IMPACT OF PREDICTIVE MARKETING BASED ON ARTIFICIAL INTELLIGENCE
Transforming Communication and Sales Strategies in SMEs and *Startups*

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KEYWORDS	ABSTRACT
Predictive marketing *Artificial Intelligence* *Startups* *SMEs* *Communication strategies* *Sales*	*This article analyses the impact of predictive marketing based on artificial intelligence (AI) in startups and SMEs, with a particular focus on its role in optimising communication and sales strategies. A mixed-methodological approach, comprising semi-structured interviews and questionnaires, revealed notable enhancements in the personalisation of customer interactions, accompanied by an average increase of 25.4% in conversion rates. The findings demonstrate that organisations that adopt AI not only optimise resources and enhance their strategic capacity but also gain a competitive advantage in an ever-evolving digital environment. Despite these advantages, ethical and organisational challenges arise, such as the lack of skilled personnel and the effective management of large volumes of data. These challenges require specific solutions to ensure the ethical and effective implementation of AI.*

1. Introduction and State of the Question

Predictive marketing has revolutionised business strategies over the past decade, enabling companies to anticipate customer behaviour through the analysis of historical data and machine learning models. In today's context of digital transformation, artificial Intelligence (AI) has become a key enabler for taking predictive marketing to unprecedented levels of precision and personalisation. According to Davenport and Ronanki (2018), AI not only automates repetitive tasks but also provides predictive capabilities that allow campaigns to be adjusted in real-time to meet consumers' needs.

AI facilitates the execution of tasks such as managing customer records, reducing operational costs and freeing employees from repetitive tasks so they can focus on higher-value activities. Additionally, the insights generated enable companies to better understand their customers, personalise marketing campaigns, and improve strategic decision-making. Advanced systems such as chatbots and virtual assistants enhance customer interactions, increasing satisfaction and loyalty (Davenport & Ronanki, 2018). These advancements have allowed businesses to adapt their strategies to individual customer needs, driving efficiency and boosting return on investment (ROI).

Despite the advancements made by large corporations, the adoption of AI by startups and small and medium-sized enterprises (SMEs) presents a number of significant challenges. These companies frequently have restricted financial and human resources, making it difficult to invest in advanced technologies (Chatterjee et al., 2021). Nevertheless, predictive marketing can assist these organisations in optimising their resources by enabling the personalisation of communication and sales campaigns. As posited by Lilien and Rangaswamy (2001), personalisation enhances efficiency by directing resources towards audiences with greater conversion potential, thereby conferring a competitive advantage. The implementation of AI in predictive marketing enhances companies' capacity to anticipate customer preferences and to customize advertising messages with greater precision. Syam and Sharma (2018) observe that AI not only automates tasks but also facilitates personalisation by enabling the collection and analysis of large volumes of data in real time, thereby improving conversion rates and customer retention.

Moreover, Jarek and Mazurek (2019) observe that AI has transformed digital marketing, facilitating the hyper-personalisation of campaigns. By employing sophisticated algorithms, organisations are able to adapt their communications in real time, thereby optimising their ROI. This capability is particularly beneficial for startups and SMEs, which operate with constrained resources and aspire to deliver personalised experiences on a par with those of large corporations. However, the utilisation of AI-based predictive marketing techniques gives rise to a number of ethical and organisational challenges, particularly in relation to the handling of personal data and compliance with regulations such as the General Data Protection Regulation (GDPR) in Europe. Tene and Polonetsky (2012) highlight potential issues surrounding the re-identification of anonymised data and the misuse of privacy. Start-ups and SMEs must strike a balance between personalisation and consumer privacy by implementing ethical data management practices to avoid any invasive practices that could damage their reputation. This article examines the ways in which startups and SMEs can leverage AI to develop effective predictive marketing strategies, with a particular focus on personalisation, resource optimisation and competitiveness. It also considers the ethical and organisational challenges that these entities may encounter in this process.

1.1. Definition of Predictive Marketing

The term 'predictive marketing' is defined as the utilisation of data, algorithms and analytical techniques with the objective of anticipating consumer behaviour and proactively adjusting marketing strategies (Chintalapati & Pandey, 2021). This approach has gained prominence in the context of digital marketing, where organisations employ a range of platforms to analyse substantial historical data sets, identify behavioural patterns and trends, and personalise campaigns and design more effective advertising messages (Chaffey & Ellis-Chadwick, 2019).

One of the pillars of predictive marketing is the use of statistical models and machine learning algorithms to analyse previous consumer behaviours, such as purchasing patterns and web browsing (Hair et. al, 2019). These methods allow companies to anticipate future decisions and optimise

strategies in real time, providing competitive advantages by adjusting prices and personalising content (Venkatesan et. al, 2018).

