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Artificial Intelligence in the Service of Customer Experience Innovation

-Case of Ooredoo Algeria-

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Abstract:

The telecommunications sector is widely recognized as a dynamic environment for artificial intelligence (AI) adoption, given the frequency and diversity of customer interactions across digital and automated service channels. However, the extent to which AI adoption translates into customer experience innovation remains dependent on the quality of AI-enabled services as perceived by customers, a mechanism that remains underexplored in the Algerian and broader North African telecommunications context.

This study aims to examine the direct effect of AI adoption on customer experience innovation at Ooredoo Algeria, and to test whether AI-enabled service quality mediates this relationship.

A quantitative explanatory design was adopted, grounded in a positivist epistemology and a deductive approach; data were collected through a self-administered structured questionnaire, distributed to Ooredoo Algeria customers via Google Forms. A total of 235 valid responses were obtained and analyzed using SPSS. The analyses included reliability testing, descriptive statistics, Spearman correlation, simple regression analyses, following the assessment of relevant statistical assumptions, and Hayes' PROCESS Macro Model 4 with 5,000 bootstrap samples.

The results indicate that AI adoption has a positive and statistically significant effect on both AI-enabled service quality and customer experience innovation, and that AI-enabled service quality partially mediates the relationship between AI adoption and customer experience innovation (indirect effect = .300, BootSE = .051, 95% CI [.206, .406]), with both direct and indirect effects remaining statistically significant.

These findings suggest that the contribution of AI to customer experience innovation in telecommunications operates through two complementary pathways — one direct, reflecting customers' favorable perceptions of AI adoption, and one indirect, operating through measurable improvements in service quality — which highlights that the strategic value of AI may depend not only on deployment itself but also on its ability to improve service quality.

Keywords: Artificial intelligence adoption • AI-enabled service quality • Customer experience innovation • Mediation analysis • Telecommunications • Ooredoo Algeria

Résumé :

Le secteur des télécommunications est largement reconnu comme l'un des environnements les plus dynamiques pour l'adoption de l'intelligence artificielle (IA), compte tenu de la fréquence et de la diversité des interactions client à travers les canaux de service numériques et automatisés. Cependant, l'impact de l'adoption de l'IA sur l'innovation de l'expérience client dépend largement de la qualité des services activés par l'IA telle qu'elle est perçue par les clients, un mécanisme encore peu étudié dans le contexte algérien et nord-africain.

Cette étude vise à examiner l'effet direct de l'adoption de l'intelligence artificielle sur l'innovation de l'expérience client au sein d'Ooredoo Algérie, et à vérifier si la qualité de service activée par l'IA joue un rôle médiateur dans cette relation.

Une démarche explicative quantitative a été adoptée, fondée sur une posture épistémologique positiviste et une approche déductive. Les données ont été collectées via un questionnaire structuré auto-administré distribué aux clients d'Ooredoo Algérie par Google Forms, permettant d'obtenir 235 réponses valides, qui ont été analysées à l'aide du logiciel SPSS, à travers des tests de fiabilité, des statistiques descriptives, une corrélation de Spearman, des analyses de régression simple, et la Macro PROCESS de Hayes (Modèle 4) avec 5 000 échantillons bootstrap.

Les résultats indiquent que l'adoption de l'IA exerce un effet positif et statistiquement significatif sur la qualité de service activée par l'IA et sur l'innovation de l'expérience client, et que la qualité de service activée par l'IA médiatise partiellement cette relation($effet\ indirect\ = ,300, BootSE\ = ,051, IC\ 95\%\ [, 206\ ;\ .406]$), avec des effets directs et indirects tous deux significatifs.

Ces résultats suggèrent que la contribution de l'IA à l'innovation de l'expérience client dans les télécommunications s'opère par deux voies complémentaires — l'une directe, reflétant les perceptions favorables des clients à l'égard de l'adoption de l'IA, et l'autre indirecte, agissant à travers des améliorations mesurables de la qualité de service — ce qui suggère que la valeur stratégique de l'IA peut ne pas résider uniquement dans son déploiement, mais dans sa capacité à produire des améliorations tangibles de la qualité du service.

Mots-clés : Adoption de l'intelligence artificielle • Qualité de service activée par l'IA • Innovation de l'expérience client • Analyse de médiation • Télécommunications • Ooredoo Algérie

ملخص:

يُعتبر قطاع الاتصالات بيئة ديناميكية لتطبيق الذكاء الاصطناعي (AI)، وذلك نظراً لتكرار وتنوع تفاعلات العملاء عبر قنوات الخدمة الرقمية والآلية. غير ان مدى تأثير تطبيق الذكاء الاصطناعي على ابتكار تجربة العملاء لا يزال يعتمد على جودة الخدمات المدعومة بالذكاء الاصطناعي من وجهة نظر العملاء، وهي آلية لم تحظَ بالاهتمام الكافي في سياق قطاع الاتصالات الجزائري، بل وفي شمال إفريقيا بشكل عام.

تهدف هذه الدراسة إلى فحص التأثير المباشر لتبني الذكاء الاصطناعي على ابتكار تجربة العملاء في شركة أُريـدُ الجزائر، واختبار ما إذا كانت جودة الخدمات المدعومة بالذكاء الاصطناعي تؤثر على هذه العلاقة.

تم اعتماد تصميم تفسيري كمي، يستند إلى نظرية معرفية واقعية ونهج استنتاجي جمعت فيه البيانات من خلال استبيان منظم، ووزع على عملاء «أُريـدُ الجزائر» عبر «جوجل فورمز (Google Forms)»، جمعنا من خلاله 235 اجابة وتم تحليلها باستخدام برنامج .SPSS وشملت التحليلات اختبار الموثوقية، والإحصاءات الوصفية، وارتباط سبيرمان، وتحليلات الانحدار البسيطة، بعد تقييم الافتراضات الإحصائية ذات الصلة، ونموذج PROCESS Macro Model 4 الخاص بـ Hayes مع 5000 عينة بوتستراب .

