O'Sullivan & Andrew V. Abela	2007	Marketing performance measurement (MPM) ability - Firm profitability - Stock returns -	- Primary & secondary data, Decision Tree Regression Analysis, K-means Cluster Analysis	- . - Ability to measure marketing performance enhances profitability, stock returns, and marketing's stature within the firm. - MPM strengthens marketing's position and improves

				Marketing's stature within the firm		overall firm performance.
16	The Effect of the Adoption of E- Commerce and Digital Marketing...	Maya Mojarrad Ardakani et al.	Not specified	- E-commerce adoption - Digital marketing adoption - Firm performance - Sustainability	- PLS-SEM (144 SMEs)	- E-commerce and digital marketing positively affect firm performance and sustainability. - Firm performance and sustainability are positively correlated.

3.2.3. The Relationship between AI Adoption and Firm Performance

The relationship between AI adoption and firm performance has become a central theme in recent academic investigations. Researchers have employed diverse methodologies and examined various geographical contexts and industry sectors to illuminate the nuances of this dynamic relationship.

Mikalef et al. (2023) emphasize the crucial role of AI competencies in enhancing B2B marketing capabilities, which subsequently bolster organizational performance. Their study, focusing on European companies, particularly in the Nordic region known for its advanced AI adoption, utilizes a survey-based methodology to underscore the positive influence of AI competencies on organizational outcomes.

Similarly, Baabdullah et al. (2021) investigate the antecedents and consequences of AI-based B2B practices in Saudi Arabian SMEs. Their research reveals that AI enablers and readiness significantly foster the acceptance of AI practices, which in turn enhances relational governance and AI-driven business customer interaction. This conceptual model, validated through structural equation modeling, aligns with findings from other regions, suggesting a universal trend in the AI-firm performance nexus.

In the United States, Alekseeva et al. (2020) offer a nuanced perspective by differentiating the impact of AI adoption between management ranks and IT specialists on firm growth and investment decisions. Their research, utilizing online job postings as a gauge for AI demand, finds a stronger positive association with firm size and investments when AI is adopted among managers rather than IT specialists, hinting at the strategic leverage AI offers at the managerial level.

Wamba-Taguimdje et al. (2020) transcend geographical and sectoral boundaries to highlight the transformative potential of AI in optimizing organizational and process-level performance across various industries. Their extensive review of case studies and AI technologies positions AI as a strategic enabler for firms to achieve competitive advantages, underscoring the importance of AI capabilities in driving firm performance.

Furthermore, studies like those conducted by Chen, Zhou, and Frankwick (2023) in the United States and Ho et al. (2022) on a global scale provide deeper insights into AI's impact on marketing performance and resilience against market fluctuations, such as those caused by the COVID-19 pandemic. Chen, Zhou, and Frankwick (2023) demonstrate that AI adoption intensity enhances marketing performance through dynamic capabilities, while Ho et al. (2022) emphasize AI's role in shielding firms from pandemic-related risks, showcasing its critical role in sustaining firm performance under adversity.

These studies collectively illustrate the multifaceted and positive influence of AI adoption on firm performance across various contexts and through different mechanisms. While the specific impacts may vary depending on factors such as industry, geographical location, and level of adoption, the overarching trend suggests that AI serves as a powerful tool for enhancing organizational effectiveness and competitiveness in the digital era.

Table 2.3: previous studies on AI adoption with firm performance

No	Title	Authors (Year)	Country	Relationship between AI & Firm Performance	Method	Results
1	AI Adoption and Firm Performance: Management versus IT	Alekseeva et al. (2020)	USA	AI adoption (management) -> firm size, growth, investment	Online job posting analysis & regression	AI adoption (management) linked to growth, sales, market cap, R&D, Capex. No strong link to productivity.
2	Influence of Artificial Intelligence on Firm Performance	Wamba-Taguimdje et al. (2020)	Multinational (case studies)	AI capabilities -> process optimization, automation, information -> performance (organizational & process)	Case studies & literature review	AI highlights potential for performance improvement at various levels through process optimization and customer interaction.
3	SMEs and artificial intelligence: Antecedents and consequences of AI-based B2B practices	Baabdullah et al. (2021)	Saudi Arabia	AI enablers & readiness -> AI practices -> relational governance & customer interaction -> performance	Structural Equation Modeling	AI enablers, readiness, and AI practices positively impact performance.
4	Artificial intelligence competencies for	Mikalef et al. (2023)	Europe (Nordics)	AI competencies -> B2B marketing capabilities -> firm performance	Survey	AI competencies positively influence B2B marketing capabilities, which in turn positively impact performance.

Table 2.3: previous studies on AI adoption with firm performance

No	Title	Authors (Year)	Country	Relationship between AI & Firm Performance	Method	Results
	organizational performance					
5	Firm AI Adoption Intensity and Marketing Performance	Chen et al. (2023)	USA	Technological opportunism, top management support, normative pressure -> AI adoption intensity -> dynamic marketing capabilities -> marketing performance	Online survey	Increased AI adoption intensity improves marketing performance through enhanced dynamic marketing capabilities and customer orientation.
6	Artificial Intelligence and Firm Performance: Does Machine Intelligence Shield Firms from Risks?	Ho et al. (2022)	Global	AI adoption -> performance during COVID-19 pandemic	Interrupted Time-Series Analyses	AI stocks showed more resilience and quicker recovery compared to conventional stocks during COVID-19, suggesting AI as a driver for performance in challenging environments.

Table 2.3: previous studies on AI adoption with firm performance

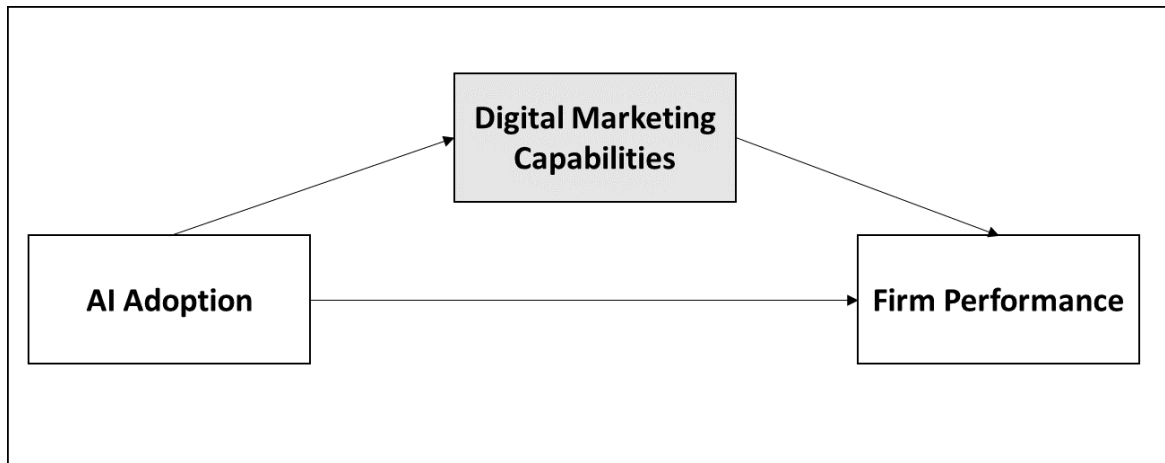
No	Title	Authors (Year)	Country	Relationship between AI & Firm Performance	Method	Results
7	Artificial Intelligence Adoption by SMEs to Achieve Sustainable Business Performance	Badghish & Soomro (2024)	Saudi Arabia	Tech readiness, org readiness, env readiness -> AI adoption -> sustainable performance (moderated by firm size)	Survey with multi-group analysis	Technological, organizational, and environmental readiness significantly influence AI adoption, which in turn impacts operational & economic performance. Firm size moderates these relationships.
8	The Impact of Artificial Intelligence on Firm Performance	Chen et al. (2022)	China & Portugal	Artificial Intelligence Capability (AIC) -> creativity, AI Management (AIM), AI-driven decision making (AIDDM) -> firm performance	Survey & PLS-SEM	AIC indirectly affects performance through creativity, AIM, and AIDDM. Innovation Culture and Environmental Dynamism moderate the impact of AIDDM on performance.

