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Original Article

Artificial Intelligence for Data-Driven Marketing: Catalyst for Digital Business Transformation

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Abstract - *In this study, the use of AI in marketing in Morocco is assessed, showcasing the disparity in the use of this technology per sector. Adoption is very advanced in the Banking and E-commerce sectors (92% and 78%, respectively), where chatbots and predictive analytics are used, achieving an ROI of 3.2 years. In contrast, SMEs and other traditional sectors have much more difficulty (23% adoption) because of the initial investment of 380,000 MAD on average and the local expertise drain (only 12% of the trainers in academia have any knowledge about AI).SMEs sit within the longest timeframes (3.2 years) to see positive ROI, while large companies see it in 1.8 years, highlighting the disparity of digital maturity in sectors. 367 professionals from diverse sectors participated in the survey, and the quantitative results show the positive impact of AI on performance, achieving a 22% decrease in acquisition costs, 34% increase in customer satisfaction, and 27% increase in marketing ROI. Additional barriers encumber the expected results, including cultural (scepticism from 44% of managers) and geographic (78% of all projects are concentrated in Casablanca and Rabat).Using a score of 3.2/5 for Adoption, Morocco is ranked higher than Egypt, 3.0, but still lacks behind South Africa, 3.8, which possesses a more advanced technological ecosystem. To boost adoption, the study recommends: (1) Partnerships between universities and businesses to provide custom training, (2) A policy for the rational use of data, and (3) Local, affordable (language, mobile-first) tailored pockets for the informal sector/SMEs.Based on the above, the promise AI offers Morocco is tangible, but not without the need for customized and differentiated policies to address inter-regional and inter-sector imbalance. For this to happen, coordinated action from the public and private sectors and academia will be necessary to support the shift.*

Keywords - *Artificial Intelligence, Data-Driven Marketing, Digital Transformation, Developing Countries, SMEs, Sectoral Adoption.*

1. Introduction

The increasing digitalization of the world demands a more sophisticated understanding of customers and more effective marketing planning. In Morocco, the situation is made worse by the pace of digitalization, with more than 80% of the population having access to the Internet and the adoption of cutting-edge technologies, including Artificial Intelligence (AI). There is also an absence of scholarly work on the application of new technologies, particularly AI and marketing, in emerging economies and Morocco. This is a significant oversight since the concerns Morocco faces in the application of AI are contextual, cultural, and structural, making them differ from the problems encountered by developed countries. In Morocco, businesses are anticipated to implement advanced, analytics-centered AI systems that will customize consumer-business engagements and help maximize returns. This piece of research reviews the use of innovative AI marketing tools within North Africa's emerging economies, while also examining Morocco's use of AI within the local context. On the other hand, a lack of local know-how, high implementation costs, skepticism about automated solutions, and a lack of AI education all contribute to obstacles in the adoption of marketing AI. While e-commerce and finance (Banking and Fintech) are slowly adopting AI, traditional SMEs struggle to keep pace with the ever-changing technological transformation. Sectoral disparities in the use of technologies unlocked new opportunities for research on the contextualization of AI adoption within developing economies that have diverse business ecosystems.This article has the objective of studying the integration of marketing AI

in building data-driven strategies in Moroccan marketing, by analyzing the following objectives:

- The extent to which marketing practices in Morocco utilize AI technologies compared to other regions in the world.
- Specific socio-economic contextual conditions that contribute to the success of AI use in marketing in Morocco.
- Industry-specific factors that promote or inhibit the use of AI technologies in marketing.
- The impact of AI on marketing choice and customer experience in Morocco.

The groundwork for identifying strategic and actionable AI opportunities came from a systematic literature review and a subsequent quantitative study with 300 marketing professionals in Morocco. While the uneven adoption of AI technologies in marketing, focusing on AI's potential in the marketing areas of predictive analytics, automation of campaigns, and chatbots, is particularly promising.The insights and socio-economic context elaborated in the study present guidance for Moroccan companies adopting local marketing practices with the use of AI technologies. This article is directed toward Moroccan marketing practitioners, organizational executives, and scholars whose interests are in marketing and AI. It is the first to address this gap in emerging Africa, and under this context, Moroccan local companies can be used to derive AI marketing case studies.The paper is organized in the following way. Section 2 examines the body of research on AI and marketing targeting marketing in Morocco. Section 3 describes research methods, and Section 4 presents the empirical findings. Section 5 consists of the interpretation of the findings, the implications of the findings, practical contributions, and directions for research. Finally, Section 6 presents the conclusion to the research with a summary of the findings and the agenda for subsequent work.

2. Literature Review

The marketing dimension of AI has undoubtedly grown on a global scale, and so has its use in marketing within Morocco. The literature has emphasized the following gains associated with the use of AI:

- Customer satisfaction: Improved personalization enabled by the use of chatbots and analysis of customer data [1, 2].
- Positioning: The application of AI for advanced market segmentation and audience targeting [3].
- Predictive analytics helps in future trend analysis and assists in decision-making. [4]
- Marketing campaign automation helps in achieving cost reductions. [5]

Kotler defines the incorporation of AI in marketing as the 'employment of technologies that emulate human behavior for the creation and communication of value as well as the provision and delivery of value throughout a customer journey' (Kotler et al, 2021) [6]. AI's identification provides the essence of human elements. Rationality and empathy must always be considered. While AI surpasses human capabilities in recognizing patterns and analyzing vast data, it is ultimately people who comprehend other people.

The future of marketing lies in the technological advancements of artificial intelligence, robotics, augmented and virtual reality, the Internet of Things, natural language processing, sensors, and blockchain technology. However, technologies only become meaningful when they bolster human connections and influence people's lives for the better. The point is not to attain technology sophistication for the sake of it, but to focus on more meaningful, personalized, and ethical customer experiences that maintain the respect of the customer (Kotler et al, 2021) [6]. The aim is to develop an innovative Customer Experience (CX) that is devoid of friction and highly engaging (see Figure 1). In pursuit of this objective, organizations must utilize a harmonious integration of human and computational intelligence. In Morocco, sectors such as e-commerce, banking, and telecommunications are leading the way in AI adoption, while others, including SMEs, are lagging due to budgetary and technical constraints. They show that in most parts of the world, the most integrated parts of AI systems within the marketing systems involve a fundamental change in operational marketing and tactical marketing, which includes automation of marketing campaigns, segmentation, predictive analytics, and personalized marketing. However, the impact of AI on the strategic level and the core of value creation in marketing is still in its infancy, especially in developing countries. The literature also illustrates that the success of AI in marketing is greatly influenced by local context, high-quality data, and human capital, which all describe Morocco as a chronic weak point (Sharma et al., 2023) [7]. In addition, as underscored by the literature in Morocco and other countries, the impact of AI is generally positive and has unequal improvement on marketing, such as acquisition costs and customer satisfaction is unequal improvement. The most unequal improvement is in the most advanced sectors, such as banking and e-commerce, as compared to SMEs and the traditional sectors. In all AI-enabled systems, such as chatbots, predictive analytics, and campaign optimization, these sectors are fronts, while the latter are stuck with high initial costs, inadequate capabilities, and limited data maturity (Sharma et al., 2023; Yadav, 2024) [7, 8]. From the review, it is clear that there are significant gaps, as there is a paucity of empirical work on the AI local culture interface. These gaps also include the lack of work on the supportive systems, incentive policies, and hybrid adoption frameworks involving AI integration. Consequently, this work offers original analysis, tailored policy recommendations, and suggestions for future research, particularly regarding hybrid models for inclusive digital transformation.

