

Personalised customer management and the contribution of artificial intelligence: a case study

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Abstract:

This paper analyzes the impact of Artificial Intelligence (AI) on customer relationship management at Algeria Telecom, based on a mixed-field study and a survey of 115 customers. It reveals that 61.7% of respondents perceive AI's impact as positive, mainly for process optimization and time efficiency, but the adoption rate remains low at 22.6%. The main barriers include infrastructural limitations, lack of specialized AI skills, and organizational resistance. Successful digital transformation requires strategic investments in technology, staff training, and data governance. Additionally, balancing automation with human interaction is crucial to maximize customer satisfaction.

Keywords: AI ; CRM ; Digitization ; Optimization ; Opportunities.

Jel Classification Codes: M310.

1. INTRODUCTION

The rapid evolution of the digital technology ecosystem has profoundly transformed the way organizations operate and interact with their stakeholders. In recent years, the information and communication technology (ICT) sector has demonstrated remarkable dynamism and resilience, even in the context of global economic uncertainty. The widespread diffusion of advanced digital technologies such as artificial

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intelligence (AI), big data analytics, cloud computing, and next-generation communication networks is accelerating the digital transformation of organizations across various industries. These technologies are reshaping business models, operational processes, and customer engagement strategies, creating new opportunities for innovation and competitive advantage.

Among these technologies, artificial intelligence has emerged as a major driver of organizational transformation. AI enables companies to process large volumes of data, identify patterns in customer behavior, and automate complex decision-making processes. In the field of customer relationship management (CRM), AI technologies offer significant opportunities to improve service delivery through personalized interactions, predictive recommendations, and real-time responses to customer inquiries. As a result, AI-driven CRM systems are increasingly considered a strategic tool for enhancing service efficiency, improving customer satisfaction, and strengthening customer loyalty.

However, despite these potential advantages, the successful integration of AI into CRM systems remains a significant challenge for many organizations. The adoption of AI requires not only appropriate technological infrastructure but also organizational readiness, digital competencies, effective data management practices, and a supportive culture of innovation. In addition, customer acceptance of AI-based services plays a crucial role in determining the success of these technologies, particularly in service-oriented sectors.

The telecommunications industry represents a particularly relevant context for studying the adoption of artificial intelligence in CRM. Telecommunications operators manage large volumes of customer data and maintain continuous interactions with users, making them suitable environments for the implementation of AI-based service solutions. In Algeria, Algeria Telecom has launched several digital transformation initiatives aimed at modernizing its services and improving the customer experience. These initiatives include the digitization of services and the development of online customer platforms. Nevertheless, the integration of

artificial intelligence within its customer relationship management processes remains limited, raising questions regarding the company's readiness to effectively adopt AI-driven solutions.

Although the literature on artificial intelligence adoption and digital transformation has expanded considerably, empirical studies focusing on the readiness of telecommunications companies in developing countries to implement AI-based CRM systems remain relatively limited. This research gap highlights the need for studies that analyze both organizational readiness and customer perceptions regarding AI-enabled services in such contexts.

Therefore, the objective of this study is to assess the readiness of Algeria Telecom to implement artificial intelligence in its customer relationship management system. Specifically, the research aims to evaluate the level of digitalization within the company, examine customer perceptions of AI-based services, and identify the technological and organizational challenges associated with the adoption of AI in CRM.

Based on this perspective, the main research question guiding this study is: To what extent is Algeria Telecom ready to implement artificial intelligence in its customer relationship management system, and how can AI technologies contribute to improving customer service quality and satisfaction?

2. Theoretical Framework and State Of The Art

2.1 The digitization of businesses

The digitization of businesses presents many challenges and opportunities. It is crucial for improving efficiency, competitiveness and economic growth. However, the process of digital transformation in Algeria faces a number of obstacles that are slowing down its adoption and effectiveness. According to the OECD, digitization enables businesses to offer new products and services to a greater number of connected consumers around the world. Digitization is the process of 'transforming analogue information (in any form and on any medium) into digital code' (Canadian Council of Archives, 2002).

According to new estimates, the information and communications technology (ICT) sector in OECD member countries has grown much faster than the economy as a whole over the past ten years. More specifically, between 2013 and 2023, the ICT sector grew around three times faster than the economy as a whole, with an average growth rate of 7.6% over the same period (OECD, 2024). This dynamic can probably be explained by the growing importance of digital technologies and innovation in many areas of the economy.

In Algeria, the digitization of businesses has become a major challenge in order to remain competitive on the market (Allaouat, 2016). Companies must adopt information and communication technologies to improve their operational efficiency, productivity and customer relations. However, the level of digitalization of businesses in Algeria is still relatively low compared with international standards, which is a challenge to be met (Bentaiba & Araba, 2022).

2.2 The challenges of digitizing businesses

Companies face many challenges and opportunities related to digitalization, including technological backwardness and insufficient infrastructure, which limit access to advanced technologies and hinder the adoption of digital solutions (Messiliti, Benzaama, & Benzidane, 2019). Another major obstacle is the lack of skills and training in digitisation among both employees and managers. In addition, resistance to change, whether cultural or organisational, acts as a brake on the integration of new technologies (Saad & Zawdie, 2005). In addition, the current regulatory and political framework does not encourage digitization, as reforms are hardly conducive to digital innovation and technological investment. Finally, data security and confidentiality remain major concerns for businesses, underlining the importance of protecting sensitive information in a digital environment.