Table 2.4 : the comparison between the current study and previous studies

The relationship	Feature	Similarities	Differences
Relationship between AI Adoption and Digital Marketing Capabilities	Focus	Investigates the relationship between AI adoption and digital marketing capabilities (e.g., Basha, 2023; Dr. Sajan M. George et al., 2024).	Focuses on the overall impact of AI adoption on digital marketing capabilities, not on specific functions. Previous studies often investigate the impact of AI on specific digital marketing activities, providing a more granular view (e.g., Vlačić et al., 2021).
	Method	Employs quantitative research using surveys and statistical analysis (e.g., Mogaji et al., 2020; Hafize Nurgul Durmus Senyapar, 2024).	Utilizes a quantitative approach, similar to other studies (e.g., Eriksson et al., 2020; Anoop MR, 2021).
	Key Findings	Finds a significant positive impact of AI adoption on digital marketing capabilities, aligning with previous research (e.g., Vlačić et al., 2021; De Bruyn et al., 2020).	Focuses on the overall impact of AI adoption, not on specific functions (e.g., Eriksson et al., 2020; Anoop MR, 2021).
	Context	Conducts the study within a specific context of SMEs in the service sector in Eloued, Algeria.	There is none of previous Studies take a specific context of SMEs in the service sector in Eloued, Algeria.
Relationship between Digital Marketing Capabilities and Firm Performance	Focus	Investigates the relationship between digital marketing capabilities and firm performance (e.g., Trihadi Pudiawan Erhan et al., 2023; Chih-Wen Wu et al., 2024).	Finds no direct relationship between digital marketing capabilities and firm performance, highlighting the importance of AI adoption for improving firm performance. Most previous studies find a positive correlation (e.g., Alvina Mumtaza Yusuf et al., 2022).
	Method	Employs quantitative research using surveys and statistical analysis (e.g., Maya Mojarrad Ardakani et al., Not specified; Piyush Ranjan, 2023).	Utilizes a quantitative approach, similar to other studies (e.g., Sanna Joensuu-Salo et al., 2018).

Relationship between AI Adoption and Firm Performance	Key Findings	Findings deviate from the majority of previous research, indicating that digital marketing capabilities may not directly impact firm performance (e.g., Alvina Mumtaza Yusuf et al., 2022; Zhan Wang & Hyun Gon Kim, 2017).	Most studies find a positive correlation between digital marketing capabilities and firm performance (e.g., Alvina Mumtaza Yusuf et al., 2022; Zhan Wang & Hyun Gon Kim, 2017).
	Context	Conducts the study within a specific context of SMEs in the service sector in Eloued, Algeria.	There is none of previous Studies take a specific context of SMEs in the service sector in Eloued, Algeria.
	Focus	Investigates the relationship between AI adoption and firm performance (e.g., Alekseeva et al., 2020; Wamba-Taguimdje et al., 2020).	Demonstrates a direct link between AI adoption and firm performance, highlighting the potential of AI for improving SME performance. Previous studies provide a more nuanced understanding, focusing on specific AI capabilities, contextual factors, and mechanisms of impact (e.g., Ho et al., 2022).
	Method	Employs quantitative research using surveys and statistical analysis (e.g., Baabdullah et al., 2021; Mikalef et al., 2023).	Utilizes a quantitative approach, similar to other studies (e.g., Badghish & Soomro, 2024; Chen et al., 2022).
	Key Findings	Findings align with previous research, demonstrating a positive impact of AI adoption on firm performance (e.g., Chen et al., 2023; Ho et al., 2022).	Focuses on the direct link between AI adoption and firm performance, highlighting the potential of AI for SMEs. Previous studies focus on the role of specific AI capabilities, contextual factors, and mechanisms of impact (e.g., Chen et al., 2023; Ho et al., 2022).
	Context	Conducts the study within a specific context of SMEs in the service sector in Eloued, Algeria.	There is none of previous Studies take a specific context of Algeria.

Figure 2.1. Conceptual framework of the study



CHAPTER THREE

METHOD AND RESULTS

1. Introduction

This chapter delineates the methodology employed and discloses the findings of the study, which investigates the impact of AI adoption on digital marketing capabilities and firm performance within SMEs in El Oued City, Algeria. It thoroughly describes the research design, data collection procedures, and analytical methods utilized to rigorously examine the hypothesized relationships. Additionally, this chapter methodically details the sequence of operations from data gathering to analysis, culminating in a detailed presentation of the results. The objective is to provide a lucid and comprehensive account that not only justifies the methodological decisions taken but also elucidates the insights derived from the empirical data, thereby providing a robust foundation for the conclusions drawn concerning the transformative influence of AI in the SME sector.

2. Methodology

This section outlines the methodology employed to examine the impact of AI adoption on digital marketing capabilities and their subsequent influence on firm performance. A quantitative approach was selected for this investigation, aiming to provide a comprehensive understanding of the study's focus areas, including the definition of the analysis unit, characteristics of respondents, and the study's target population within the context of SMEs in El Oued City, Algeria. This approach facilitated the detailed planning of the sampling method and the adaptation of the survey tool for this specific demographic. A structured, self-administered questionnaire was developed and disseminated to gather data from the targeted SMEs, ensuring a methodical collection process and precise measurement of each variable under consideration. The final segment of this chapter delves into the data analysis techniques utilized to decipher the intricate relationships between AI adoption and its effects on digital marketing capabilities, further exploring how these factors contribute to enhancing firm performance.

2.1. Study context

This research project delves into the service sector of El Oued, Algeria, focusing specifically on the role and significance of Small and Medium Enterprises (SMEs). The study concentrates on three key sub-sectors within the service industry: transportation, education, and tourism. These sectors are crucial components of the

regional economy and provide a valuable lens for understanding the challenges and opportunities faced by SMEs in El Oued.

A sample of 453 SMEs operating within these sectors forms the basis of this investigation. The research aims to analyze the operational structures, economic contributions, and strategic approaches adopted by these enterprises. By doing so, it seeks to provide a comprehensive understanding of their impact on the local economic landscape and the specific conditions under which they operate.

2.1.1. Small and Medium Enterprises in Algeria

According to Bilal Mechaali and Salah Mahrez, the old directive Law 01-18 defines an SME as a producer of goods and/or services, regardless of its legal nature. An SME operates with 10 to 250 employees and does not exceed an annual turnover of 2 billion dinars or an annual budget of 500 million dinars, meeting criteria for independence. The new Law No. 17-02, issued on January 11, 2017, amends and supplements the 2001 Law and includes updated financial limits for small, medium, and large enterprises to align with economic development and state goals for sector growth. According to Article 5 of the SME Promotion Act 2017, an SME is defined as an enterprise producing goods and/or services with 10 to 250 employees, an annual turnover not exceeding 4 billion dinars, or a total annual budget not exceeding 1 billion Algerian dinars, and meeting the criteria for independence.