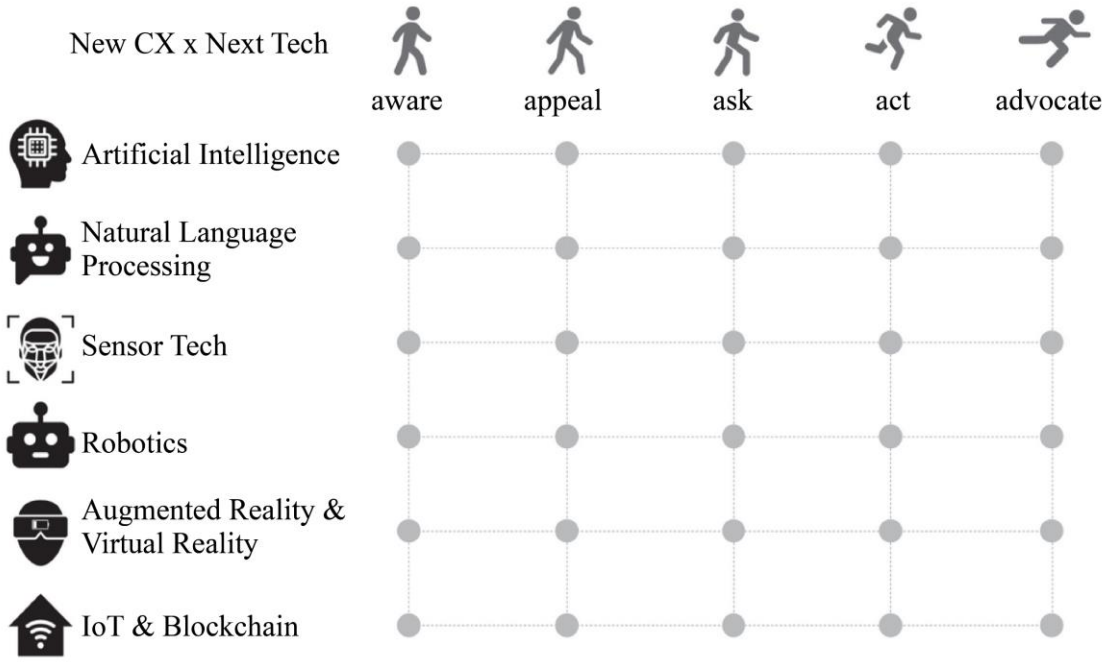

Fig. 1 The next tech across the new Customer Experience (CX), (Kotler et al., 2021)

2.1. Digital Transformation and AI Adoption in Morocco

Morocco is currently experiencing a significant acceleration in its digital transformation, primarily driven by structural government initiatives, such as the 'Morocco Digital 2025' strategy, and supported by growing Internet penetration, which reached 84% of the population in 2024 (ANRT, 2023) [9]. Nevertheless, the adoption of artificial intelligence solutions in the marketing field varies significantly across different economic sectors. The leading fields in this adoption include the finance and Fintech industries, where Attijariwafa Bank and BMCE have incorporated AI technologies in credit scoring, fraud detection, and other customer interaction services (Bank of Africa's virtual assistant 'Jawab' chatbot). In the e-commerce domain, represented by Jumia Maroc, AI technologies are incorporated for customer journey and recommendation system analyses. In the telecommunications sector, AI technologies are used by Maroc Telecom and Orange Maroc to personalize customer offers and perform network optimization. However, the study identifies the most pronounced lag in low-tech sectors, particularly in agriculture and crafts, as well as in SMEs. As noted in the OECD report (2023) [10], these actors are highly constrained by the absence of required finance and the technical know-how for these technologies.

This gap particularly calls for a differentiated offering in the supporting policies for the digital transformation of adaptation-advanced sectors. This sectoral disparity corresponds to, and expands on, the work of Huang and Rust (2021) [3], who discuss the uneven distribution of AI adoption in emerging markets, as well as the particularities of the Moroccan case, especially regarding its economic structure and sectoral development priorities. Unlike most studies on AI use by SMEs, which focus on developed economies, several emerging economies have started to contribute. Panigrahi et al. (2023) [11] examine AI chatbots in Manufacturing-SMEs, “find chatbots have a positive impact on supply chain performance”. Panigrahi et al. explain, but state there are still adopter challenges, such as costs and workforce skill gaps. Almashawreh et al. (2024) [12], on the other hand, researched AI adoption in Jordanian SMEs and explained the importance of technology. Infrastructure and org. Orientation adds to the challenges. Meanwhile, in Saudi Arabia, a study applying the Tech.-Org.-Envr. (TOE) framework states that SMEs’ performance sustainability in emerging markets improves when there is a balance between internal (leadership, skills) and external (regulatory, infrastructure) factors. Closest to Morocco, Allioui & Mourdi (2024) [13] analyzed the AI readiness of e-commerce SMEs and observed that cost perceptions, skilled workforce availability, and the level of digital infrastructure still pose the main challenges. However, this focuses more on the irregular region and less on major urban centres.

2.2. Applications of AI in Marketing in Morocco

Research reveals some new uses of AI in marketing in Morocco, but it still lags behind advanced economies in terms of maturity. In customer service, particularly in the banking and e-commerce industries, the use of chatbots is increasing. Customers use WhatsApp to screen and respond to users. Automation, however, is constrained by the culturally normative preference for human interaction, which, as Belhadi et al. (2021) [2] show, is especially salient to 42% of local consumers (CGEM, 2023) [14]. In Morocco, automation is

still limited by the culturally normative preference for human interaction. Predictive analytics and segmentation are the second use for Morocco, where basic tools, such as Google Analytics and Power BI, are widely adopted. Still, there is limited use of advanced machine learning for trend forecasting. For instance, Marjane Holding is a well-known case in the AI literature for improving seasonal inventory levels. This speaks to the underutilised potential of such technologies in the Moroccan context. Globally, digital advertising is primarily focused on platforms like Facebook and Google, yet the advertising strategies that accompany these platforms tend to be basic, and automated campaign features are not frequently used. According to Bank Al-Maghrib (2023) [12], the structured data needed to improve advertising effectiveness is virtually non-existent, as only 28% of firms have these systems. This data deficiency is a product of the data immaturity challenges that the OECD (2023) [10] has pointed out. In Morocco, the absence of fully developed marketing data and the absence of fully developed marketing techniques pose a unique set of challenges.

2.3. Challenges Specific to the Moroccan Context

AI marketing solutions have yet to be implemented on a larger scale for structural reasons. Local expertise is virtually non-existent, as only 12% of higher education institutions have fully developed AI programs (Ministry of Education, 2023) [16]. This deficiency, as the World Bank (2023) [15] estimates, is likely to be 0.8% of the annual GDP of the private sector. EMSI and 1337 have some specialized programs, but 87% of firms still have problems with AI recruitment (CGEM, 2022) [14]. This situation significantly increases the cost of foreign solutions, including repetitive and frustrating misalignments as well as unmet Moroccan market demands. Cultural and regulatory issues create barriers to AI adoption. The Moroccan market operates from a relational and human perspective. As such, there is some reluctance to trust the automation of the commercial relationship. Investments in this area are also hindered by the lack of a coherent legal framework regarding the use of personal data, particularly given the proposed legislation that has been stalled since 2022.