2.3 Digitization opportunities

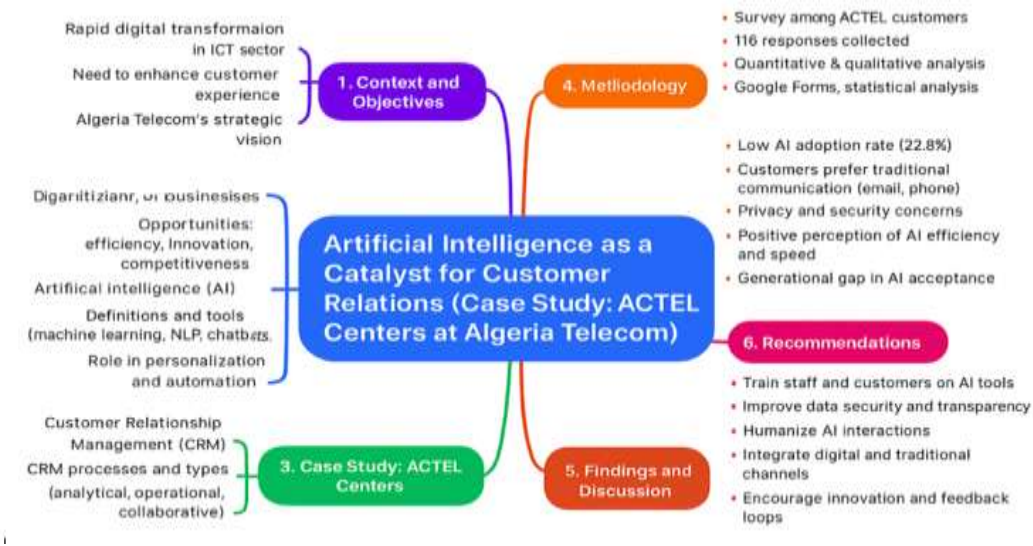
The opportunities for digitization for Algerian businesses are numerous and include mainly the improvement of operational efficiency, by

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enabling businesses to streamline their operations, reduce costs and optimize efficiency through the automation of processes and the use of integrated management systems (Almahairah, 2023). In addition, digitization opens up access to new markets, particularly internationally, through e-commerce, enabling Algerian companies to reach global markets and increase their sales (Maaradj, 2009). Finally, it stimulates innovation and value creation by offering companies the opportunity to develop new products and services, improve the customer experience and generate added value (Benkrid, Moussa, Badir, & Bellatreche, 2020).

The figure below provides a visual overview of the main elements of the study — context, theoretical framework, case study, methodology, results, recommendations and conclusion — and serves as a roadmap for understanding the logical progression of this research.

Fig.1. Mind map illustrating the conceptual framework of the study



Source: This diagram was designed by me using AI

3. Artificial Intelligence and Customer Relationship Management: Conceptual Foundations

3.1 Definitions of AI

Artificial intelligence (AI) has become a constantly evolving field, offering increasingly advanced capabilities to improve customer relationship management. According to John McCarthy (1955)¹ *“AI is the science and engineering of making intelligent machines, especially intelligent computer programs”*². According to the OECD: *“Artificial intelligence (AI) is transforming every aspect of our lives. It influences how we work and what we do, and promises to help tackle global challenges such as climate change and access to quality healthcare”*³. According to IBM: *“Artificial intelligence uses computers and machines to mimic the problem-solving and decision-making capabilities of the human mind”*⁴.

These definitions encompass a wide range of technologies, such as machine learning, natural language processing and computer vision techniques, with the aim of making relevant decisions.

3.2 AI tools

Artificial intelligence, through deep learning and machine learning, is already present in various areas of business activity. To deal with obstacles such as lack of time, organizational problems and excessive workloads, Algerian companies need to use AI tools. These tools are revolutionizing their practices and improving their productivity. The opportunities offered by AI for Algerian businesses can be integrated into various departments, such as production, marketing, logistics and human resources, particularly customer relationship management (CRM).

For Reger Benoit⁵, 12 AI tools are essential if we are to be more productive at work. These tools use deep learning and machine learning

¹ Artificial intelligence is a term coined by John McCarthy in 1955.

² <https://www.syloe.com/glossaire/intelligence-artificielle/#:~:text=Qu'est%2Dce%20que%20l,particulier%20de%20programmes%20informatiques%20intelligents> Accessed on 27/05/2025

³ <https://www.oecd.org/fr/numerique/intelligence-artificielle/> Accessed on 6/06/2025

⁴ <https://blog.hubspot.fr/marketing/outils-ia-productivite> Accessed on 02-06-2025

⁵ <https://blog.hubspot.fr/marketing/outils-ia-productivite> Accessed on 02-06-2025

methods that are transforming various areas of companies, such as production, marketing, logistics and human resources, improving productivity and dealing with organizational problems and the costs associated with working life. (Reger, 2025).

3.3 Definitions of customer relationship management (CRM)

According to (Jackson, 1985) ¹ CRM ² means “marketing directed toward strong and lasting relationships with individual accounts” (Jackson, 1985). (Rababah et al., 2011) define CRM as “ the building of a customer-centric culture through which a strategy is created to acquire customers, improve profitability and retain them, which is enabled by the application of information technology to achieve mutual benefits for the organization and customers” (Rababah, Mohd, & Ibrahim, 2011).

The results of the analysis (Rababah, Mohd, & Ibrahim, 2011) revealed that almost half of the definitions (48%) state that CRM is a business strategy, and 22% of these definitions define CRM from a technological perspective and 17% define CRM as a business philosophy. While two definitions suggest that CRM is a technology-based strategy, there is only one definition that defines CRM using three perspectives. The results confirm that there is a tendency to define CRM as a strategy.