2.1.2. Service sector in Eloued

The service sector in El Oued, Algeria, plays a vital role in the local economy, significantly contributing to job creation, revenue generation, and overall economic development. This sector encompasses a diverse range of industries, including transportation, education, tourism, healthcare, hospitality, and others.

-Transportation Sector: The transportation sector in El Oued includes various modes of transportation such as buses and taxis. Taxi companies are private enterprises providing public transportation services within the city and nearby areas.

-Education Sector: The education sector in El Oued encompasses a variety of educational institutions such as public and private schools, training and development centers, language schools, and private tutoring services. These institutions provide diverse educational opportunities and cater to the needs of students in various fields.

-Tourism Sector: El Oued is considered a cultural tourism destination where visitors can explore the landmarks and traditions of the desert. The tourism sector in El Oued

includes tourism establishments, hospitality services, and recreational activities that offer tourists unique and enjoyable experiences.

2.2. Research Design

Guided by Sekaran (2016), this quantitative study employs a survey method to examine the causal relationships between AI adoption, DMCs, and PRF. Utilizing validated measurement scales (Sekaran, 2016) and a five-point Likert scale (Churchill & Iacobucci, 2006), the questionnaire facilitates efficient and accurate data collection on respondent opinions and attitudes (Sekaran & Bougie, 2016). This approach enables statistical analysis and generalization of findings (Hair, 2007), leveraging the strengths of survey research in capturing diverse perspectives (Ghauri & Grønhaug, 2005).

2.3. Unit of Analysis

Following Bhattacharjee (2012) and Neuman (2007), this study identifies SMEs integrating AI into their digital marketing strategies as the unit of analysis. This aligns with the research objective of examining the impact of AI adoption on digital marketing capabilities and subsequent firm performance within the SME context.

2.4. Respondent's Characteristics

This study of AI integration in SME digital marketing utilizes the key informant method at the organizational level. A single survey is completed by a senior executive (ideally the CEO) with comprehensive knowledge of the firm's AI adoption, strategic goals, and performance. In cases where the CEO is unavailable, the survey is to be completed by the next highest-ranking officer. Respondents must have a minimum three-year tenure to ensure familiarity with relevant organizational operations and strategies.

2.5. The Target Population of the Study

Following Malhotra (2004), this research focuses on SMEs within the service sector actively integrating AI into their digital marketing strategies. Data from the CNRC in El Oued (2024) identified 453 relevant SMEs, including SARLs those in transport (385), tourism (48), and education (20).

The selection criteria emphasized SMEs at the forefront of AI adoption in digital marketing, recognizing their potential to offer valuable insights into AI's transformative impact on marketing and performance.

2.6. Sampling Procedures

This study focuses on SMEs integrating AI into their digital marketing strategies. The CNRC identified 453 relevant SMEs in 2024. Following Krejcie and Morgan (1970), a sample size of 209 was deemed statistically significant for a 95% confidence level with a 5% margin of error.

Anticipating potential response rate challenges, we employed oversampling (Salkind, 2006), increasing the sample size by 50% to maximize usable responses. Thus, 314 questionnaires were distributed.

Systematic sampling (Zikmund et al., 2013) was employed to ensure a fair and random selection. Sequential numbers were assigned to all 453 SMEs, and a sampling interval of 3 was calculated. Starting with a randomly selected number within the first interval, every third SME was chosen until 314 questionnaires were sent, ensuring an evenly distributed sample.

2.7. Translation

As this study conducted in Eloued province where the people speak Arabic. For such consideration, the survey was translated solely into Arabic. To maintain accuracy and translation integrity, a back-translation process was implemented, involving bilingual management lecturers Dr. Oussama Saoula and Dr. Rabeh Sadaoui. Both meticulously reviewed and adjusted the translation, adhering to best practices advocated by Brislin (1970), Douglas & Craig (2007), and Ozolins (2009). This ensured the translated survey remained faithful to the original English version in content and intent, while also being adapted to the linguistic and cultural nuances of the SME audience in El Oued, thereby facilitating accurate and meaningful responses.

2.8. Data Collection

2.8.1. Questionnaire Design

This study employs a structured survey instrument to examine the effects of AI adoption on digital marketing capabilities and firm performance. An introductory section outlines the research goals and emphasizes the value of participant contributions.

Nine tables collect comprehensive data. The first six capture respondent and firm demographics (e.g., sex, age, position, firm age, field, and size) to contextualize responses. The final three tables assess the extent of AI adoption, digital marketing capabilities enabled by AI, and firm performance, directly informing the study's core objectives.

2.8.2. Data Collection Procedure

Engaging participants in survey research within a region like El Oued can be challenging due to unfamiliarity and general reluctance towards such studies. This challenge is further amplified when investigating relatively novel topics like AI adoption within firms. To address anticipated low response rates and ensure meaningful participation, this study employed a direct and personalized approach utilizing self-administered questionnaires.

Initial outreach to potential respondents was conducted via telephone. These calls served not only to solicit participation but also to emphasize the confidentiality of responses and highlight the significance of their contribution to understanding AI adoption in the local business landscape. By promising to share the study's findings, we aimed to motivate and secure involvement.

Targeting SMEs located in all municipalities in El Oued province, the survey focused on firms potentially at the forefront of AI integration. Personal visits were scheduled with willing respondents to facilitate questionnaire delivery and ensure the collection of reliable and insightful data.

Despite the challenges, the study achieved a significant response rate of 30.89%, with 97 out of 314 distributed questionnaires completed and returned. This success can be attributed to the direct, hands-on approach and thorough follow-up process, which fostered trust and engagement among respondents. The collected data offers valuable insights into the impact of AI adoption within El Oued's SME landscape.

2.8.3. Measurement Item

Surmise to previous studies on digital marketing capabilities, the questionnaire had adopted a multi-item scale in order to fit the study's context. The process had resulted in multiple-item measures for some constructs.

2.8.3.1. Digital Marketing Capabilities

We explore the domain of Digital Marketing Capabilities (DMCs) by conceptualizing it as a unified construct. This construct encompasses twelve digital marketing capabilities items that are integral to modern marketing strategies. These include social media marketing, mobile marketing, content marketing, search engine marketing, web analytics, marketing automation, and email marketing, as identified by Homburg and Wielgos (2022). Additionally, we incorporate the strategic application of digital marketing for information dissemination, customer relationship building, community management, and fostering customer closeness, following the insights from Giantari, Yasa, Suprasto, and Rahmayanti (2022).

To assess these capabilities, we employed a 5-point Likert scale, ranging from 1 ('much worse') to 5 ('much better'). This scale was chosen to gauge the comparative performance or improvement of these digital marketing capabilities over time, providing a nuanced understanding of how firms perceive their evolution in the digital marketing space. This measurement approach allows us to capture a comprehensive view of DMCs within firms, reflecting both the breadth of digital marketing activities and the depth of their impact on market engagement and customer relationships. The table no below show the digital marketing items

2.8.3.2. Artificial Intelligence Adoption

In our thesis, we assess the extent of AI adoption within marketing processes of firms, leveraging a set of specific items inspired by the work of Jing Chen et al., (2023). This evaluation is structured around a 5-point Likert scale, from 'strongly disagree' (1), 'neutral' (3), to 'strongly agree' (5), to gauge the implementation and impact of AI across various marketing dimensions of Comprehensive AI Integration, Extent of AI Implementation, Transformation of Marketing Processes, AI in Social Media Marketing, AI in Mobile Marketing, AI in Content Marketing, AI in Search Engine Marketing, AI in Web Analytics, AI's Role in Marketing Automation Enhancement, AI in Email Marketing, AI for Decision Making, AI as a Mainstream Technology, Top Management Acceptance of AI, AI as Core Technology. This approach allows us to succinctly measure the degree of AI adoption and its perceived

impact on marketing within firms, focusing on both the breadth of AI applications and the depth of its integration into marketing strategies and processes.