تشير النتائج إلى أن اعتماد الذكاء الاصطناعي له تأثير إيجابي وذو دلالة إحصائية على كل من جودة الخدمة المدعومة بالذكاء الاصطناعي وابتكار تجربة العملاء ، وأن جودة الخدمة المدعومة بالذكاء الاصطناعي تتوسط جزئيًا العلاقة بين اعتماد الذكاء الاصطناعي وابتكار تجربة العملاء ،(الأثر غير المباشر= 0,300 $BootSE$ = ,051 فاصل الثقة [95%] [0.206,0.406]) مع بقاء التأثيرات المباشرة وغير المباشرة ذات دلالة إحصائية .

تقترح هذه النتائج إلى أن مساهمة الذكاء الاصطناعي في ابتكار تجربة العملاء في مجال الاتصالات تعمل من خلال مسارين متكاملين — أحدهما مباشر، يعكس تصورات العملاء الإيجابية تجاه اعتماد الذكاء الاصطناعي، والآخر غير مباشر، يعمل من خلال تحسينات قابلة للقياس في جودة الخدمة — مما يسلط الضوء على أن القيمة الاستراتيجية للذكاء الاصطناعي قد لا تعتمد فقط على تبني هذا الاخير، بل أيضًا على قدرته على تحسين جودة الخدمة.

الكلمات المفتاحية: تبنّي الذكاء الاصطناعي • جودة الخدمة المُمكَّنة بالذكاء الاصطناعي • ابتكار تجربة العميل • تحليل الوساطة • الاتصالات • أوريد الجزائر

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My beloved brother Oussama, who has always been my source of strength and high spirits, my companion in the most challenging days, and my steadfast companion through every hardship.

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List of abbreviations

AI	Artificial Intelligence
AIADOPT	Artificial Intelligence Adoption
AISQ	AI-enabled Service Quality
ASJC	All Science Journal Classification
B	Unstandardized Regression Coefficient
BootSE	Bootstrap Standard Error
CEI	Customer Experience Innovation
CEM	Customer Experience Management
CEO	Chief Executive Officer
CI	Confidence Interval
CX	Customer Experience
CXINNOV	Customer Experience Innovation
df	Degrees of Freedom
DV	Dependent Variable
GSM	Global System for Mobile Communications
IA	Intelligence Artificielle
ISO	International Organization for Standardization
ISO/IEC	International Organization for Standardization / International Electrotechnical Commission
IT	Information Technology
IV	Independent Variable
M	Mean
ML	Machine Learning
N	Number of Observations / Sample Size
NLP	Natural Language Processing
OECD	Organisation for Economic Co-operation and Development
p	Probability Value / Significance Value
PLS-SEM	Partial Least Squares Structural Equation Modelling
PROCESS	Hayes' PROCESS Macro
QR	Quick Response
R	Correlation / Multiple Correlation Coefficient

R^2	Coefficient of Determination / R Square
SD	Standard Deviation
SE	Standard Error
SERVQUAL	Service Quality Model
Sig.	Significance
SIM	Subscriber Identity Module
SPSS	Statistical Package for the Social Sciences
TAM	Technology Acceptance Model
VIF	Variance Inflation Factor
VIP	Very Important Person
WTA	Wataniya Telecom Algerie
β	Standardized Beta Coefficient
α	Cronbach's Alpha

Glossary

AI Adoption	AI adoption refers to the extent to which Ooredoo Algeria uses artificial intelligence and advanced digital technologies in its services. In the thesis, it is the independent variable used to explain customer experience innovation directly and indirectly through AI-enabled service quality.
AI-enabled Customer Experience	AI-enabled customer experience refers to customer responses shaped by interactions with artificial intelligence tools, such as chatbots, automated services, personalized offers, and digital assistance. In the thesis, it is linked to personalization, convenience, trust, speed, and service quality.
AI-enabled Service Quality	AI-enabled service quality refers to customers' evaluation of service quality when service interactions are supported or delivered through artificial intelligence technologies. In the thesis, it is the mediating variable between AI adoption and customer experience innovation.
Baron and Kenny Mediation Steps	The Baron and Kenny mediation steps are a preliminary procedure used to examine whether a mediator explains the relationship between an independent variable and a dependent variable. In the thesis, they are used before Hayes' PROCESS Macro to support the mediation analysis.
Bootstrapping	Bootstrapping is a statistical resampling method used to estimate the reliability of indirect effects by repeatedly drawing samples from the data. In the thesis, 5,000 bootstrap samples are used in PROCESS Macro Model 4 to test the mediating role of AI-enabled service quality.
Confidence Interval	A confidence interval is a statistical range that estimates where a population effect is likely to fall. In the thesis, confidence intervals are used especially in regression and mediation analysis, where an indirect effect is significant when the bootstrap confidence interval does not include zero.
Convenience Sampling	Convenience sampling is a non-probability sampling method where respondents are selected because they are accessible and willing to participate. In the thesis, this method is used to collect questionnaire responses from accessible Ooredoo Algeria customers.
Correlation Analysis	Correlation analysis examines the strength and direction of association between variables. In the thesis, Spearman correlation is used to assess relationships among AI adoption; AI-enabled service quality, and customer experience innovation.
Cronbach's Alpha	Cronbach's Alpha is a reliability coefficient used to assess the internal consistency of a scale. In the thesis, it is used to verify whether the questionnaire items measuring AI adoption, AI-enabled service quality, and customer experience innovation are reliable.
Cross-sectional Study	A cross-sectional study collects data at one point in time. In the thesis, the questionnaire data were collected from customers during a specific period and then analyzed statistically.
Deductive Approach	A deductive approach starts from theory and hypotheses, then tests them using empirical data. In the thesis, this approach is used because the conceptual model and hypotheses are tested through quantitative analysis.