Underdeveloped infrastructure is one of the most notable gaps that contributes to the low effectiveness of artificial intelligence algorithms. Data quality, collection, and storage issues hinder algorithm performance. Rural regions of Morocco face these issues to an even greater degree due to poor access to digital technology. This imbalance in digital resources adds to the inequitable digital access, especially the gap between urban centers like Casablanca and Rabat and the rural regions. This uneven geography and the resulting inequitable access to resources, and rural Moroccan businesses trying to implement AI-driven marketing on a national scale, are especially affected. Moroccan small and medium enterprises account for over 95% of the country's business sector. With regards to SMEs' particular contextual challenges, for the most minor players in the sector, the most critical issue relates to the cost of financing the initial investment of AI tools, approximately MAD 380,000. The technical disparity is vast because just 12% of SMEs report having data scientists on staff. There is a managerial gap in which the lack of sophisticated systems around the data is so total that predictive systems integrated with automation are largely unused. From a cultural perspective regarding the business-client relationship, smaller enterprises are most likely to rely on the traditional approach, including personal and relational trust as the central component. This lack of sophisticated systems around the data explains the low adoption score of 23% for SMEs, compared with 81% for large corporations. This gap is likely to increase structural inequities in the Moroccan digital ecosystem.

2.4. Comparative Analysis with Other Emerging Markets

Morocco's approach to marketing AI is comparable to that of emerging market economies. Like Egypt and Tunisia, sectoral AI adoption is also uneven in Morocco, with the financial sector being the most advanced. There are three main reasons for this regional trend. First, the pervasive and rigid banking regulations establish the conditions for innovation and also necessitate some level of it. Second, the comparatively structured and organized institutional data resources of the banking sector form restrictions that enable innovation within the sector. Finally, the existence of competing fintech banks spurs innovative efforts through pressure to streamline services and products. Morocco is still behind South Africa when it comes to technology. South Africa employs a more advanced and systematic AI technology ecosystem and competitive AI systems across sectors. South Africa invests heavily in R&D and has a more developed start-up ecosystem; thus, it has a more advanced technology adoption culture within its businesses. Morocco's primary lag will likely come down to the management and exploitation of data. Significant gaps in systems and culture, not technology, will explain the primary structural gaps in the country.

Recent case studies on comparative research point out disparities in AI adoption across various emerging markets. For example, within the framework of innovation policies and tax breaks, Da Silva & Mendes analyze the use of AI in the adoption of small and medium enterprises in Brazil. This finding, however, is in stark contrast to the case in India, as described by Panigrahi et al., where AI adoption is severely constrained by a significant gap in available skills. To reiterate previous points and validate the case for Morocco, it is essential to highlight that the issues and challenges well-documented are far from unique to the Moroccan case and are broader and systemic within the context of developing economies. The literature review conducted to inform this assignment primarily focused on marketing and AI applications in the Moroccan context, revealing troubling evidence gaps. For example, within the Moroccan context, literature on the use of AI in B2C marketing is so prevalent

that the use of AI in B2B marketing is almost overlooked. This is particularly disconcerting, given the considerable impact B2B marketing has on the overall national economy. Moroccan SMEs, which make up over 95% of the local entrepreneurial ecosystem, have also not been the subjects of research on adoption strategies. Most existing frameworks focus on larger firms or originate from the West, thereby failing to consider the unique and important constraints of these small entities, such as limited resources, scant data, and low levels of digitization and technological development. Furthermore, the influence of public entities on the adoption of AI marketing technology is also not extensively covered in the literature. Little has been written on the systemic policy, incentive, and support framework analyses that focus on transforming marketing using AI. The absence of thoughtful research impedes Moroccan policymakers and local business leaders from crafting contextually appropriate and significant plans.

Most of the literature points to the early stage of marketing AI in Morocco. Some sectors show a marked advancement, especially in digital finance and e-commerce, where AI applications in customer service, predictive customer analytics, and personalization are deployed. There are, however, stark limitations to the geographic deployment of AI technologies, which remain concentrated around Large-Scale Economic Centers, reinforcing the structural inequalities in the Moroccan digital landscape. To bridge the gap and attain acceptable levels of technological sophistication compared to advanced economies, three strategic priorities must be implemented.

Most importantly, the enhancement of local proficiency, the primary focus of all proposed changes, centers around the need for AI-driven policies that are fine-tuned for local deployment. Equally, the closing of the academic and practical industry gap through proposed hybrid academic-industry models. The more recent collaborations, such as the one between EMSI and Fintech organizations, are examples of best practices that warrant broader adoption. Encouraging responsible regulation helps promote investment while balancing the safeguarding of consumer interests. Defining and streamlining the laws around marketing data, paid circulation, and streamlining tax incentives for firms adopting emerging tech will also encourage and support entrepreneurial investment.

In this context, the currently-discussed AI bill is a step in the right direction. To meet the earlier promise of fair and democratized access to technology, we need to solve the issue of higher-cost and customized offerings for the Moroccan SMEs. Outcome will need a combination of new, dedicated, and local firms and adjusting the offerings of the foreign firms to the Moroccan context, including language (Arabic/Darija), mobile-first distribution, and a hybrid payment ecosystem involving cash and digital payment mechanisms.

3. Research Methodology

This study gathers information on AI adoption in data-driven marketing in Morocco through quantitative methodology, including a questionnaire survey and triangulation analysis. For this study, the author used Cochran's formula to define a sample of 400 marketing professionals. Professionals were selected through proportional stratified sampling based on sector of activity (banking/fintech, e-commerce, telecoms, retail), company size, and geographical location. Thus, the author guarantees that people from all relevant walks of life were considered. Quality, stratified sampling guarantees that the survey research results will be generalizable and will aid in the understanding of AI adoption in a wide array of the Moroccan economy. Quantitative research on newly emerging areas, such as this case, often attempts to use secondary data to provide context, but this study manages to provide primary available empirical data. To accurately capture the diversity within the Moroccan business landscape, proportional stratified sampling was used. Representativity was achieved by varying the sectors (banking/fintech, e-commerce, telecoms, retail), company size (large enterprises vs. SMEs), and geographic regions (Casablanca, Rabat, and Marrakesh, among others). Among the 400 professionals selected, valid responses came from 367 (effective response rate of 91.75%). The balance was attained for sector, firm size, experience, and regional distribution. These results are illustrated in Table 2. Your sample size is large enough to give meaningful insights and not let a specific area or region skew the sample and the results.

Your tool was validated by 30 respondents and 30 experts. It has 4 thematic sections that cover the 4 dimensions of technology adoption, how it is perceived, and its enablers and disablers. Your 6-week data collection period (professional email, LinkedIn, and professional associations; 72% response rate) was followed by extensive data cleaning, coding, and performing multivariate analyses (using NVIVO 12, Smart PLS 4). Multiple analytical frameworks and techniques were implemented for the purpose of analytical coherence. Basic descriptive statistics were used to summarize the adoption levels and cross-sector performance indicators. One-way ANOVA and other inferential statistical methods were used to infer and examine the differences among the sectors and levels of companies, as well as to determine the significance of those differences. The correlations between the adoption of AI and the performance indicators of marketing, such as return on investment, customer satisfaction, and customer acquisition cost, were examined through the use of multiple regression. All the analyses were conducted on SPSS 26. Various statistical methods described above, alongside ANOVA and regression, facilitated the attainment of statistical significance and the scope of inferences to be generalized. For the analyses using PLS-SEM for the adoption framework, SmartPLS 4 was employed for the structural equation modeling to assess and validate the causal

relationships and latent constructs. To analyze the open-ended responses from the surveys, NVivo 12 was used to enhance the integration of qualitative and quantitative results in the analysis. The application of the various methods provided a comprehensive perspective on the findings, which is what the necessary statistical rigor demanded. In relation to the Moroccan Neutrality of the GDPR, biases arising from propensity, nonresponse, and non-anonymity were discussed.

The nature and quality of the study demanded that additional ethical guidelines be developed and articulated. Declaration sheets that provided details on the research, highlighted that it was voluntary, and guaranteed confidentiality of all collected data were presented to the participants prior to them responding to the questions.

Participants also consented electronically before completing the questionnaire. For confidentiality purposes, the data were stripped of direct identifiers and were also devoid of names, company IDs, and emails. Data custodial access made individual responses locked away, while only consolidated data sets were accessible for the purpose of analysis. Participants could also withdraw from the study voluntarily and without reason at any point.