The implementation of predictive marketing has been particularly prevalent in sectors such as e-commerce and retail, where the ability to anticipate consumer behaviour enhances the efficiency of resource allocation and increases conversion rates. Recent research indicates that customer engagement is enhanced when personalised experiences are based on predictive data (Islam et al., 2019). The implementation of predictive strategies allows companies to optimise their ROI by reducing expenditure on ineffective campaigns and targeting segments with a higher likelihood of conversion. Nevertheless, the implementation of such strategies necessitates the ethical handling of data and compliance with privacy regulations, including the GDPR in Europe. Tene and Polonetsky (2012) highlight the potential risks associated with the re-identification of anonymised data, emphasising the necessity for companies to adopt transparent information management practices. It is of the utmost importance to strike a balance between personalisation and respect for consumer privacy if a company is to foster customer trust, which in turn affects brand perception and customer loyalty.

1.2. Organisational Empowerment through AI

The advent of AI has transformed the manner in which organisations make decisions, providing them with a previously unparalleled degree of organisational empowerment. This empowerment not only optimises operational processes but also enhances productivity and efficiency through the utilisation of sophisticated technologies (Dwivedi et al., 2021). As Haenlein and Kaplan (2019) posit, AI is not only capable of interpreting and learning from vast quantities of data, but it is also able to adapt autonomously to novel circumstances. This enables organisations to achieve their strategic objectives in a more efficacious manner.

In the field of marketing, AI is capable of adjusting offers in accordance with changing consumer preferences, thereby enhancing the customer experience and increasing ROI. Furthermore, AI's capacity to optimise market segmentation and anticipate trends confers a competitive advantage in dynamic environments, where consumer expectations evolve rapidly.

AI not only transforms the manner in which business decisions are made, but also enables organisations to adopt a proactive stance. The capacity to process vast quantities of data fosters strategic agility, conferring a substantial competitive advantage upon businesses. The utilisation of digital technologies, such as AI, transforms routine tasks into automated processes, thereby enabling employees to direct their attention towards activities that require creativity and critical thinking (Brynjolfsson & McAfee, 2017). For startups and SMEs, the adoption of AI represents a crucial means of differentiation, enabling them to compete in an environment that is dominated by large corporations. Notwithstanding its economic and technological constraints, AI offers access to sophisticated predictive analytics tools, thereby facilitating the optimization of marketing campaigns and personalization (Lashitew, 2021). Such technologies facilitate enhanced data-driven decision-making and operational efficiency, in addition to enabling the anticipation of shifts in market demand.

1.3. Ethical Considerations

The integration of AI in predictive marketing gives rise to a number of significant ethical concerns that warrant further investigation. One of the most significant challenges is the utilisation of extensive personal data, which algorithms require to generate precise predictions. The collection and analysis of this data may contravene users' privacy, particularly in the absence of compliance with data protection regulations such as the GDPR in Europe (Tene & Polonetsky, 2012). It is thus imperative that organisations provide consumers with comprehensive information regarding the collection and utilisation of their data, thereby fostering trust and responsibility in the deployment of advanced technologies.

A further ethical challenge is the potential for bias to be inherent in algorithms. The perpetuation or amplification of existing biases may occur as a result of AI-based decisions if the training data is biased (Oy, 2017). As (Caliskan et. al, 2017), have observed, algorithms can reflect human biases, which may result in the perpetuation of stereotypical representations of certain groups. Such bias has the potential to negatively impact specific demographic groups, resulting in discriminatory practices in market

segmentation and the personalisation of offers. Consequently, the lack of transparency surrounding the operation of these algorithms hinders the ability to identify and address potential biases, underscoring the necessity for organisations to be transparent about their operations and the data they utilise. In order to mitigate these risks, it is of the utmost importance to implement auditing and validation practices that ensure fairness in strategies.

Transparency is of paramount importance in maintaining consumer trust. Mittelstadt et al. (2016) posit that users must comprehend the manner in which automated decisions influence their experiences. A lack of clarity can result in a loss of consumer trust and negatively impact a company's reputation in the marketplace. It is therefore imperative that organisations foster transparency in their algorithmic processes, both from an ethical standpoint and in order to cultivate customer loyalty.

2. Objectives

The main objective of this paper is to analyse the impact of predictive marketing based on AI on the performance of startups and SMEs. This analysis examines how these technologies can enhance communication and sales strategies, enabling these companies to compete more effectively in a dynamic and highly competitive market (Main Objective, MO). The incorporation of AI into predictive marketing provides not only advanced tools for segmentation and personalisation, but also enables companies to respond expeditiously to evolving consumer requirements.