Hayes' PROCESS Macro	Hayes' PROCESS Macro is an SPSS add-on used to test mediation, moderation, and conditional process models. In the thesis, PROCESS Model 4 is used to test whether AI-enabled service quality mediates the relationship between AI adoption and customer experience innovation.
Independent Variable	An independent variable is the variable expected to influence or explain changes in another variable. In the thesis, AI adoption is the independent variable.
Kolmogorov-Smirnov Test	The Kolmogorov-Smirnov test is a statistical test used to examine whether data follow a normal distribution. In the thesis, it is used as part of the normality test because the sample size is greater than 50.
Kurtosis	Kurtosis is a statistical indicator describing the shape and peakedness of a distribution. In the thesis, kurtosis values are used with skewness to assess whether the main variables are approximately normal.
Likert Scale	A Likert scale is a rating scale used to measure respondents' agreement or disagreement with questionnaire statements. In the thesis, a five-point Likert scale is used, ranging from Strongly Disagree to Strongly Agree.
Mean Score	A mean score is the average value of responses for an item or variable. In the thesis, mean scores are used to interpret customers' perceptions of AI adoption, AI-enabled service quality, and customer experience innovation.
Mediation	Mediation occurs when the effect of an independent variable on a dependent variable passes through an intermediate variable. In the thesis, AI-enabled service quality mediates the relationship between AI adoption and customer experience innovation.
Multicollinearity	Multicollinearity occurs when predictor variables in a regression model are highly correlated with each other. In the thesis, it is checked using tolerance and VIF values before interpreting regression results.
Natural Language Processing	Natural language processing refers to AI techniques that allow machines to understand, interpret, and generate human language. In the thesis, it is linked to chatbots, virtual assistants, sentiment analysis, and automated communication.
Normality Test	A normality test examines whether data follow a normal distribution. In the thesis, normality is assessed using Kolmogorov-Smirnov, Shapiro-Wilk, skewness, and kurtosis before selecting appropriate statistical techniques.
Partial Mediation	Partial mediation occurs when the independent variable still has a direct effect on the dependent variable after the mediator is included. In the thesis, AI-enabled service quality partially mediates the relationship between AI adoption and customer experience innovation.
Positive Significant Effect	A positive significant effect means that an increase in one variable is associated with an increase in another variable, and that the relationship is statistically supported. In the thesis, this phrase is used to describe supported hypotheses linking AI adoption, service quality, and customer experience innovation.
Predictive Analytics	Predictive analytics refers to statistical and machine learning methods used to forecast future outcomes from historical data. In the thesis, it is

	linked to churn prediction, customer retention, proactive service, and personalized recommendations.
PROCESS Model 4	PROCESS Model 4 is the mediation model in Hayes' PROCESS Macro. In the thesis, it tests the indirect effect of AI adoption on customer experience innovation through AI-enabled service quality.
Quantitative Explanatory Study	A quantitative explanatory study uses numerical data and statistical tests to explain relationships between variables. In the thesis, this design is used to test the effects of AI adoption on service quality and customer experience innovation.
Regression Analysis	Regression analysis is a statistical method used to estimate the effect of one or more independent variables on a dependent variable. In the thesis, regression is used to test the main hypotheses and sub-hypotheses.
Reliability	Reliability refers to the consistency of a measurement instrument. In the thesis, reliability is assessed through Cronbach's Alpha to ensure that the questionnaire scales are internally consistent.
Self-administered Questionnaire	A self-administered questionnaire is a data collection instrument completed directly by respondents without interviewer intervention. In the thesis, it is used to collect customer perceptions through structured Likert-scale items.
Shapiro-Wilk Test	The Shapiro-Wilk test is a statistical test used to assess whether data are normally distributed. In the thesis, it is presented with the Kolmogorov-Smirnov test in the normality analysis.
Significant Value	A significance value indicates whether a statistical result is unlikely to have occurred by chance. In the thesis, results with p-values below the accepted threshold are interpreted as statistically significant.
Skewness	Skewness measures the asymmetry of a distribution. In the thesis, skewness values are used together with kurtosis to support the interpretation that the variables are approximately normal.
Spearman Correlation	Spearman correlation is a non-parametric correlation method used to measure the strength and direction of association between ranked or non-normally distributed variables. In the thesis, it is used because the data are based on Likert-scale responses and normality results are not fully satisfied.
Standard Deviation	Standard deviation measures the dispersion of responses around the mean. In the thesis, it shows how much respondents' answers vary for the main variables and questionnaire items.
Standard Error	Standard error measures the precision of a statistical estimate. In the thesis, it appears in regression and PROCESS outputs to evaluate the stability of coefficients and indirect effects.
Virtual Assistant	A virtual assistant is an AI-enabled system that interacts with users to answer questions, provide guidance, or support service processes. In the thesis, virtual assistants are part of AI-enabled customer service in telecommunications.
AI-driven Personalization Engines	AI-driven personalization engines are systems that use customer data, machine learning algorithms, and predictive analytics to adapt recommendations, offers, messages, and service interactions to

	individual customer profiles. In this thesis, they explain how AI adoption can support more relevant, timely, and individualized customer experiences.
Hyper-personalization	Hyper-personalization refers to the use of real-time data and AI-based analytics to tailor products, services, communications, or interactions at the individual customer level. In this thesis, it represents an advanced form of personalization enabled by artificial intelligence.
Mass Personalization	Mass personalization refers to the adaptation of products, services, or communications to broad customer segments rather than to individual customers. In this thesis, it is used to distinguish traditional segment-based personalization from AI-enabled hyper-personalization.