2.8.3.3. Firm Performance

We evaluate firm performance as a reflective construct based on a series of items measuring how firms stack up against their main competitors, drawing on insights from Chen, Zhou, and Frankwick (2023), and Apasrawirote, Yawised, and Muneesawang (2022). Utilizing a 5-point Likert scale ranging from 'strongly disagree' (1) to 'strongly agree' (5), we examine firm performance across various dimensions of competitiveness increase, strategic position strengthening, market share growth, sales growth, customer satisfaction improvement, customer referral increase, and customer loyalty enhancement.

2.8.4. Data Analysis Procedure

This study of AI adoption's impact on El Oued SMEs employed descriptive and inferential statistical techniques using SPSS 29 and Smart PLS 4, respectively. Descriptive analysis summarized survey data for preliminary screening (Bichi, 2004). Smart PLS 4 was chosen for its flexibility and efficacy in analyzing complex models with smaller sample sizes (Hair et al., 2012; Ringle et al., 2012; Goodhue et al., 2006; Duarte et al., 2010).

Following Diamantopoulos and Winklhofer (2001), 39 reflective measurement items were selected. A two-step evaluation process validated the measurement and structural models (Henseler et al., 2009; Hair et al., 2016). PLS-SEM was employed to assess the structural model, utilizing bootstrapping procedures to evaluate path coefficients, reliability, validity, R^2 , and Q^2 (Hair et al., 2014; Hair et al., 2016; Henseler et al., 2009).

3. Results

3.1. Rate of return

In February 2024, researchers initiated the distribution of questionnaires among a select group of SMEs, identified from a list provided by the National Center of Commercial Register (CNRC). This effort was concentrated on SMEs located in Eloued province. The research team made preliminary contact with each SME to schedule meetings, during which they introduced the questionnaire options available

to participants. Over a period of three months, 314 drop-and-collect surveys were handed out, accounting for 49.92% of the total 629 SMEs targeted. From these, 101 questionnaires were retrieved. However, among the 101 questionnaires collected, 4 were found incomplete, leaving 97 fully completed questionnaires available for analysis. This represents 30.89% of the questionnaires distributed, a rate considered acceptable for analysis as per Hair et al. (2010), who suggest a 30% response rate as sufficient. Thus, the data from these 97 questionnaires are deemed appropriate for further examination. The distribution and collection data of the questionnaires are detailed in Table 3.1.

3.1. Total Number of Questionnaire Distributed and Collected.

Label	Number
No. of distributed Questionnaires	314
No. of received Questionnaires	101
Uncompleted Questionnaire	04
Usable Questionnaires	97
Rate of Usable Questionnaires	30.89%

3.2. General Information

This section presents an overview of both the respondents and their companies, divided into six categories. The initial categories cover the age, position, and gender of the respondents. The subsequent three categories delve into the company's size, age, and field.

3.3. Respondent Profile

According to table 3.2., the respondent profile includes three questions which are related to the respondents' work position, the age of respondents, and her/his sex. First, the respondent profile includes his or her work position in the SME. Out of a total of 97 participants, it reveals that there are 30 CEOs, constituting 30.9% of the total respondents. Administrators form the largest group, with 31 individuals, representing 32.0% of the participants. Engineers with just 10 respondents, making up 10.3% of the total. Lastly, the category labeled "Others" includes 26 people, accounting for 26.8% of the respondents.

Table 3.2 The Respondent Position

Position	Frequency	Percent
CEO	30	30.9
Administrator	31	32.0
Engineer	10	10.3
Others	26	26.8
Total	97	100.0

The table presents an age distribution of respondents. Out of 97 individuals, there are 27 people aged 30 years or younger, constituting 27.8% of the total. The largest group falls within the 31 to 40 years age range, with 43 individuals making up 44.3%. The 41 to 50 years age group includes 23 people, representing 23.7% of the total. Lastly, those over 50 years old, comprises just 4 individuals, accounting for 4.1%. the data is shown in table 3.3.

Table 3.3 The Respondent age

	Frequency	Percent
Less than 30	27	27.8
From 31 to 40	43	44.3
From 41 to 50	23	23.7
More than 50	4	4.1
Total	97	100.0

Table 3.4 provides a breakdown of respondents by gender. Out of 97 respondents, 77 are male, constituting 79.4% of the total, and 20 are female, making up 20.6%.

Table 3.4 The Respondent Gender

	Frequency	Percent
Male	77	79.4
Female	20	20.6
Total	97	100.0

3.4. SMEs Profile

The SMEs profile includes three questions which are related to the company's sector, the age, and size. Regarding to sector, the table presents a breakdown of companies by their industry type, specifically focusing on the sectors of Tourism, Education, and transportation, among a total of 97 companies surveyed. It reveals that 72 companies, or 74.23% of the total, operate within the Tourism industry, indicating a significant predominance of this sector. In contrast, the Education sector comprises 21 companies, making up 21.65% of the total. Lastly, transportation were just 4 responses which indicate 4.12% of total collected surveys.

Table 3.5: Sector of the Company

	Frequency	Percent
Tourism	72	74.23
Education	21	21.65
Transportation	4	4.12
Total	97	100.0

The table 3.6 categorizes companies based on their age, the distribution indicates that 11 companies, or 11.3% of the total, are less than 3 years old. Companies in the 4 to 10 years range and those between 16 to 30 years both represent the largest segments, each comprising 34 companies or 35.1% of the total, highlighting a balanced presence of relatively established businesses within the dataset. Meanwhile, 18 companies, or 18.6%, fall into the 11 to 15 years category.

Table 3.6: Age of the Company

	Frequency	Percent
Less than 3	11	11.3
From 4 to 10	34	35.1
From 11 to 15	18	18.6
From 16 and above	34	35.1
Total	97	100.0

The table 3.7 provides an overview of the size of companies based on the number of employees. It divides companies into four size categories: those with fewer than 49 employees, those with 50 to 99 employees, companies having 100 to 199 employees, and those with more than 200 employees. The data shows that the largest group consists of companies with fewer than 49 employees, making up 46.4% of the total. The next sizable category includes companies with 100 to 199 employees, representing 27.8%. Companies with 50 to 99 employees account for 15.5%, while those with more than 200 employees make up the smallest group at 10.3%.

Table 3.7 : Size of the Company

	Frequency	Percent
<49 years and less	45	46.4
From 50 to 99	15	15.5
From 100 to 199	27	27.8
From 200 and above	10	10.3
Total	97	100.0

3.5. Assessment of PLS-SEM Path Model Results

The study follows a two-step evaluation process for PLS-SEM path models, focusing first on the measurement model, then on the structural model.

3.5.1. Assessment of Measurement Model

In the assessment of the measurement model, we examine both reliability and validity:

3.5.1.1. Internal Consistency or Reliability

Reliability measures are crucial for assessing the internal consistency of observed variables representing a latent variable, showing how consistently these variables measure the underlying construct. According to Hair et al. (2019), Cronbach's alpha and composite reliability are the primary metrics used, with values ranging from 0 to 1. Typically, values above 0.7 indicate acceptable internal consistency, demonstrating that the observed variables reliably measure the latent construct and significantly contribute to its conceptual understanding.