Furthermore, the objective is to ascertain the particular benefits that AI bestows upon the personalisation of customer interactions (Specific Objective 1, SO1). This encompasses enhanced conversion rates and the capacity to provide more gratifying and pertinent user experiences. By personalising campaigns and tailoring them to consumer behaviours and preferences, companies can enhance customer loyalty and retention, which are vital in a highly competitive business environment.

A further objective is to investigate the ethical and organisational challenges encountered by start-ups and SMEs when implementing these technologies (Specific Objective 2, SO2). This examination encompasses the necessity to adopt an ethical approach that prioritises consumer privacy and transparency in the utilisation of data.

Ultimately, this paper aims to put forth pragmatic recommendations that can facilitate an ethical and efficacious integration of predictive marketing (Specific Objective 3, SO3). The objective of these solutions is twofold: firstly, to ensure that startups and SMEs benefit from AI, and secondly, to promote a responsible and sustainable use of the technologies.

3. Methodology

This study employs a mixed methodology, integrating both qualitative and quantitative analysis, to assess the impact of AI-based predictive marketing on startups and SMEs. This comprehensive approach enables a more profound comprehension of the phenomenon, integrating numerical data with a thorough examination of particular instances, offering both statistical precision and practical contextualisation (Creswell & Creswell, 2017).

The qualitative research is concerned with the analysis of specific cases of companies that have implemented predictive marketing strategies. The objective of the semi-structured interviews is to gather detailed information about the motivations for adopting artificial intelligence, the perceived benefits and the challenges faced in the process. Qualitative analysis commences with data familiarisation, whereby transcripts are examined to gain insight into both content and context. Subsequently, preliminary codes are generated from the responses, identifying concepts such as "effective personalisation", "implementation challenges" and "operational efficiency". The codes are then grouped into broader themes, which allow key patterns to be identified. These include the benefits of AI and the barriers to AI adoption. Subsequently, the themes are subjected to a process of review and refinement, with the objective of ensuring that they are an accurate reflection of the data. The final stage of the process is to define and name the themes in a way that clearly reflects their content. This involves highlighting terms such as "personalisation strategies" and "ethical challenges in data use".

This structured approach ensures rigorous analysis and interpretable results, thereby facilitating an in-depth understanding of business experiences in the implementation of artificial intelligence in marketing. The study employs a non-probability convenience sampling strategy, selecting a total of 50

companies. This approach facilitates the inclusion of participants willing to share their experiences, given the limited access to data in this field.

The selected companies are drawn from sectors where the adoption of AI is particularly relevant, including e-commerce and B2B services, thereby enriching the research context. Although non-probability sampling may introduce biases, the results allow us to formulate hypotheses that could be explored in future studies with larger and more representative samples. For instance, there is a possibility of an over-representation of companies with more advanced AI implementation, which, although a limitation, provides a solid basis for the development of more detailed studies in the future.

Furthermore, this strategy enables the involvement of organisations with a keen interest in predictive marketing, which is beneficial for the collection of preliminary data on the implementation of AI in a range of business contexts, including SMEs. Conversely, the quantitative component of the study comprises structured questionnaires and data analysis, with the objective of measuring the impact of predictive marketing strategies on business performance. The utilisation of statistical tools will facilitate the assessment of correlations between the adoption of AI and a range of indicators of success, including conversion rates, ROI and resource efficiency. This combination of methods guarantees a comprehensive and integrated evaluation of the impact of AI on marketing practices within these business contexts.

3.1. Study Design

The study employs an exploratory-descriptive approach, with a focus on primary data collection through semi-structured interviews and questionnaires. These were specifically designed for marketing managers of startups and SMEs that have integrated AI into their communication and sales strategies. This design is particularly suited to understanding how AI technologies are applied in marketing and to identifying the main challenges and benefits perceived by companies (Robson & McCartan, 2017).

The study design permits not only an exploration of companies' current experience with AI, but also the identification of patterns and trends in its implementation. The combination of qualitative and quantitative approaches allows for a more comprehensive and informed evaluation of the influence of AI on marketing, which in turn provides valuable information for future research and practice in this evolving field.

3.2. Participants and Sampling

The study employed a non-probability sampling approach utilising a convenience method, with a total of 50 companies selected, distributed equally between 25 start-ups and 25 SMEs. The companies in question operate in a number of strategic sectors, including e-commerce, B2B services, information technology, digital health, online education and logistics. The selection of these sectors is justified by their notable adoption of AI technologies in their marketing strategies, reflecting a commitment to innovation and competitiveness in an increasingly demanding market (Lashitew, 2021).