General Introduction

Artificial intelligence (AI) has emerged as a major driver of digital transformation across industries. It is increasingly used to automate business processes, generate insights from data, and support customer and employee engagement. AI is not limited to a single technology but represents a set of organizational capabilities that can help firms improve their operations and create business value (T. H. Davenport & Ronanki, 2018).

However, the value generated by AI does not automatically result from its adoption; it depends on how organizations implement, integrate, and align AI initiatives with their objectives (Enholm et al., 2022).

In service activities, AI is particularly relevant because intelligent systems can support or partially automate customer interactions, improving speed, consistency, and efficiency in service delivery (Huang and Rust, 2018). This transformation is also visible in frontline service encounters, where AI-enabled technologies can reshape interactions between the customer and the organization by increasing standardization, reliability, scalability, and personalization (Wirtz et al., 2018).

Beyond operational improvements, customer experience has become a central concept in service management. Customer experience can be defined as a multidimensional response to a firm's offering, including cognitive, emotional, behavioral, sensorial, and relational dimensions (Gentile et al., 2007). Customer experience is also formed across the entire customer journey, through multiple interactions and touchpoints between the customer and the firm (Lemon & Verhoef, 2016).

In the digital context, AI-enabled services can improve personalization, convenience, trust, and service quality, all of which contribute to the development of innovative customer experiences (Ameen et al., 2021).

Customer experience innovation extends beyond traditional service improvement; it aims to make interactions more modern, personalized, proactive, seamless, efficient, and emotionally engaging, consistent with the experience economy perspective (Pine & Gilmore, 1998).

In the telecommunications sector, this relationship is especially relevant, as telecom operators manage frequent multi-channel customer interactions where AI can support service improvement, personalization, and more proactive service models (World Economic Forum, 2025). Ooredoo Algeria, as a major Algerian telecommunications operator with a large customer base of approximately 15.6 million customers according to information provided during the internship, constitutes a relevant empirical case for studying this relationship. Its digital channels, including mobile applications, chatbot assistance, and automated services, provide a relevant context for examining how AI adoption may enhance AI-enabled service quality and contribute to customer experience innovation.

Although AI offers important opportunities for service improvement, its adoption does not automatically lead to a better customer experience. Customers evaluate AI-

enabled tools according to their concrete effect on service interactions, such as saving time, providing accurate information, solving problems, and making the interaction smoother (Huang and Rust, 2018).

Therefore, the impact of AI adoption on customer experience innovation may depend on the quality of AI-enabled services perceived by customers. When AI improves responsiveness, reliability, convenience, personalization, and overall service performance, it may strengthen customer experience. However, when AI-enabled services are unclear, slow, or unable to meet customer needs, their effect may be limited (Ameen et al., 2021).

In the Algerian telecommunications context, this issue is particularly relevant because digital transformation is still developing and customer expectations are evolving. Therefore, this study examines the impact of artificial intelligence adoption on customer experience innovation, while considering AI-enabled service quality as a mediating mechanism in the case of Ooredoo Algeria.

Research Question

Based on the foregoing analysis, the main research question of this study is formulated as follows:

What is the impact of artificial intelligence adoption on customer experience innovation through AI-enabled service quality in the case of Ooredoo Algeria?

In order to answer this main question, the following sub-questions are proposed:

- **Q1:** What is the impact of artificial intelligence adoption on customer experience innovation at Ooredoo Algeria?
- **Q2:** What is the impact of artificial intelligence adoption on AI-enabled service quality at Ooredoo Algeria?
- **Q3:** What is the impact of AI-enabled service quality on customer experience innovation at Ooredoo Algeria?
- **Q4:** Does AI-enabled service quality mediate the relationship between artificial intelligence adoption and customer experience innovation?
- **Q5:** What is the impact of artificial intelligence adoption on the different dimensions of customer experience innovation, namely modernity and innovation, personalization, proactivity, seamlessness, speed and efficiency, and emotional engagement?

Research Hypotheses

Based on the research question and the conceptual model of the study, the following main hypotheses are formulated:

- **H1:** Artificial intelligence adoption has a positive and significant effect on customer experience innovation.
- **H2:** Artificial intelligence adoption has a positive and significant effect on AI-enabled service quality.

- **H3:** AI-enabled service quality has a positive and significant effect on customer experience innovation.
- **H4:** AI-enabled service quality mediates the relationship between artificial intelligence adoption and customer experience innovation.
- Six sub-hypotheses examine the effect of AI adoption on each dimension of customer experience innovation:
  - **H1a:** Artificial intelligence adoption has a positive and significant effect on modernity and innovation.
  - **H1b:** Artificial intelligence adoption has a positive and significant effect on personalisation.
  - **H1c:** Artificial intelligence adoption has a positive and significant effect on proactivity.
  - **H1d:** Artificial intelligence adoption has a positive and significant effect on seamlessness.
  - **H1e:** Artificial intelligence adoption has a positive and significant effect on speed and efficiency.
  - **H1f:** Artificial intelligence adoption has a positive and significant effect on emotional engagement.

Objectives of the Study

The main objective of this study is to **examine the impact of artificial intelligence adoption on customer experience innovation at Ooredoo Algeria, and to determine whether this relationship is mediated by AI-enabled service quality.**

More specifically, the study aims to:

- Analyze customers' perceptions of AI adoption in Ooredoo Algeria's services.
- Examine the direct effect of AI adoption on customer experience innovation.
- Examine the effect of AI adoption on AI-enabled service quality.
- Evaluate the effect of AI-enabled service quality on customer experience innovation.
- Test the mediating role of AI-enabled service quality in the relationship between AI adoption and customer experience innovation.
- Examine the effect of AI adoption on each of the six dimensions of customer experience innovation: modernity and innovation, personalization, proactivity, seamlessness, speed and efficiency, and emotional engagement.