These were all meant to demonstrate compliance with the Moroccan GDPR as well as the ethical standards of research on an international level. Indeed, every study has its limitations (in this case, partial sector coverage and self-reported data), but contextual innovation lies in the sector contextualization and in the methodological triangulation in its granularity.

From the context, the insights are robust, specific to Morocco, and within the realm of an international comparison. The stepwise validation of results, from literature review to the final draft, framed this sequencing and innovation, which the eight-month detailed scheduler facilitated.

4. Results

4.1. Sample Demographic Data

With a response rate of 91.75% data was collected from 367 Moroccan marketing specialists as noted below.

Table 1. Methodological framework of the quantitative study on digital marketing in Morocco

Element	Description	Specifications
Type of study	Descriptive and analytical quantitative research	Cross-sectional design (single-shot)
Approach	Hypothetical-deductive	A combination of survey and documentary analysis
Key variables	- Independent: Sector, company size, budget	- Dependent: Level of adoption, perceived ROI, performance
Target population	Marketing professionals in Morocco	Decision-makers (managerial level) in 5 key sectors
Sampling strategy	Proportional stratified sampling	Strata: Sector (5), Size (SME/GE), Region (3 economic zones)
Sample size	400 professionals	Cochran calculation (95% confidence, 5% margin of error)
Main instrument	Structured questionnaire	4 sections: Demographic data, Adoption, Impact, Obstacles
Instrument validation	- Pre-test (n=30)	Cronbach's alpha=0.82 - Reviewed by three experts
Data collection	- Channels: Email (60%), LinkedIn (25%), Associations (15%)	Period: 6 weeks - 3 reminders
Quantitative analysis	- Descriptive statistics	- Inferential analyses (ANOVA, regression)
Software tools	- SPSS 26 (basic analyses)	- SmartPLS 4 (advanced modelling) - NVivo 12 (open responses)
Quality controls	- Management of non-response bias	- Ethical protocols (Moroccan GDPR)
Timeline	8 months (Jan-Aug 2024)	5 phases: Preparation, Pre-testing, Collection, Analysis, Writing
Deliverables	- Cleaned database	- Analysis reports - Scientific article

Table 2. Demographic and professional profile of survey respondents

Characteristic	Breakdown (%)	Key Observations
Sectors	- E-commerce (28%)	Strong adoption of digital-first
	- Banking/Fintech (22%)	Leader in AI solutions (chatbots, scoring)
	- Telecoms (18%)	Massive investments in data analytics

Regions	- Casablanca (42%)	Developed tech ecosystem
	- Rabat (23%)	Concentration of head offices
Experience	- 2-5 years (38%)	Young, digitally native population
	- +10 years (15%)	Strategic decision-making

The demographic distribution bolstered the sample, particularly with notable contributions from banking/fintech (22%), e-commerce (28%), and telecoms (18%). The diversity of this distribution will provide a robust foundation for the analysis and will undoubtedly influence cross-industry generalizability.

4.2. Levels of AI Adoption by Sector

Discrepancies in strategic alignment were uncovered when integrating AI across the key sectors of the Moroccan economy. The fintech and banking sector continues to dominate and lead AI adoption at 4.2 out of 5, and it continues to invest and has advanced technologies. In contrast, the agro-industry scored 1.7 out of 5 and demonstrates the ongoing struggles of the legacy segments, as AI traceability is implemented in only 29% of the cooperatives.

Explaining the variations in the pace of adoption can help to better understand the gaps between traditional and capital-intensive industries like banking or telecom.

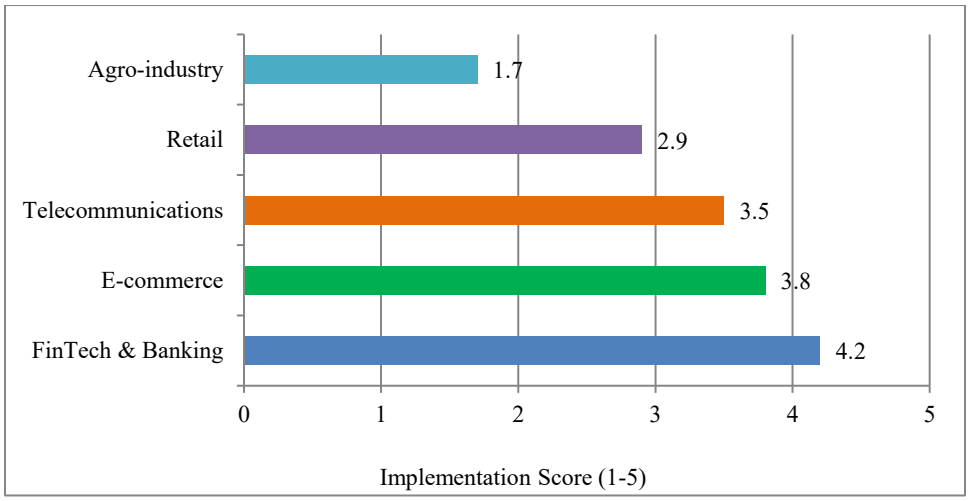

Fig. 2 Adoption of AI solutions by sector in Morocco

The 1.3 point difference between fintech and retail translates to a 23% productivity gap, which justifies the need for bespoke strategies across different industry sectors. Three important lessons can be drawn from this:

- Resource allocation: Banking and telecoms sectors continue to be more proficient and more profitable than all other sectors.
- Threshold effect: Scores below 3/5 show more to be acutely deployed and not more strategically.
- Unrecognized gap: The 1.3 differential between Fintech and Retail indicates an opportunity 23% to the overall productivity of the sectors.

These distinctions imply the need for flexible policies:

These would include acceleration for intermediate sectors like e-commerce and telecoms, and “start-up” policies designed to activate more dormant sectors. Each group would be adjusted for its unique constraints of infrastructure and skills.

4.3. Priority Applications

As shown in Figure 2, there is an explicit specialisation of AI marketing applications by sector of activity within Morocco. Predictive analysis (64%) and personalisation (58%) dominate, especially in banking and e-commerce, as they serve the functions of anticipation and optimisation of customer behaviour and purchasing, respectively.

Process automation (52%) through chatbots is proving successful, with average customer service cost reductions of 40% in the telecom sector. Nonetheless, intelligent reporting (33%) and real-time personalisation (12%) functions are still under-utilised. Beyond the strategic emphasis of pursuing immediate operational gains, the behaviours in question can be ascribed to variations in the digital maturity of the sectors and the extent of available data. The retail sector is considerably behind in technology adoption compared to other industries, which makes the use of predictive analytics and automated risk management an innovative leap for the financial sector. This demonstrates the need for sector-specific solutions.