3.4 The CRM process

The literature on Customer Relationship Management (CRM) highlights several stages that structure its implementation process. Numerous authors have examined these stages in detail. The following section discusses some of the most important stages identified in previous studies:

- ✓ **Customer knowledge:** consists of collecting and analyzing customer data (profiles, history of interactions, needs, preferences, etc.) in order to understand them better. It segments the customer base to tailor offers and services to each segment.

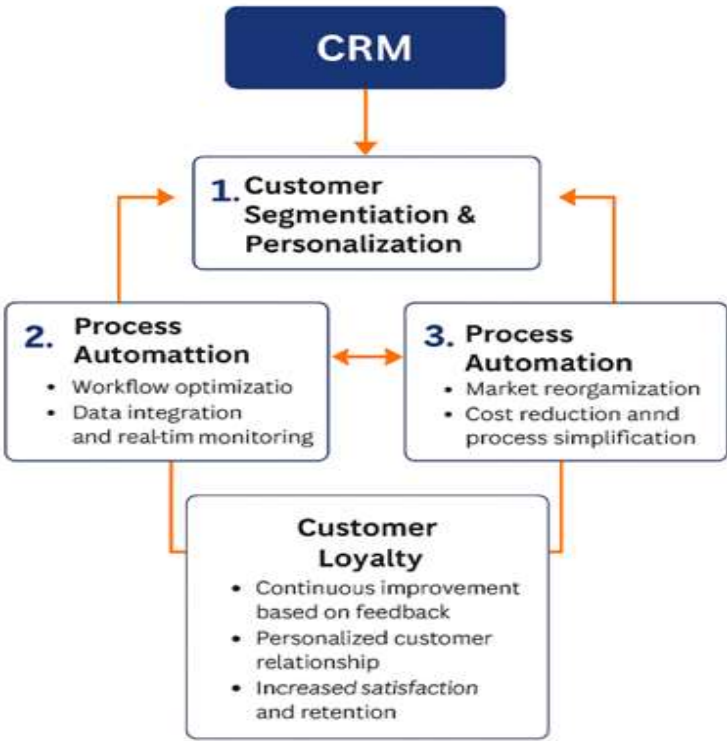
¹ Jackson, Barbara. B. (1985). *Build customer relationships that last* (Vol. 11, pp. 120-128). Boston, MA, USA: Harvard Business Review.

² CRM (*Customer Relationship Management*)

- ✓ **Accessibility and responsiveness:** by providing various communication channels (telephone, email, chat, social networks, etc.) to simplify interactions with customers. This makes it possible to react quickly to customer requests and complaints to increase customer satisfaction.
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- ✓ **Personalized service:** this means that offers, advice and follow-up can be tailored to the specific needs of each customer. This personalization strengthens the long-term relationship with loyal customers.
- ✓ **Complaints management:** this management model enables effective processes to be put in place to deal with complaints proactively and constructively. This business model uses customer feedback to continually improve products and services.
- ✓ **Loyalty and retention:** The aim is to develop loyalty and reward programs to encourage customer loyalty. By analyzing the reasons why customers leave, the company needs to implement actions to retain them.
- ✓ **Training and involvement of staff :** it is up to the company to train and motivate employees in contact with customers so that they can offer a quality service. This involves the teams in the continuous improvement of customer relations.

By applying these principles, Algeria Telecom will be able to improve customer satisfaction and loyalty, while strengthening its competitiveness in the telecommunications market.

Fig.2. Customer Experience Optimization: Key Process



Source: This diagram was designed by me

This figure illustrates the main stages involved in optimizing the customer experience, from identifying customer needs to implementing improvement strategies and evaluating satisfaction outcomes. It highlights the continuous and iterative nature of the process, emphasizing feedback collection and data-driven adjustments to enhance service quality and customer loyalty.

3.4 Types of GRC

Due to the complexity of describing how GRC works in an organization, some authors (Rababah K. M., 2011) (Zablah, 2004) divide it into three categories: analytical, operational and collaborative GRC. It turns out that achieving its objectives requires :

I. **Analytical CRM** aims to record, store, analyze and evaluate customer data and to model, predict and use customer behaviour in the day-to-day work of the organization.

II. **Operational CRM**: focuses on the day-to-day management of the relationship with the customer, across all points of contact; telecentres, telephone, Internet and sales force tools:

- **Marketing automation** is its responsibility to manage and support all customer-related marketing activities.
- **Sales automation** involves the support of all sales activities associated with one-to-one customer contact and the support of computer-aided internal and external sales processes through ICT.
- **Customer service support** is essential to maintaining long-term customer relationships.

III. **Collaborative CRM** enables communication with suppliers, partners and customers and promotes cooperation to improve processes and meet customer needs.

3.5 The objectives of AI in CRM

Artificial intelligence (AI) is transforming customer relations by enabling companies to process large amounts of data quickly and automate repetitive tasks, freeing up time for higher value-added missions (Thomas & al., 2020). It offers personalized recommendations by analyzing customer behaviour and anticipates their needs through predictive analysis, thereby improving satisfaction and loyalty. AI also provides a better understanding of customer interactions by analyzing their feelings, helping companies to better adapt to their expectations (VENKATESWARAN, 2023) (Lee & Kim, 2021).

In the literature, it is emphasized that the use of artificial intelligence (AI) in customer relationship management offers numerous advantages, such as personalization of interactions, automation of processes, and a better understanding of customer needs (Meuter, Bitner, Ostrom, & Brown, 2005) (Scherer, Siddharth, & Tanniru, 2015) .