Importance of the Study

This study is important from academic, contextual, managerial, and practical perspectives.

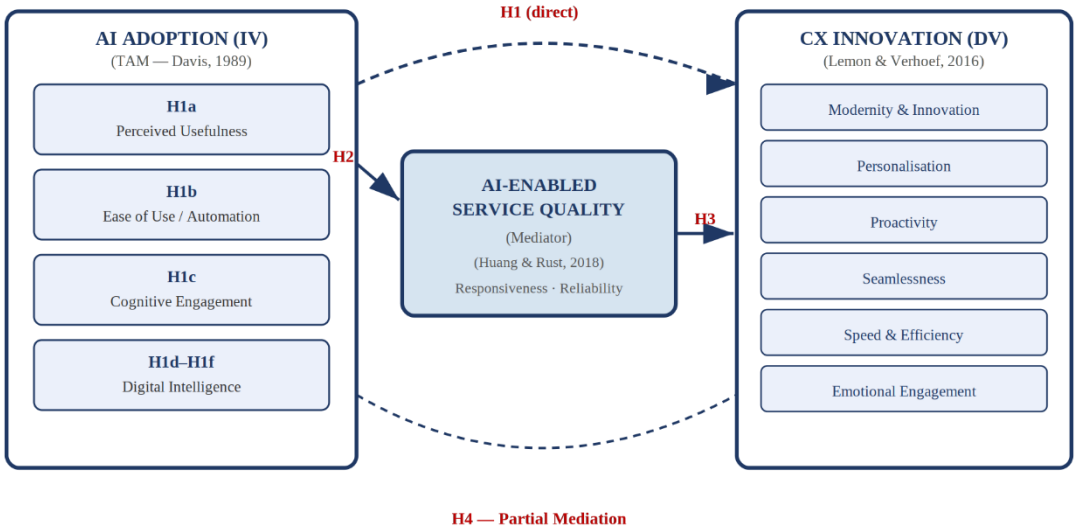
- From an academic perspective, it contributes empirical evidence on the mediating role of AI-enabled service quality in the relationship between AI adoption and customer experience innovation. While previous studies have examined the role of AI in customer experience, the mechanism through which AI adoption may translate into customer experience innovation remains an important area for further investigation, particularly in service-intensive sectors.

- From a contextual perspective, the study addresses a gap by focusing on the Algerian telecommunications sector, which has received limited scholarly attention compared with more digitally mature markets. By studying Ooredoo Algeria, the research provides a context-specific understanding of how customers perceive AI-enabled services in an emerging-market environment.
- From a managerial perspective, the findings can help Ooredoo Algeria and similar telecom operators better understand the customer-facing value of AI adoption. The study may support decision-makers in improving digital channels, chatbot assistance, automated services, personalised offers, and other AI-enabled customer service tools.
- From a practical perspective, understanding how customers evaluate AI-enabled service quality can guide the development of more customer-centred AI strategies in telecommunications. This can help improve responsiveness, reliability, convenience, personalisation, and the overall customer experience.

Structure of the Work

This thesis is structured into three chapters. The first chapter, entitled **Literature Review and Conceptual Framework,** presents the theoretical foundations of the study—the Technology Acceptance Model and the Experience Economy Theory; reviews prior studies on AI, customer experience, service quality, and customer experience innovation; and concludes with the conceptual framework and the justification of the research model. The second chapter, entitled Methodological Framework and Host Organization, presents the epistemological position, research approach, quantitative explanatory design, self-administered structured questionnaire, sampling strategy that yielded 235 valid responses, SPSS-based analysis procedures including Hayes' PROCESS Macro Model 4; and a contextual presentation of Ooredoo Algeria. The third chapter, entitled Empirical Results, Analysis, and Discussion, reports the data quality verification procedures, respondents' profile, descriptive statistics, Spearman correlation analysis, regression and mediation analyses, hypothesis testing results, and a structured discussion of the findings in relation to the literature and the organizational context of Ooredoo Algeria. The thesis closes with a general conclusion summarizing the main findings, theoretical and managerial implications, study limitations, and future research directions.

Figure 1 : conceptual model of the study



source: Established by the researcher

Chapter 01: Literature review and conceptual framework

This chapter presents the theoretical and conceptual foundations of the study. It is organized into three sections. The first section presents the theoretical foundations of the research through the Technology Acceptance Model (Davis, 1989) and the Experience Economy Theory (Pine & Gilmore, 1998) The second section develops the literature review by examining previous studies related to artificial intelligence, customer experience, service quality, and customer experience innovation. The third section presents the conceptual framework of the study by clarifying the four main concepts of the study: artificial intelligence, customer experience, service quality in AI-enabled environments, and customer experience innovation. Together, these elements provide the conceptual basis for the analysis developed in the following chapters

Section 01: Theoretical foundation

Definition of the Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was developed by (Davis, 1989) to explain why individuals accept or reject information technology adoption depending mainly on two user perceptions:

- Perceived usefulness: defined as the degree to which a person expects that using a particular system would improve their performance at work
- Perceived ease of use, on the other hand, means the degree to which a person expects that using a certain system would be free of effort.

Definition of the experience economy theory

The Experience Economy Theory was developed by (Pine & Gilmore, 1998) .It argues that economic value has evolved throughout time, moving from commodities to goods, services, and experiences. This idea holds that because experiences are unforgettable, intimate, and captivating, they provide a unique sort of worth. This idea is pertinent to the current study because it clarifies how customer experience innovation transcends basic service enhancement and develops into an innovative method of value creation.

These two theories function as the primary theoretical foundation. Artificial intelligence (AI) adoption in organizations is explained by the Technology Acceptance Model, and how this acceptance might lead to innovation in customer experience is explained by the Experience Economy Theory. When taken as a whole, they offer a theoretical framework for comprehending how adoption of AI and innovation in customer experience are related.