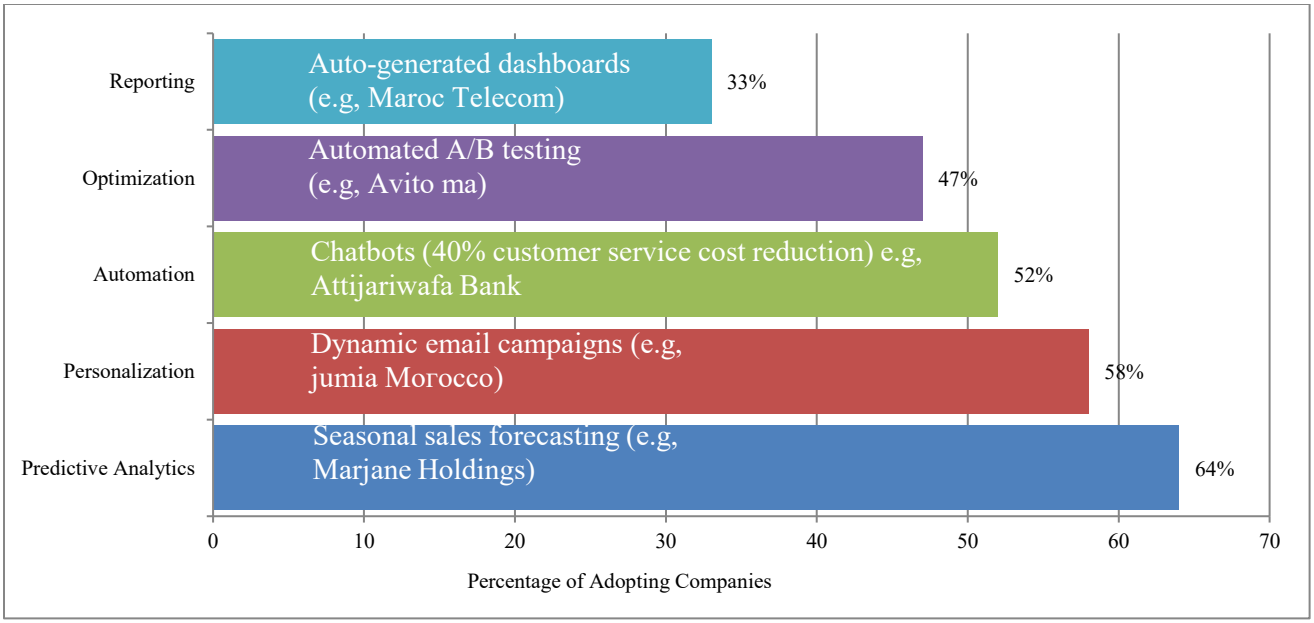

Fig. 3 Domains of AI marketing applications in Morocco (2024)

The case for bespoke solutions is even stronger for SMEs. Our data shows that while they constitute 80% of the economy in Morocco, they account for only 23% of AI adopters.

4.4. Perceived Performance

As shown in Table 3, the value AI tools brought to the marketing performance in Morocco is commendable. For example, marketing ROI for Marketing averaged 27% higher, and costs for customer acquisition fell by 22%. The strong assessments and positive rankings merely confirm the value that AI tools bring to the marketing performance. The correlations ($p < 0.001$) between AI experience and the mentioned metrics are strong, validating the importance of the findings.

Table 3. Business impact of AI solutions

Metric	Average Improvement	Correlation with AI Experience (r)
Marketing ROI	+27%	0.62***
Conversion Rate	+19%	0.58***
Customer Acquisition Cost	-22%	-0.71***
Customer Satisfaction	+34%	0.53***

****p<0.001*

As summarised in all the above sections, the learning curve with respect to the AI tools is enormous. Here are some of the important points in the Summary:

- Financial efficacy: The -0.71 correlation between the use of AI and customer acquisition costs illustrates the scale and efficiency that automated marketing campaigns achieve.
- Relationship quality: The 34% increase in customer satisfaction, in addition to the moderate and positive correlation (0.53), demonstrates that AI not only improves marketing efficiency but also enhances the overall marketing experience for the customer.
- Learning curve: The ROI and 0.58-0.62 band with the conversion rate reinforce the observation that tactical and operational excellence were the focus.

These results align with those of Davenport et al. (2020) [4] on the differentiated impact of AI by performance metrics and explore the potential Morocco has in this regard, particularly in terms of automated campaigns and significant reductions in customer acquisition costs. The remaining impact, even with sectoral variables- which is not shown- adds to the plausibility of these findings in other contexts.

4.5. Major Obstacles

As Figure 4 highlights, the most important challenges in Morocco regarding the adoption of AI marketing solutions are about structural gaps. The biggest of these gaps is the lack of local expertise (4.1/5), as only 12% of Small and Medium Enterprises (SMEs) have a data scientist, revealing a critical lack of trained personnel. This gap exists at least partially due to the gaps in the provision of training, evidenced by EMSI and 1337 only meeting 30% of the market need. The second most important gap is the price of the solutions (3.8/5), which 72% of the SMEs surveyed stated is prohibitively high considering the average initial investment of MAD 380,000. The need to import and adjust foreign solutions, along with added customisation, results in even more costly challenges. Finally, the cultural barrier (3.4/5) remains, with 44% of

managers still prioritising human relations and automating commercial interactions. These three barriers form a structural problem that may explain why the adoption rate remains limited at 64% for Moroccan companies. The hierarchy of scores (4.1 > 3.8 > 3.4) suggests that technical and financial obstacles are more significant than cultural barriers in the adoption of AI solutions. These results confirm previous work on the specificities of emerging countries, while highlighting the urgent need to develop solutions adapted to the Moroccan economic fabric, particularly for SMEs, which represent the bulk of the private sector but remain largely absent from the digital transformation.

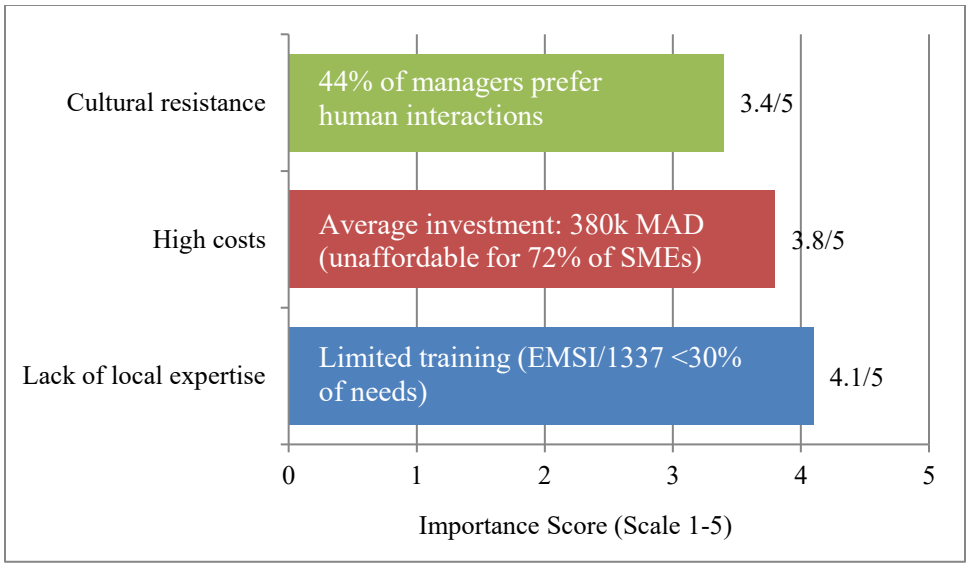

Fig. 4 Barriers to AI adoption in marketing in Morocco

4.6. Regional Comparisons

Morocco displays a unique situation when it comes to the adoption of AI marketing solutions relative to other emerging African markets. As illustrated in Figure 5, Morocco, with a score of 3.2/5, is the leader in French-speaking Africa, marginally ahead of Egypt (3.5), but still trails behind South Africa (3.8).