In order to guarantee the relevance of the experiences shared, only companies that have implemented predictive marketing tools within the past two years were included. The criterion of temporality permits the evaluation of both short- and medium-term results, thereby ensuring that participants' perceptions are based on recent experiences of implementing AI.

The participants in the interviews were selected on the basis of their roles as marketers and CEOs, thus ensuring that the insights gained were both direct and relevant with regard to the implementation and results of predictive marketing in their respective companies. The interviews were structured around questions addressing the utilisation of AI in their operational processes, observed alterations in conversion rates, campaign efficacy and the ethical challenges associated with the implementation of these technologies. The use of non-probability sampling and the careful selection of participants enables the study to provide a comprehensive and detailed insight into the impact of AI-based predictive marketing on startups and SMEs, thus establishing a robust foundation for further analysis of the collected data.

3.3. Data Collection

The data collection process was conducted in two distinct phases, each designed to address specific aspects of the impact of AI on predictive marketing. The initial phase of the study comprised semi-structured interviews, the objective of which was to gain insight into participants' perceptions and experiences of integrating AI into their marketing strategies. This method is particularly valuable for obtaining rich and detailed data on emerging topics, such as the use of AI in startups and SMEs, as it allows interviewees to share their experiences in an open and reflective manner (King, 2004).

The second phase of data collection involved the distribution of quantitative questionnaires, which included questions designed to assess the impact of AI on key performance indicators. The aforementioned indicators encompassed ROI, customer conversion rates and the optimisation of marketing budgets. The questionnaires were constructed using a 5-point Likert scale, enabling respondents to indicate their perceptions of the success of AI implementation in their business strategies. This quantitative approach provides a robust statistical foundation that enhances the qualitative findings obtained in the preceding phase (Hair et. al, 2019).

3.4. Data Analysis

The qualitative data was analysed using thematic coding techniques, an approach that allows for the identification of recurring and meaningful patterns in participants' responses, facilitating an understanding of the main benefits and barriers associated with the adoption of AI in marketing (Braun & Clarke, 2006).

The analysis of quantitative data was conducted using the Statistical Package for the Social Sciences (SPSS) software, which is widely regarded as one of the most reliable and comprehensive programs in the field of statistical research (Field, 2018). The programme facilitated both descriptive and correlational analyses, thereby enabling an in-depth examination of the impact of AI implementation on marketing campaign performance. Correlational analysis revealed a significant relationship between the utilisation of AI and an improvement in key performance indicators, including conversion rates and resource allocation efficiency. These quantitative findings corroborate the conclusions derived from the qualitative data, offering a more comprehensive and nuanced perspective on the impact of AI on the marketing practices of startups and SMEs.

3.5. Validity and Reliability

In order to guarantee the internal validity of the study, a data triangulation approach was employed, integrating both qualitative and quantitative methodologies. This method is crucial for corroborating the findings obtained in both phases of the research, thereby enhancing the credibility of the results (Creswell & Plano Clark, 2011). The use of triangulation allows for a more nuanced and multifaceted understanding of the phenomenon under study, while also reducing the potential for bias that may arise from relying on a single method of data collection.

In terms of reliability, a systematic and replicable approach to data analysis was adopted, in accordance with the criteria set out by (Miles et. al, 2014). This signifies that the coding and analysis processes were conducted in a consistent manner, thereby ensuring the reliability and reproducibility of the results. The reliability of the findings was enhanced by cross-checking the coding by multiple researchers. This procedure serves to minimise individual biases and improve the robustness of the findings.

4. General Analysis and Results

This research analysis examines the influence of predictive marketing based on AI on a number of pivotal areas for startups and SMEs. In particular, the analysis assesses the impact of these technologies on the personalisation of communication strategies, the optimisation of conversion rates and the allocation of resources to marketing campaigns. The objective of this analysis is to provide a comprehensive and detailed view of the impact of AI implementation on contemporary marketing practices, within a business environment characterised by intense competition and evolving consumer expectations. The data gathered from questionnaires and interviews with startups and SMEs enables us

to quantify the impact of AI in these areas and to gain insight into the experiences and perceptions of companies with regard to its implementation.

The following table (Table 1) presents a summary of the key findings on the adoption of predictive marketing in startups and SMEs, as well as the impact of AI on conversion rates and the optimisation of marketing resources:

Table 1. Analysis of predictive marketing adoption in *startups* and SMEs

Sector	Adoption rate	Increase in conversion rate	Reduction of operating costs
E-commerce	40,7%	30,6%	15,3%
B2B services	30,2%	20,2%	10,2%
Technology companies	25,8%	15,9%	8,7%
Other (e-Health, education, logistics)	3,3%	11,7%	2,1%

Source: own elaboration, 2024.