Section 02: Literature review

1. Studies on AI and organizational value

The organizational implications of artificial intelligence have attracted considerable scholarly attention over the past decade, with researchers converging on the view that AI constitutes a transformative force capable of reshaping both strategic processes and operational outcomes**.** (Enholm et al., 2022) in **"*Artificial Intelligence and Business Value: A Literature Review*"** provide a systematic review of how organizations adopt and use AI to generate business value. Their analysis synthesizes the literature by identifying the main enablers and inhibitors of AI adoption, the major types of AI use in organizations, and the first- and second-order effects of AI. The study shows that the realization of business value from AI depends on organizational readiness, technological and organizational enablers, and the alignment of AI initiatives with broader strategic objectives.

This argument aligns strongly with the perspective presented by (T. H. Davenport & Ronanki, 2018) in **"*Artificial Intelligence for the Real World".*** They argue that AI should not be understood as a single monolithic technology, but rather as a set of business capabilities that support three main needs: automating business processes, gaining insight through data analysis, and engaging customers and employees. Their work also emphasizes that organizations should prioritize practical and incremental AI initiatives rather than highly ambitious "moon shot" projects. Their contribution is particularly important because it defines AI adoption as a managerial and strategic process that depends on selecting appropriate use cases, understanding technological capabilities, and scaling implementation carefully. This perspective is generally consistent with (Enholm et al., 2022) who demonstrate that AI-derived value depends on organizational conditions enabling factors , and strategic alignment of initiatives. Both studies suggest that the organizational value of artificial intelligence (AI) adoption is not automatic but depends on how organizations select, implement, and support AI in practice.

(Hajkowicz et al., 2023) in **"*Artificial intelligence adoption in the physical sciences, natural sciences, life sciences, social sciences and the arts and humanities: A bibliometric analysis of research publications from 1960-2021*"** extend this line of inquiry by situating AI adoption within a broader interdisciplinary research context. Drawing on a bibliometric analysis of 3.1 million AI-related peer-reviewed publications identified within 137 million scholarly publications, they show that AI adoption has expanded rapidly across nearly all fields of research, especially in recent years. Their findings highlight the breadth, intensity, and interdisciplinary diffusion of AI, while also suggesting that AI is increasingly becoming a sustained and transformative capability across applied domains. This contribution is particularly relevant to the present study because it helps justify the examination of AI as a broad organizational and strategic phenomenon whose significance extends beyond purely technical fields.

(Bonhomme, 2024) in ***"L'intelligence artificielle dans le processus de prise de décision: le cas de l'usage de l'IA et de la donnée massive dans la création d'un plan***

***urbain*"** offers a complementary perspective by examining the role of AI in decision-making processes within complex environments. Although the thesis is not directly focused on customer experience, it is relevant for understanding how AI systems can influence decision framing and support data-driven organizational judgment in complex environments.

In conclusion, these studies suggest that AI is a genuine and measurable source of organizational value, while also showing that its realization depends on both internal capabilities and external contextual factors.

2. Studies on customer experience in the digital context

The conceptualization of customer experience has undergone profound transformation alongside the digitalization of service industries. (Wirtz et al., 2018) in ***"Brave new world: service robots in the frontline"*** provide an important service-focused perspective by showing how service robots and AI-enabled frontline technologies are likely to reshape service encounters through greater standardization, consistency, and scalability, while also enabling new forms of customer-firm interaction.

More specifically, (Wirtz et al., 2018) suggest that customers may evaluate robot-delivered service quality not only in terms of functional performance but also through social-emotional and relational dimensions such as perceived ease of use, social presence, trust, and rapport.

This insight is of considerable strategic significance: it implies that organizations operating in digital or hybrid service environments must adapt their customer experience management practices in order to respond to the adjusted expectations of digitally enabled customers. The implications of this argument are especially pronounced in sectors characterized by high digital service intensity, such as telecommunications, where the customer journey, from onboarding to billing dispute resolution, is increasingly mediated through digital channels.

(Ameen et al., 2021) **in "*Customer experiences in the age of artificial intelligence"*** support this perspective by showing that AI-enabled services can improve customer experience through personalization, convenience, AI-enabled service quality, trust, and relationship commitment. Their findings indicate that these factors play a significant role in shaping AI-enabled customer experience in retail service settings.

Taken together, these studies suggest that customer experience in digital contexts is no longer shaped solely by service outcomes but also by the quality, speed, and personalization of technology-mediated interactions**.** (Wirtz et al., 2018) therefore provide an important benchmark for evaluating AI-enabled customer experience improvements in technology-intensive contexts, while (Ameen et al., 2021) strengthen the argument that digital and AI-based service innovations can generate measurable experiential benefits.

3. Studies on AI and customer experience

3.1.Personalization

Personalization is among the most extensively documented mechanisms through which AI enhances customer experience, as it refers to the capacity to tailor service offerings, communications, and recommendations to individual customer profiles in real time. Drawing on Davenport et al. (2020), AI-driven personalization engines can be understood as systems that use customer data, machine learning algorithms, and predictive analytics to adapt recommendations, offers, messages, and service interactions to individual customer profiles.

Davenport et al. (2020) were among the first to systematically identify the role of AI-driven personalization engines in customer-facing applications, highlighting recommendation algorithms, dynamic pricing models, and behavioral targeting tools as the main instruments through which AI translates data into individualized experiences. Their analysis suggests that AI-powered personalization enhances customer-facing processes through better targeting, improved recommendation quality, and stronger customer engagement, which may contribute to customer experience innovation.