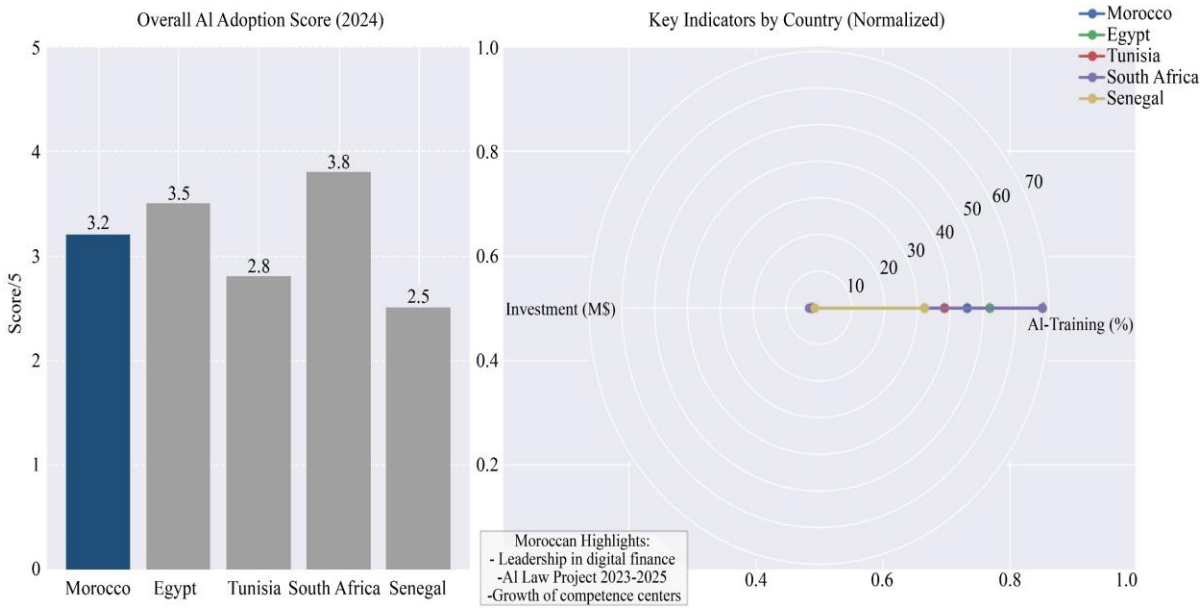

Fig. 5 Comparative positioning of marketing AI adoption in Africa

This situation is a product of the particular economic and technological conditions in each case. As a result of the comparison, the following observations can be integrated:

- Morocco's investment in chatbots and predictive analytics in digital finance has enabled the country to remain a regional leader.

- In Morocco, SMEs are adopting digital finance more slowly than in other countries, primarily due to the limited adoption of AI technologies in the banking sector when compared to South Africa.
- South Africa is underperforming in comparison to its more developed start-up ecosystems, just as Egypt is also underperforming. However, in contrast to South Africa, Egypt has disproportionate outcomes with its tech scale-ups.

Africa's business models are valuable for Morocco, as it is able to identify and analyze its strategic opportunities. From a development-centric viewpoint, South Africa appreciates the value of having public-private partnerships. The practices of Egypt, on the other hand, should serve as a cautionary tale regarding economic development, as excessive bureaucracy can prove to be a hindrance. Morocco is situated in a diplomatic geographical area that allows rapid and, at times, unbalanced development. The stability of the Moroccan model is a response to the positive effect of investments, particularly in the strategic engagement with SMEs, which catered to the balanced development of the economy on a regional level.

4.7. Sector Trends

There is a 'Sector Trends' report on marketing AI as used in Morocco, which reveals inconsistencies. Within the Moroccan Banking and FinTech sector, marketing AI is omni-adopted (92%) with a 3.2-year ROI on invested chatbots. In e-commerce, there is remarkable AI-enabled performance as 78% of platforms employing dynamic pricing, which improves the average basket size by 31%. AI marketing is used across the telecom sector as well. 65% of telecom operators have optimized their networks and reported an 18% reduction in churn and 23% in infrastructure costs. Traditional sectors, particularly retail, are lagging, with only 42% of players in this industry using these technologies. Compared to retail, FinTech has a 2.1x greater lag, showcasing the need for differentiated adoption and implementation strategies. Therefore, it seems that the most effective digitization policy targets one specific sector, allowing for skills to be transitioned from frontline sectors to more traditional ones.

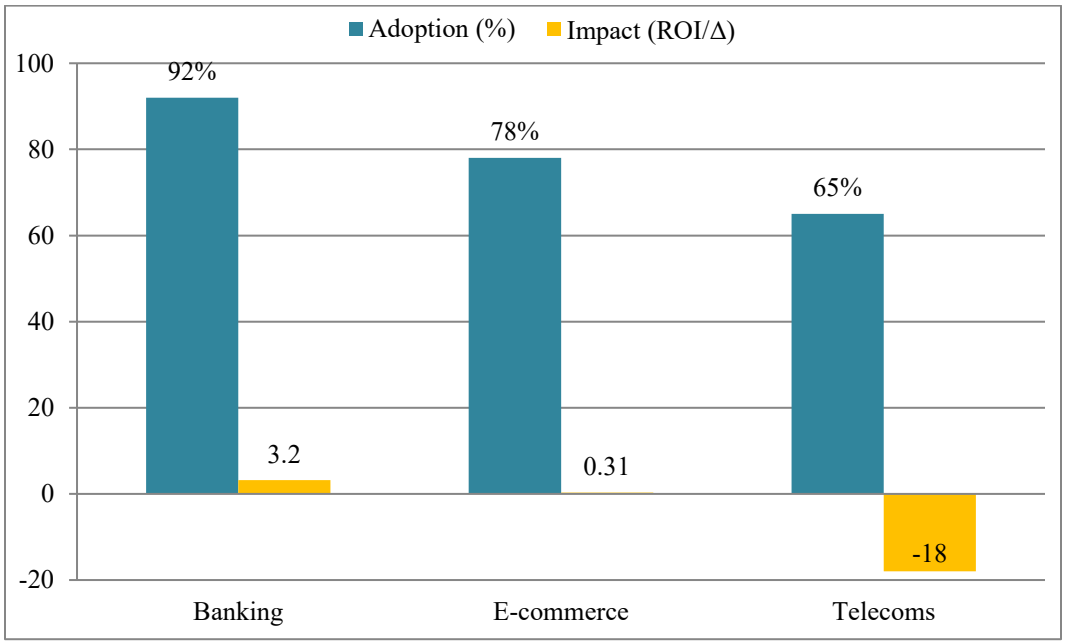

Fig. 6 AI adoption and impact by key sector

4.8. Qualitative Data: Sectoral Perspectives on AI Marketing in Morocco

Understanding AI marketing varies by industry sector in Morocco. In banking and FinTech, Customer Service Managers view changes as meaningful, yet subtle. A CX Manager in a bank in Casablanca claims the implementation of a chatbot has resulted in a 60% reduction in the volume of calls received, but the complexity of 30% of the queries still requires a human agent. Such observations substantially point to the efficiency AI can provide, but also the limitations in circumstances requiring personalization. In retail and e-commerce, predictive analytics has performed impressively. An IT director at a Marrakesh-based group claims predictive accuracy in anticipating stock-outs at 89%, which has helped increase the average basket size by 31%. Still, several respondents mention the challenges of historical data. This is clearly the case for traditional players with a weaker digital toolset. Telecommunications respondents referred to AI's influence on operations as positive and noted a reduction of 18% in customer churn. However, a data manager did point out the 12-month organisational delay in realising the benefits, referring to the lag culture. The absence of human and cultural factors seems to be the remaining impediment to the effective implementation of AI marketing in Morocco.

4.9. Summary of Results

The first key figure for AI tech penetration was 64% across all technologies, claimed by respondents to mask several inequities. A geographical bias was evident, with a concentration in large urban centers, as well as a striking digital disparity between large corporations (81% adoption) and SMEs (23%). The absence of digital transformation was also reported in specific sectors, including agriculture and crafts. Feedback has shown considerable improvements in operational efficiency. Client organizations have said each team saves about 11 hours per week, which equates to 1.5 full-time employee hours saved per week. The pre-eminence of algorithmic solutions is further supported, demonstrating 40% accuracy improvement over prior methods used. The 2.7-year average ROI in the Banking and Telecom industries continues to remain competitive at an international level.