4.1. Adoption Rate of Predictive Marketing in Startups and SMEs

The data collected for this study indicates that 65.3% of the startups and SMEs interviewed have implemented some form of artificial intelligence (AI) in their marketing strategies over the past two years. This noteworthy percentage not only signifies a surge in the adoption of sophisticated technologies but also portrays a tendency towards the digitisation and modernisation of processes, which is crucial for businesses striving to remain competitive in an increasingly dynamic market.

Among the most prominent sectors, e-commerce leads with 40.7% AI adoption, representing a significant penetration rate. Notable examples of companies utilising AI for customer experience personalisation include Komodore, a software provider for the tourism accommodation industry, and Lola Market, a Spanish e-commerce platform specialising in the purchase and home delivery of groceries and supermarket products. These organisations employ AI to enhance the customer experience through product recommendations based on individual browsing histories.

In the B2B services sector, 30.2% of companies have integrated AI into their operations, enabling more effective customer segmentation and a deeper comprehension of customer needs. Syndeno, a company specialising in software infrastructure, has implemented artificial intelligence (AI) tools that analyse behavioural data. The company's CEO, Alberto Iglesias, provided the following explanation: "The adaptation of our interactions to the particular requirements of each customer has resulted in an increase of 15% in the proportion of successful outcomes." The technology sector exhibits a 25.8% rate of adoption for AI, with a prevailing culture of innovation driving the implementation of advanced technologies. Notable companies such as Salesforce have developed AI solutions that facilitate the prediction of customer needs through the utilisation of real-time data analysis. Furthermore, nascent sectors such as digital health, online education and logistics are beginning to adopt AI. In the field of digital health, applications such as AB Medica employ artificial intelligence to facilitate personalised medical diagnostics. In the field of education, platforms such as Coursera employ the use of artificial intelligence (AI) to facilitate the personalisation of learning pathways. In the field of logistics, Paack, a company specialising in home delivery solutions, employs the use of AI to optimise its routes.

The increasing utilisation of predictive marketing in startup and small and medium-sized enterprises (SMEs) underscores the pivotal role of artificial intelligence (AI) as a catalyst for transformation across a spectrum of industries. As an increasing number of companies recognise the potential of these technologies to optimise processes and enhance the customer experience, it is anticipated that there will be a sustained rise in their implementation, leading to the creation of a more competitive and customer-centric business environment.

4.2. Increasing Conversion Rates

The companies surveyed indicated that the implementation of AI has had a discernible positive impact on their conversion rates. The mean increase in conversion rates for startups and SMEs was 25.4% following the utilisation of predictive tools for the personalisation of marketing strategies. This increase is notable, particularly in an environment of intense competition where the maximisation of ROI is of paramount importance.

A comparative analysis of conversion rates across sectors reveals notable discrepancies. E-commerce companies such as Shopify and Mumumío (which specialise in the sale of gourmet products and fresh food) have demonstrated the greatest improvement, with an average increase of 30.6%.

In the B2B services sector, the mean increase in conversion rates was 20.2%. The application of AI facilitates more effective segmentation and automation of sales processes. Íñigo Robles, the Chief Executive Officer of Solved, corroborated this assertion. "We use AI to predict which leads are most likely to result in a sale, which helps us to optimise our time and resources".

Similarly, other sectors, including information technology, digital health, online education and logistics, have also demonstrated an increase in conversion rates. To illustrate, Zocdoc employs AI to facilitate personalised medical appointments, which has resulted in a 25% increase in patients scheduling visits. In the field of education, Khan Academy employs the use of AI to personalise content according to students' needs. In the field of logistics, Glovo employs AI to enhance the efficiency of delivery route management and order handling. This has resulted in a 15% improvement in conversion rates, achieved by reducing costs and improving customer service.

These findings highlight the efficacy of AI not only as an optimisation instrument but also as a driver to enhance conversion rates across a spectrum of industries. The capacity of AI to personalise experiences and deliver tailored solutions illustrates its value in contemporary marketing strategy, thereby transforming the manner in which businesses establish connections with their audiences.

4.3. Optimising Marketing Resources

The implementation of AI has not only resulted in an increase in conversion rates but has also enabled a significant optimisation of marketing resources. The data collected indicated that 70.5% of the companies surveyed reported a reduction in the operational costs associated with acquiring new customers. This demonstrates the efficacy of predictive marketing tools in the efficient management of available resources. In the e-commerce sector, companies reported a noteworthy reduction in customer acquisition costs, with an average decrease of 15.3%. This success can be attributed to the capacity of AI to facilitate accurate market segmentation and personalise advertising campaigns. Furthermore, the companies Ulabox and Privalia have implemented AI algorithms which optimise their marketing strategies by targeting only those segments most likely to convert, thereby reducing ineffective advertising expenditure.