This argument is reinforced and extended by Kumar & Koshy (2025) in ***"Analyzing The Role of Artificial Intelligence in Customer Experience and Enhancing Retention,"*** who examine AI-enabled personalization in service industries characterized by large and heterogeneous customer bases**.** Their study demonstrates that AI personalization platforms, when integrated with customer relationship management systems, enable organizations to move from segment-level targeting to true individual-level customization, a transition they describe as the shift from 'mass personalization' to 'hyper-personalization.' In line with this distinction, mass personalization can be understood as personalization at the level of broad customer segments, whereas hyper-personalization refers to the use of real-time data and AI-based analytics to tailor interactions at the individual customer level. This distinction is important because AI does not only personalize communication in a general way; it can also support more precise, context-sensitive, and individualized customer experiences.

Their findings reveal that this capability is associated not only with higher customer satisfaction scores but also with measurable improvements in customer lifetime value and **Net Promoter Score (NPS)**, thereby providing empirical support for the strategic importance of AI personalization. However, the benefits of AI-enabled personalization should be interpreted with caution. The use of customer data raises important challenges related to privacy, transparency, algorithmic bias, and customer trust. If personalization is perceived as intrusive or poorly explained, it may weaken rather than improve the customer experience. Therefore, AI-driven personalization requires not only technical capabilities but also responsible data governance and ethical implementation.

In contrast to T. Davenport et al.(2020) who treat personalization as one element within a broader AI ecosystem**,** Kumar & Koshy, (2025) position it as a key mechanism of AI-driven customer experience innovation, arguing that personalization capability is a major determinant of competitive differentiation in AI-enabled service environments.

Taken together, these two studies provide a strong basis for treating AI-driven personalization as both a critical process and a strategic outcome of AI adoption in customer-facing environments.

3.2. Automation of Service Interactions

A second major mechanism through which AI reshapes customer experience is the automation of service interactions, namely the substitution or augmentation of human agents by intelligent systems capable of handling customer queries, complaints, and transactions autonomously. Huang and Rust (2018) in ***"Artificial Intelligence in Service"*** offer a theoretically grounded framework for understanding this process by distinguishing between different types of intelligence involved in service tasks, including mechanical, analytical, intuitive, and empathetic intelligence.

Their main contribution lies in demonstrating that AI replaces service tasks progressively according to the level of intelligence required, beginning with routine mechanical tasks and moving gradually to more complex analytical, intuitive, and empathetic tasks. This perspective suggests that AI can improve efficiency and consistency in routine service interactions, while more socially and emotionally complex encounters continue to depend more strongly on human capabilities or human-machine integration This framework is directly relevant to this study because AI-enabled service quality depends on the ability of AI systems to perform service tasks efficiently, reliably, and consistently. Mechanical and analytical intelligence may improve speed, accuracy, and responsiveness, while intuitive and empathetic dimensions remain more difficult to automate and may influence how customers evaluate the overall quality and innovativeness of their experience**.**

The frameworks proposed by (T. Davenport et al., 2020) and (Huang and Rust, 2018) provide an essential corrective to more optimistic views of AI in customer-facing service by showing that the experiential value of automation depends on how well human and machine roles are calibrated.

3.3.Predictive Capabilities

Beyond personalization and automation, predictive analytics constitutes a third dimension through which AI transforms the customer experience. T. Davenport et al. (2020) and Kumar & Koshy, (2025) suggest that AI-powered predictive systems enable organizations to anticipate customer needs, identify churn risk, and support proactive service interventions. This predictive capacity allows firms to move from reactive to anticipatory service approaches, thereby addressing customer pain points before they escalate into dissatisfaction or service defection.

These predictive capabilities are especially important in high-churn service environments such as telecommunications, where the ability to identify at-risk customers with sufficient lead time allows organizations to intervene with targeted retention offers or service improvements. At the same time, the effectiveness of predictive AI remains highly dependent on the availability of high-quality and longitudinal customer data. This observation is consistent with the infrastructure-readiness concerns raised (T. Davenport et

al., 2020) and (Hajkowicz et al., 2023)**,** it is also consistent with (Ameen et al., 2021) who report that AI-enabled service systems can improve customer experience by enhancing personalization, convenience, engagement, and loyalty.

4. Challenges and Risks of AI Adoption

While the preceding scholarship establishes a compelling case for the organizational and experiential value of AI, a parallel body of literature cautions against an uncritical embrace of AI technologies by documenting a range of ethical, institutional, and operational challenges that complicate their deployment. (Dwivedi et al., 2021) **"*in Artificial Intelligence (AI): Multidisciplinary Perspectives on Emerging Challenges, Opportunities, and Agenda for Research, Practice, and Policy*"** provides one of the most comprehensive multidimensional assessments of AI-related challenges in organizational contexts. Their study identifies issues ranging from data bias and algorithmic opacity to workforce displacement, regulatory ambiguity, and public trust deficits. Their multidisciplinary analysis, drawing on evidence across industries and domains, demonstrates that the challenges of AI adoption extend beyond technical limitations and include social, ethical, organizational, legal, and managerial dimensions. This perspective highlights the sociotechnical complexity of AI implementation and suggests that successful adoption depends not only on technological capability but also on governance, institutional readiness, and public trust. This finding qualifies the optimistic projections of (T. Davenport et al., 2020) and (Hajkowicz et al., 2023) suggesting that the pathway from AI investment to organizational value is strewn with implementation hazards that are easily overlooked in studies focused primarily on technological potential.

(Gupta, 2018) in **"*Driving Digital Strategy: A Guide to Reimagining Your Business*"** complements this perspective by emphasizing the management and organizational difficulties associated with digital transformation. According to (Gupta, 2018), successful digital transformation requires organizational redesign, leadership support, capability development, and strategic alignment. These factors are particularly important in AI-enabled service contexts since inadequate organizational planning and control can reduce service quality, weaken customer trust, and restrict the value produced by technological innovation. In this sense (Gupta, 2018) supports the view that managerial preparedness and organizational adaptation are just as important to the effective deployment of AI as technological capabilities.