In this study, Cronbach's alpha for all constructs ranged from 0.723 to 0.840, as shown in Table 3.1. Additionally, the composite reliability for all constructs exceeded the minimum acceptable threshold of 0.70, specifically ranging between 0.74 and 0.86. This confirms that the internal consistency of the measures is verified and substantiated.

AVE gauges the average proportion of variance that observed variables explain in relation to their corresponding latent variable, serving as a key indicator of the construct's convergent validity. Fornell and Larcker (1981) suggest that AVE values should range between 0 and 1, with values above 0.5 indicating that more than half of the variance in the indicators is accounted for by the latent variable. This supports the adequacy of the observed variables in representing the intended construct. According to the data in Table 3.8, AVE values for the constructs in this study range from 0.506 to 0.588.

Table 3.8: Internal Consistency Analysis

	Cronbach's alpha	Composite reliability	Average variance extracted
AIDP	0.802	0.858	0.506
DMC	0.766	0.848	0.583
PRF	0.767	0.850	0.588

Note: Composite Reliability (CR) = (square of summation of the factor loading) / [(square of summation of the factor loading) + (square of the summation of the error variances)]. Average Variance Extracted (AVE) = (summation of the square of the factor loadings) / [(summation of the square of the factor loading) + (summation of the error variance)].

3.5.1.2. Convergent Validity Testing

Hair, Black, Babin, Anderson, and Tatham (2006) defined convergent validity as the degree to which measurements accurately represent the intended latent variable and correlate with other measures of the same variable. They explained that factor loadings, composite reliability, and average variance extracted (AVE) are used to assess convergent validity.

Table 4.19 shows the indicator loadings, weights, reliabilities, and AVE for all items in the model. All indicators exceeded the required threshold of 0.50 suggested by Hair et al. (2006), except for AIDOP 1, AIDOP 5, AIDOP 6, AIDOP 7, AIDOP 8, AIDOP 10, AIDOP 14, DMC 1, DMC 2, DMC 3, DMC 5, DMC 6, DMC 7, DMC

11, DMC 12, PRF 1, PRF 5, and PRF 6. These items were removed from the model due to severe cross-loading and failure to meet the 0.50 minimum threshold.

The composite reliability values for all constructs were above the recommended threshold of 0.70 by Hair et al. (2006), and the AVEs for each construct were above the recommended value of 0.50 by Fornell and Larcker (1981), ranging between 0.506 and 0.588.

Table 3.9: Item Loading, AVE, and Composite Reliability

Construct	Items	Loadings	AVE	Composite Reliability
Artificial intelligence adoption (AIDOP)	AIDOP 2	0.721	0.506	0.858
	AIDOP 3	0.832		
	AIDOP 4	0.557		
	AIDOP 9	0.685		
	AIDOP 11	0.695		
	AIDOP 13	0.749		
Digital marketing capabilities (DMC)	DMC 4	0.742	0.583	0.848
	DMC 8	0.780		
	DMC 9	0.789		
	DMC 10	0.742		
Firm performance (PRF)	PRF 2	0.714	0.588	0.850
	PRF 3	0.834		
	PRF 4	0.773		
	PRF 7	0.740		

3.5.1.3. Discriminant Validity

Discriminant validity evaluates the extent to which a construct is distinct from other constructs within the model, reflecting the uniqueness of its measurement relative to others. This aspect of validity is critical in confirming that constructs are not unduly

overlapping and each represents a separate phenomenon. Two common methods to assess discriminant validity are the Fornell-Larcker criterion and item cross-loadings, as outlined by P. A. O. Duarte & Raposo (2010) and Hair et al. (2014).

The Fornell-Larcker criterion, specifically, requires that the square root of the Average Variance Extracted (AVE) for each construct should exceed the correlation between that construct and any other in the model (Fornell & Larcker, 1981; Hair et al., 2014). This method underscores the importance of a construct explaining a greater amount of variance in its own indicators than it shares with other constructs, ensuring clear conceptual distinctions are maintained.

Our analysis confirms strong discriminant validity across constructs, as evidenced by the data in Table 3.2. Each construct’s AVE square root surpasses its highest correlation with any other construct, aligning with the Fornell-Larcker criterion’s requirements:

Table 3.10 : Discriminant Validity

	AIDP	DMC	PRF
AIDP	0.711		
DMC	0.496	0.764	
PRF	0.470	0.276	0.767

AIDOP: The square root of AVE (0.711) is greater than its correlations with DMC and PRF, confirming that AI Adoption is sufficiently distinct from both Digital Marketing Capabilities and Firm Performance.

DMC: Similarly, the square root of AVE for Digital Marketing Capabilities (0.764) surpasses its correlations with AIDOP and PRF, supporting its discriminant validity.

PRF: The square root of AVE for Firm Performance (0.767) exceeds its correlations with AIDOP and DMC, ensuring a clear conceptual separation from these constructs

3.5.2. Assessment of Structural Model

3.5.2.1. Structural Model Specification (R-square values)

R-square is a crucial metric for assessing the goodness of fit in a structural model, reflecting the proportion of variance in a dependent variable that is predictable from the independent variables (Schumacker & Lomax, 2016). R-square values range from 0 to 1, where higher values indicate a better model fit and more substantial explanatory power. Generally, values above 0.25 are considered acceptable,

signifying that the model explains a significant portion of the variance in the dependent variables.

Digital Marketing Capabilities (DMC): An R-square value of 0.246 suggests that a moderate proportion of the variance in Digital Marketing Capabilities is explained by the model's independent variables. While this indicates that the model has some explanatory power, it may not be considered strong. Further investigation into additional relevant variables could enhance the model's explanatory power.

Firm Performance (PRF): An R-square value of 0.224 for Firm Performance indicates that the independent variables in the model account for a modest portion of the variance in Firm Performance. This suggests that the model has a medium fit, prompting further exploration of additional factors that could influence firm performance or a reevaluation of the model structure regarding this dependent variable.

Table 3.11 : R-square

	R-square
DMC	0.246
PRF	0.224

3.5.2.2. Assessment of Effect Size (f²)

The F-square (f²) value measures the effect size of each independent variable on the dependent variables, offering insights into the practical significance of these influences (Cohen, 1988). Cohen's benchmarks for effect sizes are >0.35 for large, >0.15 for medium, and >0.02 for small impacts.

AIDOP to DMC: The f² value of 0.326 indicates a large effect size, suggesting that AI Adoption has a substantial and practically significant impact on Digital Marketing Capabilities.

AIDOP to PRF: An f² value of 0.190 categorizes as a medium effect, indicating that AI Adoption influences Firm Performance to a considerable extent and this effect is of practical significance.

DMC to PRF: An f² value of 0.003 implies no effect, indicating that within the model, Digital Marketing Capabilities do not significantly influence Firm Performance. This lack of effect challenges the theoretical assumptions and may require a review of the model or the relationships posited between these variables.