According to studies¹, 86% of companies that have integrated AI have seen an increase in customer satisfaction (Riccobene Mira, 2022). Forecasts for the current year 2026 indicate that more than 80% of companies will adopt AI technologies, with significant growth in the generative AI market, which will grow from \$8 billion in 2023 to more than \$100 billion in 2028. This study was conducted by Sopra Steria² (Sopra Steria, 2024).

However, the implementation of AI requires thought to be given to the data used, staff training, security and ethics (Cristina, Anna, & Andrea, 2022). For Algeria, the adoption of AI in customer relationship management represents an opportunity, but it must be accompanied by an appropriate strategy and adaptation to local specificities (khalfi, 2024).

4. Case Study and Study Methodology

4.1 Case study: ACTELs of Algeria Telecom

Algeria Telecom is the incumbent telecommunications operator in Algeria. The company was established in 2000 and plays a key role in the development of the country's telecommunications infrastructure. It offers a range of telecommunications services, including :

Fixed telephony: Algeria Telecom offers fixed telephony services for individuals and businesses, enabling voice and data communications.

Mobile phone and Internet : The mobile operator Mobilis, a subsidiary of Algeria Telecom, offers 2G, 3G and 4G mobile telephony services. At the same time, Algeria Telecom provides broadband Internet access to individuals and businesses via ADSL, optical fiber and 4G. The Commercial Telecommunications Agencies (ACTEL), present in the wilayas and daïras of Algeria, offer various services including the sale of telecommunications products, technical assistance, the management of subscriptions and invoices, as well as access to Internet and television

¹ <https://www.usine-digitale.fr/article/86-des-societes-qui-utilisent-l-ia-ont-ameliore-la-satisfaction-client.N2076471> Accessed on 10-07-2025

² Sopra Steria is a French company specialising in digital services and digital transformation consulting. It was created in January 2015 from the merger of two companies founded in 1968 and 1969: Sopra and Steria.

services. The network comprises more than 500 ACTELs, enabling Algeria Telecom to provide extensive coverage and a local service.

The digitization of ACTEL is a project aimed at modernizing the customer experience and service channels. The objectives of this initiative are to improve the efficiency and speed of services, reduce waiting times, develop new sales channels, increase agent productivity and reduce operating costs while optimizing resource management.

To illustrate this section, we have the table below, which shows the key indicators relating to internet access and digital infrastructure.

Table 1. Key Indicators of Internet Access and Digital Infrastructure

Category	Data
Internet Subscribers	More than 6.9 million customers
Fiber Optic Subscribers	More than 3.06 million customers
ADSL / VDSL Subscribers	More than 1.8 million customers
Idoom 4G Subscribers	More than 2.09 million customers
Commercial Network	More than 500 agencies and points of presence

Source: Algeria Telecom (Algeria Telecom in Figures)¹

According to the table, the country has over 6.9 million internet subscribers, reflecting strong market penetration. Fiber optic users exceed 3.06 million, enabling high-speed digital services. Traditional ADSL/VDSL connections remain significant with over 1.8 million users, especially in areas with limited fiber coverage. Idoom 4G subscribers reach 2.09 million, highlighting the role of wireless broadband. The network includes more than 500 branches and points of sale, enhancing customer access. This diversified telecom ecosystem supports steady growth. Overall, the data reflect ongoing digital transformation and infrastructure development.

¹ <https://www.algeriatelecom.dz/fr/page/presentation-algerie-telecom-p2> Consulted on 12/12/2025

4.2 Digitization measures implemented

To achieve these objectives, Algeria Telecom has implemented a number of digitization measures, including:

- **Digitization of processes:** The sales, service and subscription management processes have been digitized to improve the efficiency and speed of operations.
- **Online platform:** An online platform has been created to enable customers to manage their subscriptions, check their consumption and carry out transactions online.
- **Mobile application:** A mobile application has been developed to enable customers to manage their subscriptions and carry out transactions remotely.
- **Customer Relationship Management system:** A Customer Relationship Management (CRM) system has been implemented to improve the management of customer interactions and provide a personalized customer experience.
- **Agent training:** ACTEL agents have been trained to master the digitized tools and processes.

4.3 Results of digitization

Algeria Telecom has invested in modernizing its infrastructure to encourage the adoption of artificial intelligence (AI). Nevertheless, challenges remain, including updating data to match algorithms, a lack of specific AI skills, and a traditional business culture that hinders the integration of AI. Management needs to define a clear vision and strategy. To facilitate this transition, data update plans, training and promotion of innovation are needed. At present, the company has the skills and hardware capacity to integrate AI.

The digitization of commercial agencies (ACTEL) should improve the customer experience, increase agent productivity thanks to digital tools, reduce operational costs, and open up new sales channels. Algeria Telecom's strengths include its experience in digital transformation and skilled teams, while its weaknesses relate to its organizational culture, lack of AI skills, and the need to structure data.

4.4 Study methodology

The aim of this paper is to present clearly and concisely the research method we used to collect and analyze the data. We will explain the different stages of our approach, such as the design of the study, the choice of participants, the data collection methods and the analysis techniques. According to the authors (Creswell & Creswell, 2017), a good research methodology should be rigorous, systematic and transparent to ensure quality data that answers the research questions. To achieve this, we decided to use a survey, which allows us to explore the data in depth and in an organized way.