There was a 10.2% reduction in customer acquisition costs for B2B services. Artificial intelligence (AI) can be employed to automate processes and optimise communication with prospective customers. Alberto Iglesias, Syndeno's sales director corroborated this information: "We use AI to qualify leads and prioritise those most likely to convert. This has significantly reduced the time our team spends closing sales, allowing us to focus on the most promising opportunities". This approach not only reduces costs, but also improves the effectiveness of the sales team by focusing their efforts on the most valuable leads.

Furthermore, sectors such as information technology, digital health, online education and logistics have also demonstrated enhanced operational efficiency. In the field of digital health, applications such as Fitbit have incorporated artificial intelligence (AI) to analyse health data in real time. In the domain of online education, platforms such as Coursera have employed the use of AI to personalise educational content, thereby tailoring courses to align with users' specific needs.

The research demonstrates that the implementation of AI enhances the efficacy of marketing campaigns and facilitates more efficient resource management. By optimising the allocation of resources and enhancing marketing strategies, startups and SMEs can enhance their competitiveness and sustainability in an increasingly challenging market environment.

4.4. Impact on Personalisation and Efficiency of Marketing Campaigns

The implementation of AI has enabled startups and SMEs to significantly enhance the personalisation of their marketing campaigns. The data collected in this study indicates that 78.4% of the surveyed companies have reported an improvement in their capacity to personalise interactions with customers as a result of AI implementation. This improvement enables the customisation of messages, offers and products to align with individual consumer preferences and behaviours, resulting in a discernible enhancement in customer satisfaction and elevated conversion rates. One of the primary advantages of predictive marketing is the ability to personalise interactions with customers. In the e-commerce sector, companies such as Zalando and Spotahome (a company dedicated to renting a home without the need to physically visit it) have employed the use of AI to develop personalised shopping experiences. Zalando has demonstrated that personalised recommendations result in conversion rates that are approximately 22% higher than those observed in generic marketing campaigns.

In the B2B services sector, personalisation is evidenced by the provision of products and services that are tailored to the specific needs of customers. Customer management tools, such as Salesforce and Hubspot, have incorporated AI in order to assist companies in the process of database segmentation and the subsequent offering of personalised solutions. The utilisation of Hubspot CRM enables organisations to identify patterns in customer behaviour, thereby facilitating the provision of solutions that are more closely aligned with their needs.

Furthermore, nascent sectors such as digital health and education are also adopting personalised approaches. To illustrate, telemedicine platforms such as Teladoc employ AI to furnish treatment recommendations predicated on patients' medical histories. In the field of online education, platforms such as Khan Academy employ the use of AI to personalise educational content, thereby tailoring courses to the specific requirements of students.

As illustrated in Figure 1, these findings demonstrate how AI is transforming the manner in which businesses interact with their customers, enabling more profound and efficacious personalisation, which in turn contributes to a more gratified customer experience and enhances the commercial performance of organisations.

Figure 1. Impact of AI on the personalisation and efficiency of marketing campaigns
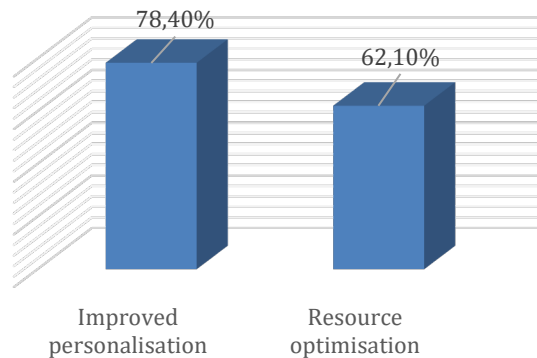
Source: own elaboration, 2024.

4.5. Challenges in AI Implementation

Despite the advantages identified in the utilisation of AI, nascent enterprises and SMEs encounter a multitude of obstacles in its implementation. The data collected revealed that 55.3% of the surveyed companies identified a lack of skilled personnel as one of the most prevalent challenges. This deficiency in the requisite skills among the team may impede organisations' capacity to fully leverage the potential of AI tools. A survey conducted by McKinsey in 2021 revealed that 69% of organisations attempting to expand their AI capabilities identified a lack of suitable skills as a significant barrier.