Table 3.12 : f-square

AODOP-DMC	0.326
AIDOP-PRF	0.190
DMC-PRF	0.003

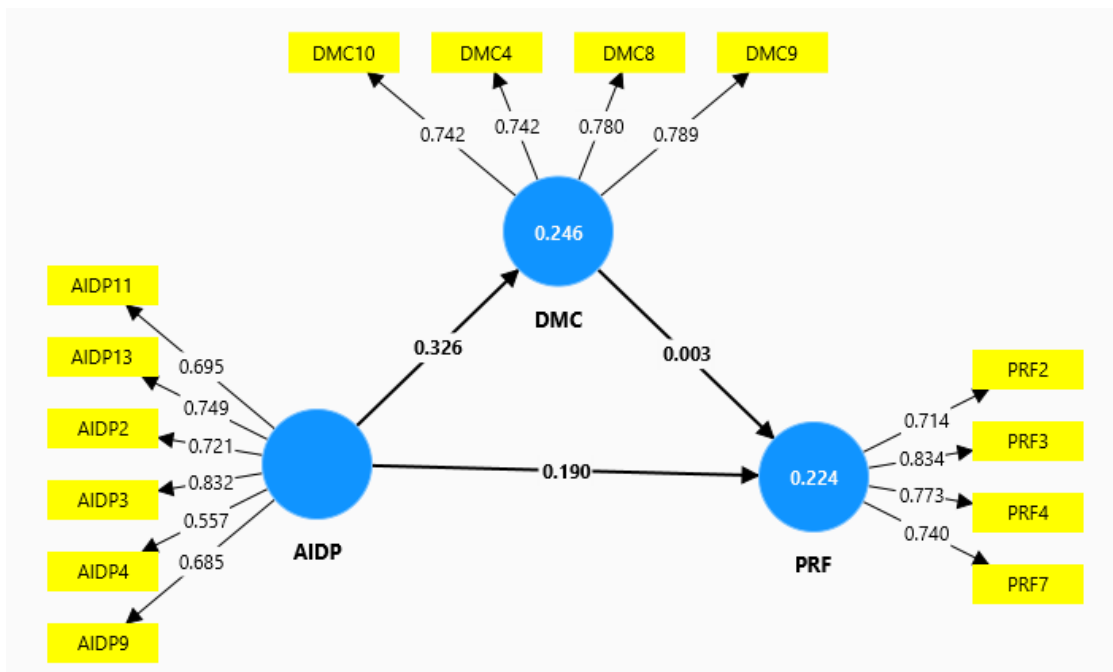


Figure 3.1: Items loading, f square, and R² Value

3.5.2.3. Assessment of Goodness-of-Fit (GoF)

In the partial least squares (PLS) method, the goodness-of-fit (GoF) assesses the overall model. The global fit measure (GoF) is the geometric mean of the average communality and the average R square for the endogenous constructs (Tenenhaus et al., 2005). This measure considers the variance extracted by both inner and outer models. According to Wetzels, Odekerken-Schroder, and van Oppen (2009), the GoF formula is: $GoF=(0.235 \times 0.559)=0.362$

Comparing this value with the standard GoF values—small (0.1), medium (0.25), and large (0.36)—the model’s GoF value of 0.362 indicates a satisfactory level of PLS model validity, as shown in Table 3.13.

Table 3.13: Global Criterion of Goodness of Fit (GoF) for Structural Model

Construct	R Square	AVE
AIDOP		0.506
DMC	0.246	0.583
PRF	0,224	0.588
$\sum x/n$	0.235	0,559
GOF	0.362	

Note: the values of GoF are small = 0.10*, GoF medium = 0.25**, and GoFlarge = 0.36*** (Wetzels, Odekerken-Schröder, & Van Oppen, 2009).

3.5.2.4. Estimates for Path Coefficients

The path coefficients in Table 3.5 measure the strength of relationships among AI Adoption (AIDP), Digital Marketing Capabilities (DMC), and Firm Performance (PRF). These coefficients show the influence of one variable on another, validating our theoretical hypotheses.

Testing these relationships helps us understand AI's role in business practices and its impact on efficiency and competitiveness. Path coefficients reveal direct and indirect effects, clarifying causal relationships in the model.

This analysis guides strategic focus by highlighting influential factors and offers empirical support for digital marketing theories. By quantifying AI's impact on marketing capabilities and firm performance, it bridges theoretical gaps and provides practical insights for business and technology deployment.

AI Adoption to Digital Marketing Capabilities (AIDP -> DMC)

The path coefficient from AI Adoption (AIDP) to Digital Marketing Capabilities (DMC) is 0.496, indicating a strong and statistically significant positive

relationship (T statistics = 6.288, $p < 0.000$). This substantial coefficient suggests that increases in AI Adoption are strongly associated with improvements in Digital Marketing Capabilities. The statistical significance of this relationship underscores the crucial role of AI in enhancing marketing functions, reflecting its transformative impact on the business landscape. The high path coefficient highlights AI's effectiveness in improving digital marketing efforts, aligning with current trends in leveraging AI for competitive advantage.

AI Adoption to Firm Performance (AIDP -> PRF)

The path coefficient from AI Adoption (AIDP) to Firm Performance (PRF) is 0.442, indicating a significant and moderately positive relationship (T statistics = 4.214, $p < 0.000$). While AI Adoption has a stronger impact on Digital Marketing Capabilities, this positive and statistically significant coefficient suggests that AI Adoption also benefits overall business performance. This moderate relationship implies that AI Adoption positively influences firm performance, though its effect is less direct and strong compared to its impact on digital marketing. This finding demonstrates the broader relevance of AI beyond marketing, as it positively affects various aspects of firm performance.

Digital Marketing Capabilities to Firm Performance (DMC -> PRF)

The path coefficient from Digital Marketing Capabilities (DMC) to Firm Performance (PRF) is 0.056, which is negligible and statistically not significant (T statistics = 0.414, $p = 0.679$). This result indicates that, within this model, Digital Marketing Capabilities have minimal direct impact on Firm Performance. The negligible coefficient suggests that improvements in marketing capabilities do not directly lead to better firm performance. This finding is crucial as it suggests the need to explore potential mediating factors or alternative pathways that might better explain how marketing capabilities influence firm performance. Understanding these dynamics is essential for developing more comprehensive strategies that link marketing improvements to overall business success.

Table : Table 3.14 : Path coefficients (Hypothesis testing)

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Result
AIDP -> DMC	0.496	0.515	0.079	6.288	0.000	Significant
AIDP -> PRF	0.442	0.470	0.105	4.214	0.000	Significant
DMC -> PRF	0.056	0.050	0.136	0.414	0.679	Not Significant

Note: significant at $p < 0.05$ at two-tailed T statistics value of 1.65. AIDP abbreviation refers to Artificial intelligence adoption. DMC = Digital marketing capabilities, and PRF = firm performance.