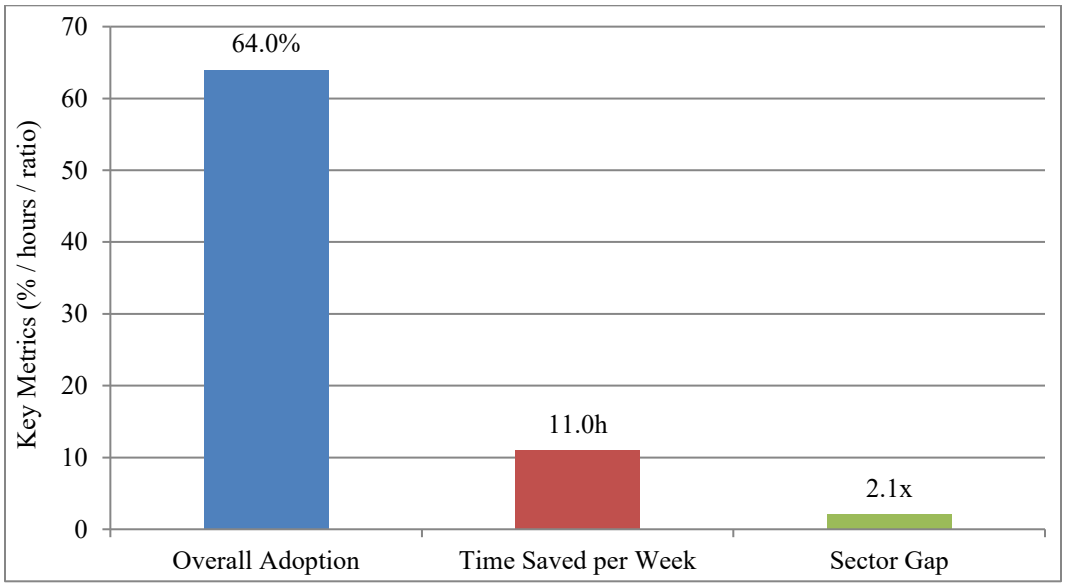

Fig. 7 Triadic summary of the adoption of marketing AI in Morocco

The analysis of sectoral imbalance shows particularly stark differences, with a ratio of 2.1:1 between FinTech and retail. There are three primary reasons: unequal distribution of niche technical resources, disparate tech spending across industries, and differing data maturity levels of economic actors. FinTech and e-commerce are positioned best in terms of growth potential, while the retail and agri-food sectors are positioned worst. This analysis places Morocco in the upper tier of countries in the world in terms of the level of adoption of marketing AI. The results indicate that there is a need to focus digital transformation efforts on SMEs and peripheral regions, which are currently the weakest link in digital transformation. According to our projections, optimising existing uses within the economic sector is most likely to provide an additional 15-20% growth. The reduction of sectoral imbalances will require bottom-up, sectoral, and structural policies. With that in mind, there are potential biases that favor self-reporting and early adopters, and considering the time frame of this study (12 months), the sustained impact of the performance metrics may not yet be ascertained. That being said, this visual summary serves many levels of decision-making. It offers a prioritized action framework for decision-makers, a benchmarking tool for businesses, and a roadmap for research in the prescribed friction areas. Based on these three pillars of analysis, as the final section will detail, it provides an answer to the inclusive and practical framework for adopting AI marketing technologies within the Moroccan economic ecosystem.

5. Discussion

Discussion and analysis highlight that while AI holds great potential for marketing in Morocco, the implementation and adoption of the technology are patchy. Larger companies have more resources and capabilities, but SMEs will need more extensive financial and technical support. AI training and coop-to-construct models could more easily build the bridge.

5.1. Uneven Adoption Across Sectors

The lack of adoption of AI marketing technologies across various sectors of the economy is a testament to the siloed approach to technology investments in the Moroccan economy. The most developed FinTech and e-commerce sectors exhibit advanced adoption levels (4.2/5 for FinTech), and this is consistent with the AI adoption levels captured by Huang and Rust (2021) [3]. The rapid adoption may be attributed to two primary reasons: first, the banking sector has detailed and structured customer data, which makes the application of AI solutions feasible; and second, there is notable competitive pressure from foreign platforms, such as the competition between Jumia and Amazon in the Moroccan market. On the other hand, lower scores were attributed to the

more traditional sectors such as agribusiness and retail, which were assigned 1.7/5. According to the CGEM report (2023) [12], this is likely the result of insufficient IT infrastructure and the lack of digitization, as only 14% of agricultural cooperatives are currently digitized. Considerable investments into technology also seem to be a low priority in these sectors. To a significant extent, the absence of sectoral-specific policies and, for example, the absence of targeted subsidy schemes to promote AI adoption in highly transformable sectors such as agriculture and food, will contribute to these results. These methods integrate addressing the inequalities and ensuring a more balanced distribution of technological progress in the Moroccan economy.

5.2. Performance and Return on Investment

The case study clearly presents the sequenced operational gains resulting from the deployment of AI marketing technologies in Morocco. There is a 22% decline in customer acquisition costs, as well as a 34% rise in customer satisfaction. The reason for these performance changes is attributed to the optimization of marketing strategies and AI-facilitated customer conversations, which Davenport et al. (2020) [4], in their study on digital maturity and the success of AI adoption, also argued for the close integration of these components.

Differences in return on investment between SMEs and large companies are quite pronounced. By sourcing data and employing specialized personnel, large companies are able to capture an ROI that is 2.5 times greater than their smaller counterparts. Although large corporations typically reach their break-even point in 1.8 years, SMEs take approximately 3.2 years to recoup their investment in AI marketing. This increasing gap suggests that Moroccan small and medium enterprises need to focus on the specific cost and complexity constraints that must be addressed.

These insights support Davenport and colleagues' own 2020 work on the theory and highlight the specifics of the Moroccan case, where the uneven distribution of tech and human resources deepens the performance gaps between geographers. Hence, the ability of enterprises to realize the potential of AI marketing depends on their digital maturity. To date, the results from this research appear strong relative to the existing literature. For instance, the ROI improvement and acquisition cost literature, in developed markets, reports a range of 10-15% as reported in Davenport et al. (2020) and Huang & Rust (2021), whereas in this research, acquisition costs declined and ROI grew by 27%. A few situational factors could help to understand these differences. Moroccan, AI-adopting firms are frequently technological first-movers in their sectors and consequently, gain significant efficiency from automating processes and shifting control from humans to machines. Second, in hiring sectors that are data-rich and digitally mature, such as banking, telecom, and e-commerce, the exposed benefits of AI are a great deal more pronounced. Third, the adoption gap among SMEs provides a selection bias; AI-adopting SMEs are generally resource-rich, strategically more aligned, and hence more likely to attain superior performance. These factors help to understand why this research has more positive impacts than the highly regarded research, but also clarify that these positive impacts are likely not true for all firms in Morocco.

5.3. Regional Comparison

Morocco does well, but it does not compare to South Africa. Figure 4 shows Morocco's digital maturity compared to the rest of Africa. With an adoption score of 3.2/5, the Kingdom leads French-speaking Africa and ranks just above Egypt (3.0) but is still behind South Africa (3.8). Although Africa shows different ways of adopting AI Marketing technologies, South Africa is a good example of what can be done. The close collaboration between the government and private sectors has created an environment for tech innovation. In Egypt, digital tech is available, but overregulation and bureaucracy distort and limit its implementation. Morocco's situation is contrasted. The competitive advantages that the country has are due to the gains from the facilitative institutional and regulatory frameworks for foreign investment. However, the challenges of digital exclusion remain, primarily illustrated by the low adoption of digital technologies by SMEs and the skewed distribution of digital resources across the country.