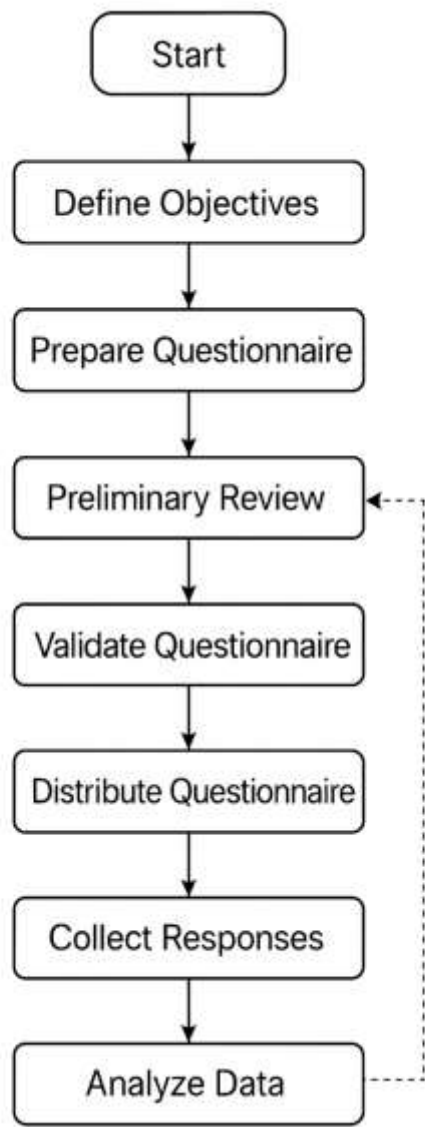
In our study, we decided to conduct a survey among customers of the Commercial Telecommunications Agencies (CTEL) of Algeria Telecom. This approach aims to bring together data from a variety of people, thus offering diversified perspectives on the impact of artificial intelligence (AI) on the quality of customer relations within Algeria Telecom

The survey directly targets Algeria Telecom customers, applying a random sampling method to select a sample of at least 100 customers. This work looks at the effect of AI on customer relationship management, with a focus on CTEL. Through this study, we seek to explore how AI technologies influence customer satisfaction and perception of the services offered.

The main objective of this survey is to collect both quantitative and qualitative data in order to analyze the real impact of AI on customer relations. We aim to assess the extent to which AI helps improve customer service efficiency, optimize internal processes and increase customer satisfaction. For this survey, we used Google Forms to distribute it to approximately 300 individuals. We received 115 responses.

We present below a detailed overview of our empirical study methodology, illustrated by the following flowchart:

Fig 3. Process of Preparing and Sharing the Customer Questionnaire



Source: This diagram was designed by me

This flowchart outlines the methodological process adopted to design, validate, and distribute the customer questionnaire for Algeria Telecom. The procedure begins with the precise definition of research objectives and the formulation of questionnaire items, followed by a preliminary review

and iterative refinements to enhance clarity and reliability. After validation, the instrument is disseminated through various channels — including social media, email, QR codes for mobile access, and printed copies — to ensure broad accessibility across different customer segments. Data collection is closely monitored through reminders and follow-ups to minimize non-response bias. Once gathered, the responses are cleaned, compiled, and analyzed using descriptive and inferential statistical methods, with results presented through tables and graphical representations for clarity. The loop illustrated in the diagram reflects the iterative nature of the process, where preliminary feedback may lead to further adjustments before final data collection, thereby reinforcing the validity and robustness of the empirical instrument.

Figure 3 presents the methodological framework developed to design, validate, and distribute the customer questionnaire administered to Algeria Telecom customers. It also underscores the iterative refinement of the instrument, which enhances the validity, reliability, and overall rigor of the collected data, thereby strengthening the robustness of the study.

5. RESULTS AND DISCUSSIONS

This section forms the core of the study, presenting and analyzing data in relation to the research objectives. It aims to provide an in-depth analysis of the results, comparing them with previous research and the current scientific context. The results are presented clearly and systematically, followed by an analysis based on the formulated hypotheses. Data interpretation identifies significant trends, relationships, or discrepancies, thereby enriching the understanding of the topic. Additionally, the discussions highlight the practical and theoretical implications of the results while addressing potential methodological limitations. This approach validates the conclusions and opens avenues for future research. Thus, the goal of this section is to offer a rigorous analysis of the results and engage in critical reflection on their implications within the studied field.

Fig. 4 Respondents by Gender

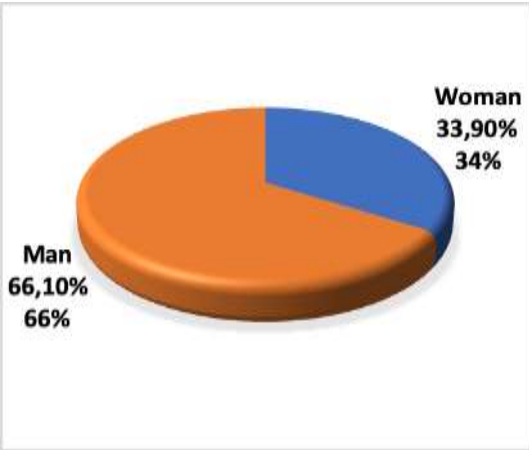
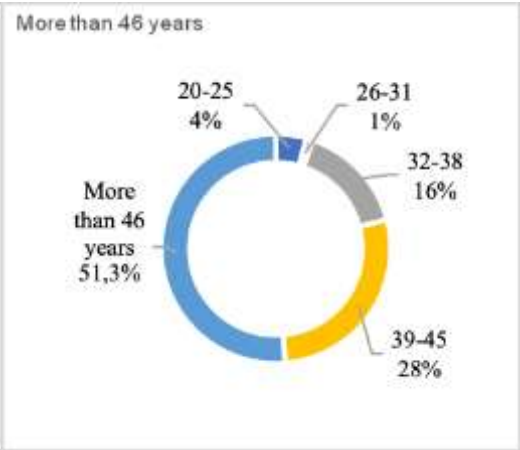