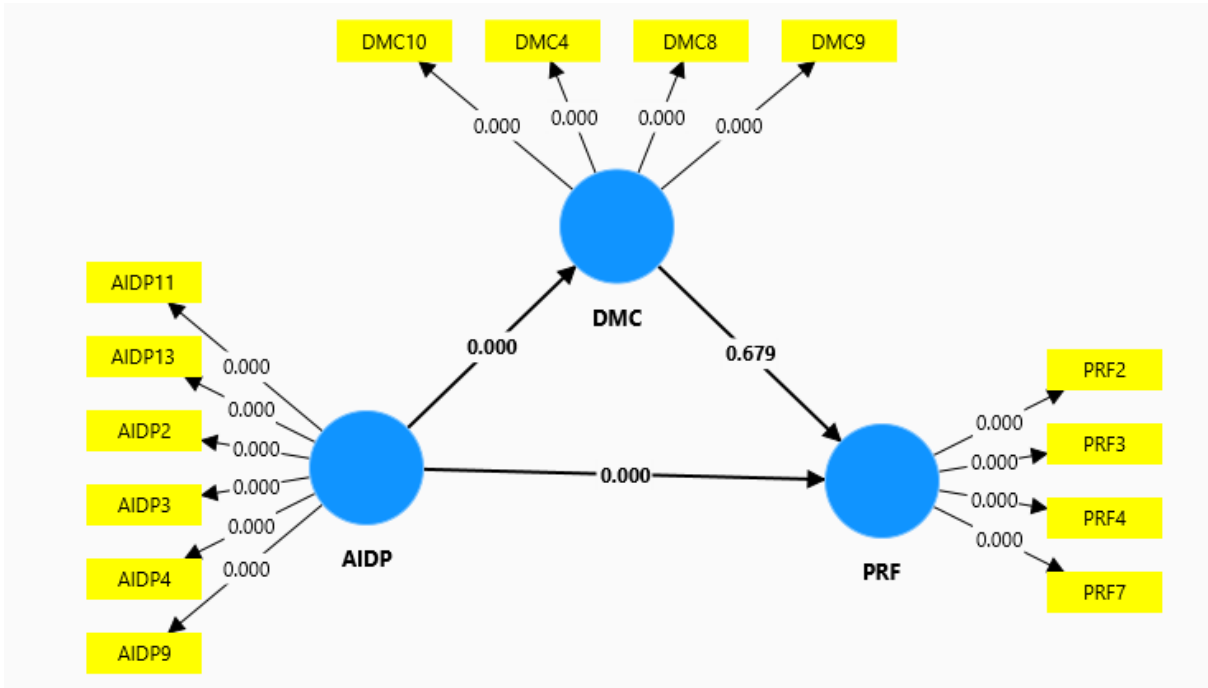


Figure 3.2: PLS Bootstrapping results of the Model

CHAPTER FOUR

DISCUSSION AND CONCLUSION

1. Discussion

Although current studies have consistently emphasized the necessity of Digital Marketing Capabilities (DMC) for companies seeking a competitive edge in today's digital market environment, there is a lack of experimental research on how SMEs utilize DMC by adopting AI to achieve superior business performance. This research aims to examine the relationship between AI, DMC, and PRF. Overall, our findings support the arguments presented by AI that allocating DMC to develop PRF has significantly contributed to achieving superior business performance. These research findings provide numerous contributions to improving the theoretical and managerial knowledge of Digital Marketing Capabilities as discussed in the following section.

1.1. Artificial Intelligence Adoption to Digital marketing capabilities

This study reveals a statistically significant relationship between the adoption of AI and the enhancement of DMC. This finding suggests that increased integration of AI technologies leads to substantial improvements in various marketing functions. Consistent with previous scholarly work (Anoop MR, 2021; Ming Hui & Roland T. Rust, 2020), this study reinforces the critical role of AI in augmenting and optimizing marketing practices.

Several underlying mechanisms may explain this observed phenomenon. Firstly, AI-powered tools facilitate the automation of repetitive tasks such as campaign management, content generation, and data analysis (Anoop MR, 2021). This automation liberates marketers' time and resources, enabling them to focus on strategic planning and creative endeavors, ultimately leading to enhanced efficiency and effectiveness. Secondly, AI algorithms excel at analyzing large datasets and identifying complex patterns, enabling highly personalized customer experiences and targeted marketing campaigns (Ming Hui & Roland T. Rust, 2020). This personalization demonstrably improves conversion rates and strengthens customer engagement.

It is crucial to acknowledge that the strength and nature of this relationship may be contingent upon several factors, including the level of AI adoption and the organization's existing DMC maturity. Organizations in the early stages of AI integration may experience a steeper learning curve, while those with mature AI implementation are likely to demonstrate a stronger correlation between AI adoption and enhanced DMC. Similarly, the impact of AI may be more pronounced for

organizations with basic DMC compared to those with advanced capabilities. Furthermore, industry-specific nuances and ethical considerations surrounding data privacy and algorithmic bias warrant careful attention within the context of AI-driven marketing practices.

1.2. Digital Marketing Capabilities to Firm Performance

Contrary to expectations, our study identified a non-significant negative relationship between DMC and PRF. This suggests that, within the context of our investigation, enhancements in DMC do not directly translate to improvements in PRF. This finding diverges from previous research, such as De Pelsmacker et al. (2018), which posited a direct and significant impact of DMC on PRF, but aligns with the observations of Yanti Purwanti et al. (2021) who noted a non-significant relationship. This discrepancy highlights the need for a nuanced understanding of the DMC-PRF relationship, particularly within the context of developing economies. Several factors may contribute to the observed non-significance, including the unique economic, technological, and market dynamics of developing countries, where factors such as limited infrastructure and lower digital literacy rates may influence the effectiveness of digital marketing strategies (Yanti Purwanti et al., 2021). Additionally, the impact of DMC on PRF may manifest through indirect pathways and time lags, requiring an initial period of optimization before yielding tangible benefits. Challenges associated with accurately measuring both DMC and PRF, along with the potential influence of moderating variables such as firm size and industry type, further complicate the relationship. To gain a deeper understanding, future research should consider longitudinal studies to track the long-term effects of DMC, investigate potential mediating variables like customer satisfaction, and conduct comparative studies across different economic contexts. This will contribute to a more comprehensive understanding of the complex interplay between DMC and PRF in developing economies.

1.3. AI Adoption to Firm Performance

Our investigation into the relationship between AI adoption (AIDOP) and firm performance (PRF) revealed a strong positive correlation, indicating that integrating AI technologies significantly enhances PRF, leading to improvements in financial performance and profitability. While the impact may not be as direct or immediate as the influence of digital marketing capabilities (DMC) on PRF, the overall effect of AIDOP remains substantial and aligns with existing research, such as the work of Lin Tu Ho et al. (2022), which demonstrates the positive

influence of AI adoption on various aspects of company performance and financial outcomes. Several mechanisms underlie this positive relationship. AI-powered automation streamlines operations, enhancing efficiency and productivity across business functions. AI algorithms facilitate data-driven decision-making and accurate forecasting, leading to better strategic planning and resource allocation, ultimately contributing to improved financial performance. Furthermore, AI fosters innovation by enabling the development of new products, services, and business models, opening up new revenue streams and market opportunities. Additionally, AI-powered solutions can enhance customer experiences and satisfaction, leading to increased customer loyalty and retention, positively impacting financial performance. It is important to consider that the strength of this relationship may vary based on the level of AI adoption, with mature implementations exhibiting a stronger and more direct positive impact on PRF. Industry-specific factors and the associated investment and implementation costs of AI should also be considered. This study provides valuable insights for businesses seeking to leverage AI for improved financial outcomes, emphasizing the significant potential of AI adoption to enhance firm performance.

2. Conclusion

This study explored the intricate interplay between AI adoption, Digital Marketing Capabilities (DMC), and Firm Performance (FP) within the specific context of Algerian SMEs operating in the service sector. Our research underlines the pivotal role of Artificial Intelligence in enhancing DMC and ultimately contributing to superior PRF.

The findings confirm a significant positive association between AI adoption and DMC, highlighting the importance of leveraging technology to enhance marketing functions. This aligns with the growing body of knowledge that recognizes AI's potential to revolutionize marketing practices, primarily through its data analysis, personalization, and strategic optimization capabilities.

While the direct link between enhanced DMC and FP was found to be negligible, suggesting the influence of external mediating factors, the study reveals a significant positive association between AI adoption and FP. This suggests that AI, even when its impact on DMC is not directly reflected in FP, still holds significant potential to drive financial performance and profitability.