A further considerable obstacle is the substantial initial expenditure, which was identified by 45.1% of respondents. The investments necessary for the acquisition and maintenance of AI technologies, in

addition to the training of personnel, can be financially prohibitive, particularly for startups operating with constrained budgets. This predicament is exemplified by the case of Shopify, which, despite having incorporated AI technologies to enhance its platform, has underscored the challenge of reconciling these investments with other operational priorities.

Furthermore, 40.4% of companies reported challenges associated with the management of substantial data volumes. The capacity to collect, store and analyse data is of paramount importance for the effective operation of AI tools. Nevertheless, a considerable proportion of startups and SMEs are unable to provide the requisite infrastructure to manage this data, which can ultimately result in suboptimal decision-making. A study conducted by Gartner in 2019 revealed that over 60% of small businesses lack effective data management strategies, thereby constraining their capacity to implement AI effectively.

Sectors such as e-commerce and B2B services, which have experienced a rapid uptake of AI, have also reported these challenges, but often have greater resources at their disposal to address them. In contrast, nascent sectors such as digital health and online education are now encountering these challenges as they deploy AI technologies. To illustrate, a digital health start-up may encounter difficulties in integrating AI tools due to a dearth of trained personnel and the high costs associated with development. These analyses highlight the necessity of identifying and addressing the potential obstacles that could impede the successful implementation of these technologies in the context of startups and SMEs (see Figure 2). This will facilitate the creation of a more effective path towards the adoption of these transformative technologies.

Figure 2. Main challenges of AI implementation
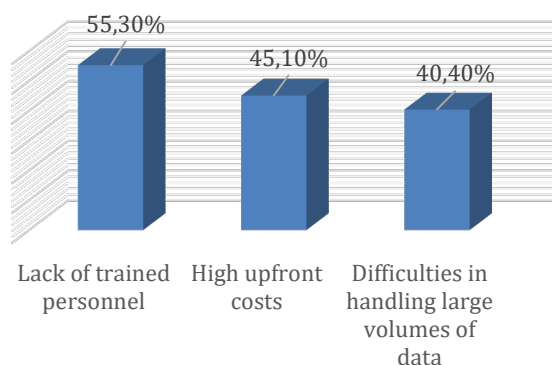
Source: own elaboration, 2024.

4.6. Resource Optimisation

The implementation of AI has not only increased conversion rates, but also enabled significant optimisation of resources invested in marketing. A review of the data collected revealed that 70.5% of the companies surveyed claimed to have achieved a reduction in the operational costs associated with acquiring new customers. This finding reflects the effectiveness of predictive marketing tools in efficiently managing available resources.

In the e-commerce sector, companies have reported a noteworthy decline in customer acquisition costs, with reductions reaching 15.3%. This success can be attributed to the capacity of AI to facilitate accurate market segmentation and personalise advertising campaigns. To illustrate, the online retailer Tradeinn, which offers products in a range of sports categories, employs AI algorithms to analyse the shopping behaviour of its users. This enables the company to send personalised offers and product recommendations. Similarly, Amazon has implemented AI algorithms that optimise its marketing strategies by targeting only those segments most likely to convert, which in turn reduces ineffective advertising expenditure. Conversely, in the B2B services sector, a reduction of 10.2% in customer acquisition costs was observed. In this sector, AI has the potential to automate processes and optimise communication with leads from prospective customers.

Furthermore, sectors such as information technology, digital health, online education and logistics have also reported improvements in operational efficiency. In the field of digital health, applications

such as HumanITcare employ artificial intelligence (AI) to analyse health data in real time, thereby optimising marketing campaigns and targeting consumers in a more effective manner. In the field of education, platforms such as Tekman Education have implemented AI in order to personalise the learning experience. These findings illustrate the manner in which AI enhances the efficacy of marketing initiatives and facilitates the more effective utilisation of resources. The objective is to enhance the competitiveness and sustainability of startups and SMEs in an increasingly challenging market environment.

5. Discussion and Conclusions

The implementation of AI-based predictive marketing in startups and SMEs has been demonstrated to be a key tool for improving the personalisation of customer interactions, increasing conversion rates and optimising the utilisation of marketing campaign resources (MO). The analysis revealed that these technologies not only enhance competitiveness in saturated markets but also enable smaller companies to compete on a level playing field with large corporations by leveraging the benefits of automation and data-driven decision-making (Dwivedi et al., 2021).