Fig. 5 Age of the Surveyed Population



Source: These graphs are based on survey data

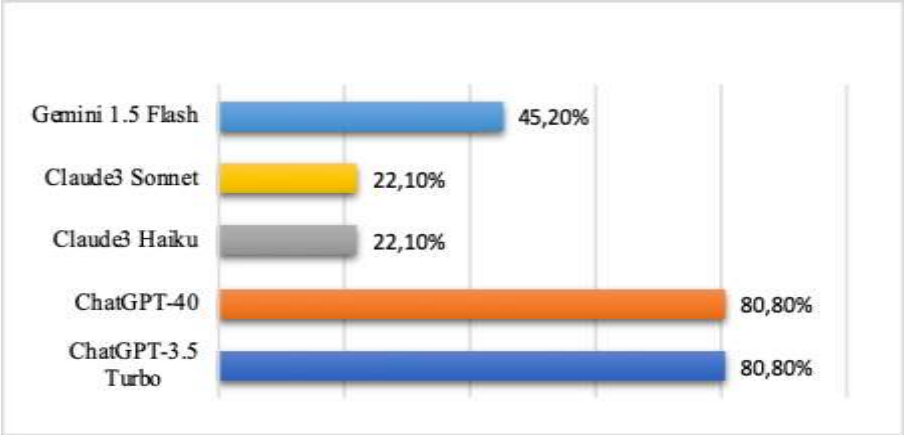
A thorough and rigorous analysis of the data collected from the survey conducted among Algeria Telecom customers revealed significant findings regarding the impact of artificial intelligence on customer relationship management.

According to the data presented in Figure 3, the distribution of respondents indicates that 33.9% are women, while 66.1% are men, providing a diverse and balanced perspective on this crucial topic.

Furthermore, the examination of the information illustrated in Figure 5 reveals fascinating insights about our sample. In fact, the majority of participants, at 51.3%, are over 46 years old. The age group of 39 to 45 years follows closely, accounting for 27.8% of respondents. Together, these two groups comprise 79.1% of the responses, highlighting the importance of tailoring customer relationship management strategies to meet the expectations of older generations. It is noteworthy that young adults aged 20 to 31 represent only a very small portion of the sample, with just 5.2%. This raises questions about their role within households, as this age group typically does not bear financial and domestic responsibilities, which often fall to their parents.

These results not only emphasize the opportunity to integrate new technologies into customer service but also highlight the need to consider innovative approaches to engage a younger audience in the future.

Fig. 6 The Main Applications of AI



Source: This graph is derived from the survey data

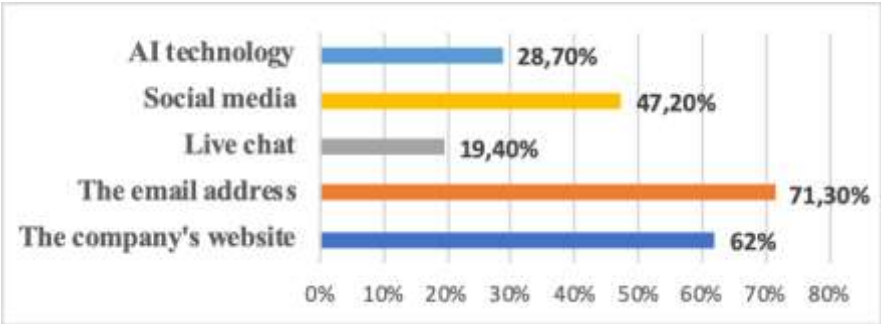
According to the data presented in Figure 6, the artificial intelligence tools most frequently mentioned by respondents are primarily ChatGPT, Gemini, and Copilot. Other applications, such as Synthesia and Canva, as well as various mobile applications, were also noted. These results reveal that users primarily recognize mainstream AI interfaces, highlighting the prominence of ChatGPT and other popular tools. This indicates that, for users, artificial intelligence is mainly perceived through widely adopted applications, while lesser-known technologies often go unnoticed.

Regarding the challenges encountered with AI and customer concerns, the analysis of responses shows that a significant majority, 81.1% of participants, reported no difficulties with these tools. However, 18.9% identified certain limitations, including outdated or incomplete data, a lack of accuracy, complexity in usage, and high costs. Additionally, the main concerns of customers center around privacy (66%), security (58.5%), and the lack of human interaction (42.5%). While the majority of respondents do not experience major issues, the reported limitations highlight an urgent need to enhance reliability, ensure more frequent updates, and make these

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technologies more economically accessible. The concerns regarding privacy and security underscore high expectations for data protection. Lastly, the worry about reduced human contact reflects apprehension about the dehumanization of interactions, emphasizing the importance of finding a balance between automation and human relationships.

Fig.7 Tools Used for Customer Interaction with the Company



Source: This graph is derived from the survey data

According to the data presented in Figure 7, email emerges as the preferred communication tool, utilized by 71.3% of respondents. It is followed by websites (62%) and social media (47.2%). In contrast, the adoption of artificial intelligence (AI) technologies remains relatively low, with only 28.7% of users employing them.