This nuanced understanding of AI's impact challenges the conventional assumption that improved marketing practices automatically lead to enhanced performance. It highlights the complex process of translating technological progress into tangible business results, emphasizing the need to consider a wider

context that includes market conditions, resource availability, and strategic execution.

This research offers valuable insights for both theory and practice. It contributes to the existing academic discourse on AI adoption within developing economies by illuminating the complexities involved in translating the potential of AI into tangible business outcomes. Furthermore, it provides practical guidance for Algerian SMEs, emphasizing the strategic importance of AI in modern marketing strategies and encouraging a comprehensive approach to its integration that considers both the enhancement of DMC and the broader business environment.

3. Contribution of the study

This thesis makes important contributions to both the theoretical framework and practical applications of AI adoption in digital marketing, particularly within the context of SMEs in Algeria. The insights offered have significant implications for both academic research and business practice.

4. Study Contribution

4.1. Theoretical Contribution

•**Enhancing Understanding of Digital Marketing Capabilities:** The research underlines the critical role of digital marketing capabilities, viewing them as advanced systems essential for organizational analysis, proactive engagement, and strategic decision-making. These capabilities are integral to shaping the strategic direction of a company and enhancing overall business performance.

•**Refining the Concept of AI Adoption:** This study provides clarity on the adoption of AI, emphasizing its role through the integration of advanced technologies such as smart computing, big data analytics, and machine learning. The ability of AI to mimic human interactions and support data-driven decisions is proven to be crucial in boosting efficiency and effectiveness across various sectors.

4.2. Practical Implications

•**Broadening the Understanding of Firm Performance:** The research highlights the complexity of firm performance, which includes competitive success and the effectiveness of achieving strategic goals. It stresses the importance of assessing a range of performance indicators such as market share, growth, profitability, innovation, and the realization of organizational vision and strategic objectives.

•**Implications for Policy and Strategic Business Management:** The findings offer valuable insights for policymakers and business leaders, especially in emerging markets and the SME sector. The study emphasizes the strategic importance of integrating AI technologies to improve competitive advantage and operational efficiency.

•**Addressing Research Gaps in Specific Contexts:** Focusing on SMEs in an under-studied region like El Oued, Algeria, the thesis addresses significant gaps in the literature and sheds light on the unique challenges and opportunities present in such markets.

5. Limitation and direction for Future Studies

This study, while providing valuable insights into the relationship between AI adoption and digital marketing capabilities in Algerian SMEs, is subject to several limitations that warrant careful consideration and inform future research endeavors.

Firstly, the study employed a cross-sectional design, limiting its ability to capture the dynamic interplay between AI adoption and digital marketing capabilities over time. Implementing a longitudinal methodology, would enable a more nuanced understanding of the temporal evolution of these relationships.

Secondly, the study's focus on SMEs in the Algerian province of El Oued raises concerns about the generalizability of its findings to other contexts. The unique market size, economic development, political landscape, and cultural heritage of this region may influence the results. Future research should therefore consider a broader sample encompassing SMEs across diverse geographical locations, including comparisons between Algeria and other developing nations. This would provide valuable insights into the contextual factors influencing AI adoption and digital marketing capabilities across different environments.

Moreover, the study's concentration on SMEs in the service sector restricts the generalizability of its findings to other sectors. Future research should explore a wider range of sectors, including manufacturing and agriculture, to gain a more comprehensive understanding of how AI impacts digital marketing capabilities across various industries.

Furthermore, the reliance on self-reported data from SMEs introduces the potential for biases, such as social desirability and inaccurate self-assessment. To mitigate these limitations, future research should consider employing a mixed-methods approach, combining quantitative surveys with qualitative methodologies like in-depth interviews or case studies, as suggested by Yin

(2017) and Eisenhardt (1989). This approach would provide a more nuanced understanding of SME owner and manager perspectives and experiences.

While this study highlighted the potential benefits of AI adoption in digital marketing and firm performance, it did not extensively explore more potential negative consequences, including customer relationship management, satisfaction, and loyalty. Future research should delve deeper into these potential drawbacks, examining ethical implications, data privacy issues, and employment impacts.

Finally, this study did not explore the influence of external factors such as technological infrastructure, economic conditions, and government policies. Future research should investigate the role of these variables in shaping the relationship between AI adoption and digital marketing capabilities. Comparative studies examining the impact of contextual elements across different countries or regions, as suggested by Wirtz et al. (2018) and Mikalef et al. (2020), could provide valuable insights into identifying strategies that prove effective in diverse environments.

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APPENDIX

1. The study survey:



University of Eloued
Faculty of Economic, Commerce and Management
Department of Management



Welcome!

We are conducting a research study to understand the impact of Artificial Intelligence (AI) adoption on the digital marketing capabilities and overall performance of Small and Medium Enterprises (SMEs) in the service sector in Eloued, Algeria. Your participation is crucial to providing valuable insights into this growing trend. The information you provide will be kept confidential and used solely for research purposes. We appreciate your time and willingness to share your experiences.

Gender	Male	
	Female	

Field	Education	
	Tourism	
	Transport	

Age	30 or less	
	31–40	
	41–50	
	51 or above	

Enterprise Age	Below 15	
	16–30	
	31 and above	

Position	Manager	
	Senior Manager	
	Division Manager	

Enterprise size	Less than 50	
	50–99	
	100–149	

	General Manager	
	Others	

	150–199	
	Above 200	

Firm Performance						
compared to our major competitors, our firm performs (disagree and agree) in terms of (1 = strongly disagree, 5 = strongly agree)						
		1	2	3	4	5
01	Our competitiveness has increased.					
02	Our strategic position has strengthened.					
03	Our market share has significantly increased.					
04	Our sales have significantly increased.					
05	Overall, our customers are more satisfied with our products					
06	Our customers encourage other people to deal with us					
07	Our customers are more loyal to us than before					

AI adoption						
(1 = strongly disagree, 3 neutral 5 = strongly agree)						
		1	2	3	4	5
01	We have implemented AI in all our marketing processes					
02	Relative to the potential of AI for our marketing activities, our AI implementation is extensive.					
03	AI has substantially changed our marketing business processes					
04	We have implemented AI in our social media marketing					
05	We have implemented AI in our Mobile marketing					
06	We have implemented AI in our Content marketing					
07	We have implemented AI in our Search engine marketing					
08	We have implemented AI in our Web analytics implementation					
09	We consider the adoption of AI tools will enhance company Marketing automation					
10	We have implemented AI in our E-mail marketing					
11	We have implemented AI for getting better decision-making					
12	AI is a mainstream technology that will be dominant in our industry.					
13	AI is well accepted by the top management in our company.					
14	AI is or will be the core technology critical to our company's future success.					

Digital Marketing Capabilities	
Compared with our competitors, our company is (better or worse) in... (1 = much worse, 5 = much better)	

		1	2	3	4	5
01	Our company applying Social media marketing intensively					
02	Our company consider Mobile marketing as one of its marketing process					
03	Via using AI, our company is create Content marketing professionally					
04	By adopting AI, our company increased the optimization of its Search engine marketing					
05	Our company make Web analytics for better decision making					
06	Our company is applying AI effectively its Marketing automation					
07	Our company has improved its E-mail marketing					
08	Our business uses digital marketing to communicate with customers					
09	Our business uses digital marketing to share information to the market (
10	Our business uses digital marketing to build relationships with customers					
11	Our business uses digital marketing to manage the community					
12	Our business uses digital marketing to feel close to customers					