5.4. Methodological Limitations

As with any study, there are limitations to consider in connection with the findings. Most importantly, there is a geographical bias due to the fact that 68% of respondents are from the Casablanca and Rabat regions. Thus, the conclusions of this case study are probably less applicable to the rest of Morocco, particularly its hinterland and rural regions, where the rate of technological adoption is considerably slower.

In the context of research design and approaches, one of the risks involves the self-reported nature of the data collected. More recent findings highlight that self-reported measures in AI research are subject to social desirability bias and overestimate actual practices (Computers and Education: Artificial Intelligence, 2024) [17]. This issue is well documented in studies on technology adoption, which overestimate positive outcomes by 18–22% in emerging markets and in studies that grossly exaggerate metrics to implement on the ground. Finally, not considering the informal sector, which, according to the World Bank (2023) [12], is 35% of the Moroccan economy, leaves the research with an unrealistic overall scope. It then poses the research scope to only formal enterprises. The informal sector is economically significant in Morocco, but this sector is also organized and uses technology in ways that are unique and which future research should address. It is these limitations that inform the conclusions of this research. This also indicates the need for future research to consider more balanced

sampling across varied regions and sectors. It would also be prudent to provide objective metrics in conjunction with self-reported metrics.

5.5. Practical Implications and Research Perspectives

These research implications target all economic actors in Morocco. For private actors, this can mean "choosing high return use cases for profitability, such as after-sales chatbots." In addition, "work with training institutions, such as 1337 school and EMSI for in-company training." This applies to resource optimization and the development of local AI capabilities. On the public policy side, there is the issue of constructing bespoke AI policy, which will spur private investment. Moreover, there is a need for public financial assistance for cloud-based services to bridge the digital divide between large companies and small and medium enterprises. These reforms need to be grounded in global best practices adapted to the Moroccan economy and institutions.

The many interesting openings to continue the research are just examples. Understanding the integration of AI within marketing in Morocco to inform the shifting future skills of the labor market would be helpful. Frameworks that combine traditional marketing with AI marketing tools collaborate with digital marketing to articulate the value of AI to businesses during the digital transition. These additions will expand the literature and, more importantly, assist in the construction of relevant hybrid conceptual frameworks that are aligned with the socio-economic realities of Morocco.

This study outlines three characteristics that explain the Moroccan marketing sector's unique trajectory with respect to its integration of AI. For one thing, AI integration is highly fragmented, with strong adoption in the financial and digital services sectors, while traditional sectors, especially older, established industries, have hardly adopted any AI. Regarding more advanced economies, the lack of AI adoption within SMEs and economically excluded areas highlights the spatial and structural economic imbalances that are inescapable within the socio-structural context. Difficulties in more advanced economies largely reflect emerging market challenges, particularly with respect to the structural impediments to growth within the AI adoption gap in SMEs and economically excluded areas.

Context-sensitive frameworks are particularly relevant to the application of AI in marketing, highlighting the need to avoid a universal, one-size-fits-all approach that overlooks the diverse regional and sectoral contexts. Consequently, the focus for decision-makers and practitioners is on:

- Designing strategic frameworks that reflect the digital variation in each sector's ecosystem;
- Defining supports that respond to the needs of especially smaller, economically peripheral areas, and their businesses;
- Addressing systemic challenges through effective public-private partnerships.

This research outlines some of the challenges Morocco is facing during its digital transition, particularly the factors that influence the adoption of technology in low-resource settings. The study emphasizes that balanced and profound digital transformation will necessitate the creation of innovative hybrids that fuse digital and analog systems. Also, in extensively using marketing AI, Morocco will have to adapt to its particular social and institutional frameworks instead of emulating other nations.

The provided materials suggest significant economic and socio-cultural implications. From an economic perspective, the lack of fair, AI-based marketing instruments is widening the productivity gap between large companies and Small and Medium Enterprises (SMEs) and reinforcing structural inequities. Socio-culturally, the paradox is that the ever-evolving AI landscape is creating and transforming jobs by automating fundamental marketing functions and generating roles such as marketing data analyst, AI strategist, and digital ethicist. As for the jobs and functions AI is capable of performing, many jobs will become redundant. This indicates the need for the economically relevant reinvention of higher and adult education. Based on economic oversight and compared with South Africa and Egypt, the state of things suggests Morocco is in need of rapid development of an aligned and comprehensive strategy on AI. Such a policy would center and balance economic activity, enhance the predictability of the policy, and assist in the equitable distribution of economic and technological instruments. For Morocco, AI represents mental technology shifts, but more importantly, AI should be viewed as a tool for socio-economic and institutional reform self.

There are some immediate actions to be taken according to the study. For the businesses, the focus should be on high-impact AI use, such as chatbots for customer service and demand forecasting analytics, and at the same time, investing in upskilling the workforce to fill the AI skills gap. For the policy makers, there needs to be prioritized urgent work on an all-encompassing national AI policy, including elements such as data governance, support for SMEs, and disincentives for structural policy barriers. For academia, the integration of AI, data analytics, and digital marketing into the curriculum is urgently needed so that graduates will have the skills necessary for the jobs in the marketplace.

Lastly, there are also several clear next steps for research. There is a need for longitudinal research on the adoption of AI over time within Moroccan enterprises. Within the current analysis of the informal sector, there is a research gap, and the sector is critical to the national economy. There is also an opportunity for cross-country comparative research, including North African and emerging economies, which will help in

understanding more policy-relevant cross-border lessons. The study of hybrid business models that use AI and digital technologies in conjunction with the more traditional ways of doing business will help to achieve a digital transformation that is inclusive, culturally appropriate, and informal to the economy at hand.

6. Conclusion

AI technology in data-driven Moroccan marketing could be transformative. However, there are still challenges in the limited use of this technology. Well-integrated AI tools in marketing can lower operational costs, improve effective customer personalization, and marketing. Constraints such as multiple structural and contextual barriers limit the technology scope and widespread use. These barriers need to be worked upon in order to fully utilize the benefits of data-driven marketing in Morocco.

There are a few Moroccan enterprise areas in which newer priorities can be drawn.

- Training tailored to the needs of the market will be crucial to closing regional technical skills gaps and establishing deeper university-business partnerships.
- AI technology will be more useful if modern data collection, information systems, and digital infrastructure are established.
- Moroccans own distinctive financial consumer patterns and are engaged mobile users. To improve user experience and marketing effectiveness, frameworks need to be behavioral and culturally shaped to Morocco's linguistic characteristics (Darija, Arabic, and French).

To understand the unequal effects of adopted AI Technology on Moroccan Small and Medium-Sized Enterprises (SMEs), the unsung heroes of the national economy, and their omission in the literature, a more thorough empirical study will be required. Moreover, the use of hybrid approaches that integrate traditional and AI-driven digital marketing methodologies may facilitate a more seamless digital transition for these businesses.

This study contributes to the understanding of AI in marketing by conducting a cross-sectoral analysis within the Moroccan context, which has been overlooked in prior studies. Earlier studies focused primarily on developed economies or on individual, siloed industries. In contrast, this research spans multiple industries while also specifically addressing the unique challenges faced by SMEs, the uneven regional disparities in technology, and the lack of data governance. By integrating the technology adoption gap literature of emerging economies with quantitative research, this study combines the global and theoretical frameworks with the economic and institutional realities of Morocco. This research will interest scholars in digital marketing and the adoption of AI, as well as practitioners and policymakers in need of context-rich materials.

Ultimately, the effective integration of AI into marketing in Morocco will rely on the collaboration of the key stakeholders—businesses, state institutions, and universities. It will be important to align these stakeholders with the country's socio-economic realities in order to develop an expansive, cohesive national system strengthened by profitable AI to enhance economic and digital development.

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