These results highlight a clear preference for traditional communication tools, indicating a certain reluctance to integrate AI-based solutions. This situation may be attributed to a lack of awareness, insufficient training, or limited accessibility to AI tools in interactions with Algeria Telecom.

To foster a more significant adoption of artificial intelligence, it is crucial to enhance user trust. This can be achieved through initiatives aimed at showcasing the added value of these technologies, particularly in terms of efficiency, personalization, and streamlining customer service processes. By highlighting the tangible benefits of AI, it would be possible to

overcome hesitations and pave the way for a broader utilization of these innovative tools.

Fig. 8 Use of AI Technology

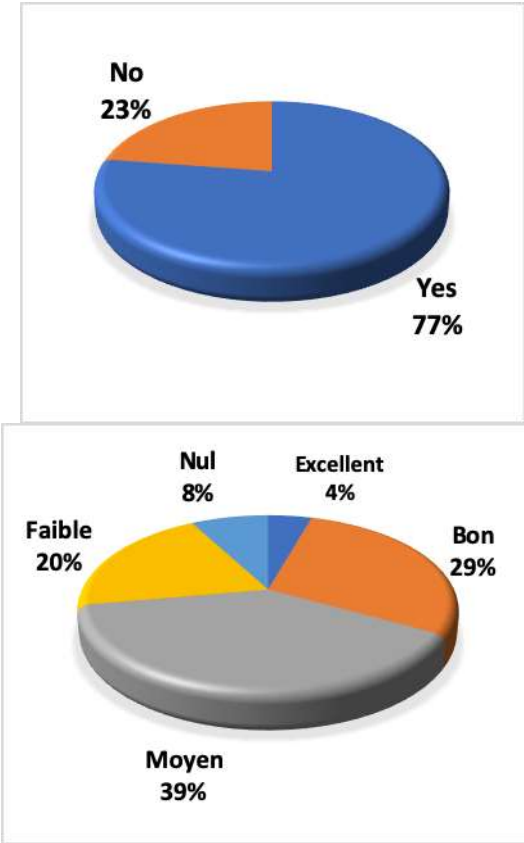


Fig. 9 Level of Knowledge in AI

Source: These graphs are based on survey data

According to the data illustrated in Figure 8, the adoption rate of artificial intelligence (AI) remains concerning, with only 22.6% of respondents claiming to use it. This situation can be attributed to several key factors:

- **Distrust and Resistance to Change:** AI is often viewed as a complex and potentially threatening technology. Concerns regarding data privacy, job displacement, and a lack of human control contribute to this distrust.
- **Lack of Awareness and Training:** Many individuals are not fully aware of the tangible benefits that AI can bring to their daily or professional lives.

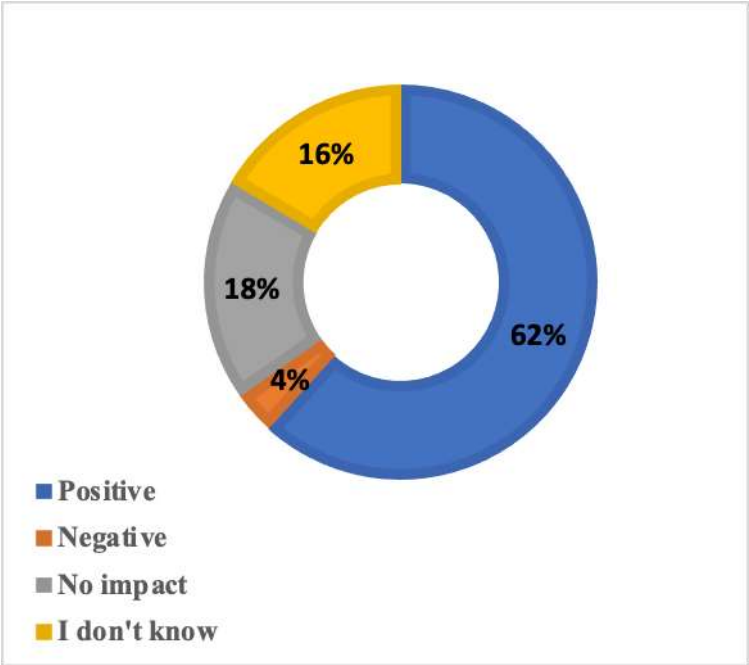
This lack of information dampens their enthusiasm for adopting this technology.

- **Lack of Immediate Need:** Some respondents believe that AI does not provide them with direct benefits, which leads them to refrain from considering its integration into their work or personal routines.

- **Technical and Financial Constraints:** Access to AI tools can be hindered by financial factors or a lack of adequate resources within their industry.

Upon reviewing Figure 9, it is revealing to note that the knowledge level of respondents is predominantly average to low, with 67.8% falling into these categories. This highlights an urgent need for training and awareness regarding AI. Only 7.8% of participants report having an excellent mastery of this technology, indicating that it remains a specialty of a minority of experts. Furthermore, the 39.1% with an average level could benefit from additional training to deepen their skills and better understand the impact of AI in their sector. Lastly, the 28.7% with a low level of knowledge require basic awareness, underscoring the importance of educational efforts to bridge these gaps and promote broader adoption of AI.

Fig. 10 Impact of AI on Behavior



Source: This graph is derived from the survey data

According to Figure 10, a significant majority of respondents (61.7%) believe that artificial intelligence (AI) has had a positive impact on their behavior. This finding highlights the growing acceptance of AI across various application areas, including health, education, transportation, and personalized services. However, it is important to note that this influence is perceived unevenly, with a considerable portion of individuals remaining skeptical about its effects on their daily habits and decisions.