This study's principal finding is the pivotal role of personalisation in the efficacy of predictive marketing. A total of 78.4% of the companies surveyed indicated that the utilisation of AI has enhanced their capacity to personalise interactions with their customers, enabling them to customise their campaigns with greater precision in accordance with consumer preferences and behaviours (SO1). This approach has resulted in a notable increase in conversion rates, with an average of 25.4% observed following the implementation of predictive tools. As Patricio (2024) notes, the capacity to make real-time adjustments to marketing strategies not only reduces the wastage of resources but also enhances the return on investment (ROI). These findings are consistent with those of previous studies which have demonstrated that personalisation is a crucial element in digital marketing, and that predictive technologies are essential to achieve this level of personalisation (Singh, 2024).

In addition to the quantitative benefits that have been observed, such as increased conversion rates, the utilisation of AI has enabled companies to improve their operational efficiency. The automation of processes, including customer segmentation and the creation of personalised campaigns, has enabled the reallocation of human resources towards more value-added tasks. This is consistent with the findings presented by Syam and Sharma (2018), who posit that AI does not entirely supplant the human role in marketing, but rather enables employees to engage in more creative and strategic activities. This form of organisational empowerment is particularly beneficial for startups and SMEs, where resources are often limited.

Nevertheless, the findings indicate that there are significant challenges associated with the implementation of AI, particularly for small businesses. One of the most significant challenges is the dearth of trained professionals equipped to manage these technologies. As posited by Davenport et al. (2020), a considerable number of companies encounter challenges in the recruitment and retention of personnel with expertise in AI and data analytics. This is particularly problematic for start-ups and SMEs, which often lack the resources to compete with larger companies in hiring these professionals. The necessity for in-house employee training requires time and resources that many SMEs and startups are unable to provide, thereby limiting their capacity to fully utilise predictive marketing technologies. In order to address this challenge, it is recommended that startups and SMEs implement continuous training programmes in digital skills and data analytics. Forming partnerships with academic institutions and online educational platforms, such as Coursera and Udemy, can facilitate the delivery of accessible and targeted training. Furthermore, companies may wish to consider implementing mentoring programmes, whereby more experienced employees disseminate their knowledge to new recruits. With regard to the high upfront costs, SMEs and startups may wish to consider funding options such as government grants, low-interest loans and strategic partnerships with technology companies that offer AI software at a reduced cost. For example, platforms such as AWS Activate provide loans and resources to startups, thereby facilitating the adoption of cloud technologies.

Another ethical and organisational challenge identified in this study is the handling of large volumes of data and consumer privacy. The collection and analysis of personal data for marketing purposes can give rise to concerns among consumers, particularly if companies are not transparent about the manner

in which that data is used (Floridi, 2019). The implementation of regulations such as the General Data Protection Regulation (GDPR) in Europe has compelled organisations to exercise greater caution in their utilisation of personal data. This is particularly pertinent for start-ups and SMEs, which must strike a balance between utilising customer data to enhance their marketing strategies and ensuring compliance with privacy regulations. As Rust y Huang (2014) observe, organisations that fail to comply with data protection regulations face not only legal sanctions but also the risk of losing the trust of their customers. This can have a negative impact on their reputation and ability to grow. In the context of big data management and consumer privacy, data management tools such as Tableau and Microsoft Power BI facilitate effective data analysis and visualisation, thereby enabling informed decision-making. Furthermore, the implementation of cloud storage solutions, such as Google Cloud Platform or Amazon S3, can assist small businesses in the management of substantial data volumes without the necessity for costly physical infrastructure.

It is important to note that the challenges identified (SO2) demonstrate considerable variability depending on the sector and company size in question. For instance, start-ups, which are typically more agile but also more vulnerable, indicated greater difficulties related to start-up costs. This is due to the necessity of balancing technological investment with other operational priorities. Conversely, SMEs reported more pronounced difficulties with data management and training, reflecting their higher operational volume and the complexity of their organisational structures. Notwithstanding these challenges, the findings of this study indicate that AI-based predictive marketing has the potential to profoundly transform the operational models of both start-ups and SMEs. Those companies that are able to surmount the obstacles to entry, such as the high costs involved and a lack of skilled personnel, will be able to gain a significant competitive advantage. This is particularly pertinent in sectors such as e-commerce, where personalisation and the speed of decision-making are critical factors for success (Lashitew, 2021).

In conclusion, the utilisation of AI-based predictive marketing presents a plethora of opportunities for startups and SMEs to enhance their competitiveness in the contemporary market. Nevertheless, it is imperative that these organisations address the ethical, organisational and technical challenges inherent to the implementation of these technologies. The key to success is the implementation of ongoing employee training, compliance with privacy regulations and the adoption of an organisational culture that values innovation and the utilisation of data. As these technologies continue to evolve, it will be critical for startups and SMEs to adapt and leverage the opportunities offered by AI to maintain competitiveness in an increasingly digital business environment (SO3).

6. Acknowledgements

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