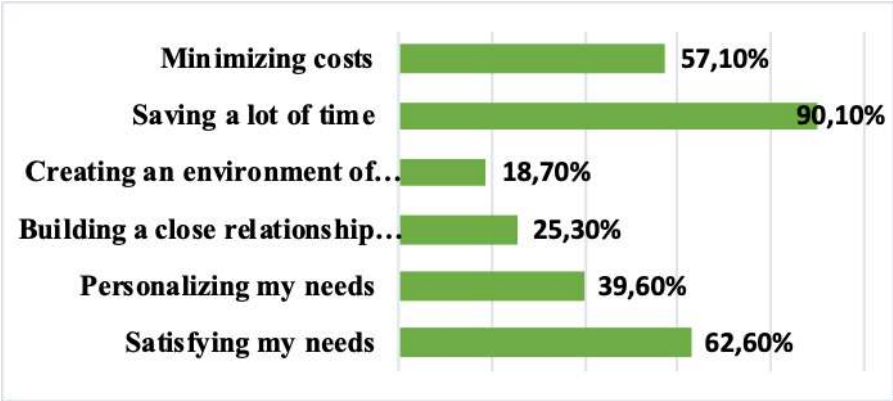
Indeed, 18.3% of participants believe that AI has had no noticeable effect on their behavior. This figure raises important questions about how AI is integrated into users' daily lives. It is plausible that some individuals have yet to engage with AI applications that genuinely enhance their experience. Additionally, 3.5% of respondents perceive a negative impact from AI, indicating that for a minority, the implications of this technology are concerning. This sentiment may be fueled by a widespread distrust of new technologies, exacerbated by social and ethical concerns, such as data privacy and algorithm transparency.

The observed balance between the absence of effect and the perception of a negative impact can also be interpreted as a sign of an adaptation phase. As AI continues to evolve and become more widespread, it is likely that users will experience a broader range of technological interactions, which could lead to a better understanding and wider acceptance of it. The tangible benefits that some users are already deriving from AI, such as optimizing daily tasks and enhancing efficiency, serve as powerful testimonials to its potential.

However, the ongoing concerns should not be overlooked. The risks associated with AI, such as the loss of autonomy, privacy violations, and algorithmic biases, are critical issues that deserve particular attention. These concerns underscore the need for a solid ethical and regulatory framework to guide the development and implementation of AI technologies. Discussions around the responsibility of algorithm designers and tech companies must be at the forefront of future debates.

Indeed, the influence of AI on human behavior is a dynamic phenomenon that is likely to evolve as these technologies become more intuitive and accessible. In the future, it is probable that the impact of AI on individuals and society will intensify, leading to a gradual transformation of current perceptions. It is imperative to accompany this evolution with a proactive approach aimed at educating users, establishing ethical standards, and fostering an open dialogue about the societal implications of AI.

Fig. 11 Positive Aspects of AI on Customer Experience



Source: This graph is derived from the survey data

According to the data presented in Figure 11, artificial intelligence (AI) is widely recognized for its ability to optimize and accelerate processes, a finding agreed upon by 90.1% of respondents. This result highlights the importance of time efficiency as a primary driver of user satisfaction. This perception can be attributed to the automation of repetitive tasks, the optimization of query management, and the reduction of waiting times in various services.

Furthermore, more than half of the respondents (62.6%) believe that AI helps better meet their needs, while 57.1% emphasize that it reduces costs. These results suggest that, beyond optimizing timelines, AI is valued for its ability to provide solutions that appear both adequate and economically beneficial. However, the less pronounced difference compared to time savings indicates that these advantages, while significant, could benefit from further enhancements to strengthen trust and personalization in the customer experience.

Despite the identified benefits, the analysis reveals that AI's ability to establish trust and provide highly personalized services remains underutilized. This phenomenon can be attributed to the fact that, although processes are optimized, human interactions and the emotional aspect of the customer relationship have not yet been completely replaced by algorithmic solutions. There is, therefore, a substantial opportunity to enhance AI technologies so that they more effectively incorporate relational and adaptive dimensions, thereby fostering a richer and more loyal customer experience.

In summary, although the results indicate significant recognition of AI's contributions, enhancing human interactions through advanced technologies could be a crucial lever for further optimizing user satisfaction.

6. CONCLUSION

The study conducted on the impact of AI on customer relationship management at Algeria Telecom has revealed significant results. AI-based technologies, such as chatbots and recommendation systems, have substantially improved customer service efficiency and subscriber satisfaction. However, limitations remain, particularly in terms of technological infrastructure and staff training, which hinder broader and more effective adoption of AI.

In light of the study's objectives, it is clear that AI holds considerable potential to transform customer-provider interactions. However, its implementation requires ongoing investments and a well-defined strategy. The results indicate that while progress has been made, there are still critical areas that need improvement to maximize the benefits of AI.

For better integration of AI in customer management, it is recommended to enhance digital infrastructures, invest in training programs for staff, and develop policies that support technological innovation. Additionally, fostering collaboration between the public and private sectors is crucial to accelerate digital transformation.

The future perspectives of researchers include exploring new applications of AI to optimize business operations and enhance user experience in a more personalized manner. It is also important to continue monitoring customer satisfaction trends and adapt technologies based on feedback.

To promote the digitization of businesses in Algeria, it is essential to implement incentive policies, improve access to advanced technologies, and support innovation. By adopting these measures, Algeria can aspire to sustainable and competitive entrepreneurial development driven by the effective integration of AI in customer relationship management.

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