This observation qualifies the personalization and automation benefits documented by (Huang and Rust, 2018) and (Kumar & Koshy, 2025) , by showing that such benefits depend on supportive organizational conditions. Although (Dwivedi et al., 2021), treat governance as one element within a broader landscape of AI challenges, (Gupta, 2018) places greater emphasis on leadership , strategic alignment, and organizational redesign as key conditions for successful transformation . Both perspectives, however, converge on the insight that the risks of AI in customer experience contexts are not only technical but are also embedded in organizational culture, managerial priorities, and regulatory

environments, this point is especially relevant for organizations operating in emerging governance contexts, such as those found across much of North Africa.

5. AI in the Telecommunications Sector

The telecommunications industry occupies a particularly important position in the broader landscape of AI-driven customer experience innovation because of its massive customer base, complex service architectures, and intense competitive pressure. (World Economic Forum, 2025) **in "*Artificial Intelligence in Telecommunications",*** provides one of the most important sector-specific assessments of AI's transformative potential in telecommunications, demonstrating that AI applications, ranging from network optimization and predictive maintenance to intelligent virtual assistants and personalized data plan management, are fundamentally altering both the economics and quality of telecom service delivery. It also shows AI leading the telecommunications value chain to improve operational efficiency, enhance customer service, support personalization, and strengthen secure and reliable operations.

The report further identifies the telecommunications sector as a particularly favorable environment for AI adoption due to its inherent data richness: telecom operators have access to granular and high-frequency data on customer behavior, network usage patterns, and service interactions, which provide the basis for predictive and personalized AI applications.

However, (World Economic Forum, 2025) also identifies that the pace and scale of AI adoption depend on enabling conditions such as data, infrastructure, architecture, workforce capabilities, and responsible AI governance . These factors may be especially challenging in emerging-market contexts. This finding is consistent with (Hajkowicz et al., 2023), who emphasize the contextual conditions shaping AI's organizational impact across different national settings, and with (Dwivedi et al., 2021) who highlight the sociotechnical barriers to AI adoption. In the specific context of North African and Middle Eastern telecom operators, the report suggests that the transition to AI-enabled customer experience management requires not only technological investment but also deliberate organizational capability building. In this sense, the telecommunications sector emerges as both an important testing ground for AI-driven customer experience innovation and a context in which the opportunities and constraints of AI adoption are especially visible.

6. Research Gap and Justification for the Present Study

The foregoing review reveals a growing body of scholarship on the relationship between artificial intelligence (AI) adoption, customer experience (CX) innovation, and digital service transformation. Collectively, the reviewed studies indicate that AI generates measurable organizational value (T. H. Davenport & Ronanki, 2018; Enholm et al., 2022; Hajkowicz et al., 2023)**;** improves service interactions in digital environments and transforms customer experience expectations (Ameen et al., 2021; Wirtz et al., 2018)**;** and enhances customer-facing outcomes through personalization, automation, and predictive capabilities, which emerge in the literature review as major mechanisms of AI-enabled

transformation (Ameen et al., 2021; T. Davenport et al., 2020; Huang and Rust, 2018; Kumar & Koshy, 2025).

The literature also responsibly documents important ethical, managerial, and organizational challenges associated with AI adoption (Dwivedi et al., 2021), while highlighting the strategic relevance for AI in the telecommunications sector as a driver of customer experience innovation (World Economic Forum, 2025).

However, three significant and interrelated gaps remain in the existing literature. First, most existing studies reviewed are based on advanced digital economies and on Western or Asian markets characterized by high levels of digital infrastructure maturity. As a result, the specific context of North African and Algerian telecommunications operators remains underexplored, despite the presence of structural conditions that may shape AI adoption differently from those observed in more digitally mature environments.

Second, although prior research has examined the contribution of AI to customer-facing outcomes, limited attention has been given to AI-enabled service quality as the mechanism through which AI adoption may translate into customer experience innovation.

Third, the existing sector-specific scholarship, including the (World Economic Forum, 2025) report, remains largely descriptive and managerial in orientation. It documents how leading operators are using AI but provides limited empirical evidence on how AI adoption, AI-enabled service quality, and customer experience innovation are linked in practice.

This research work addresses these gaps directly by examining the relationship between AI adoption and customer experience innovation at Ooredoo Algeria, while considering AI-enabled service quality as the mediating mechanism. By focusing on an underexplored yet strategically relevant telecommunications context, the study contributes contextualized empirical evidence to a field still dominated by research conducted in more digitally mature environments. In doing so, it responds to calls for contextually grounded and sector-specific AI research (Dwivedi et al., 2021; Hajkowicz et al., 2023; World Economic Forum, 2025) and extends recent discussion on AI-enabled customer experience into a context where such inquiry remains limited.

The following table synthesizes the reviewed literature and highlights both its main contributions, limitations, and relevance to the present study:

Table 1: sources, contributions, and limitations of reviewed studies

N°	Source	Main Contribution	Methodology	Limitations	Relevance to the Present Study
1	(Enholm et al., 2022)	Explains how organizations create business value from AI by identifying key enablers and inhibitors of AI adoption, major types of AI use in organizations, and first- and second-order business effects of AI. It also links AI capability and organizational readiness to value creation.	Systematic literature review	Based only on peer-reviewed literature published up to 2020, so newer AI developments are not included. The study is mainly synthetic and conceptual rather than directly empirical, which limits immediate contextual application to specific sectors or emerging economies.	Highly relevant because it provides a strong foundation for understanding AI adoption, organizational value, enabling conditions, and business effects, all of which support the study's discussion of AI adoption in relation to customer experience innovation.
2	(T. H. Davenport & Ronanki, 2018)	Shows that firms can derive practical value from AI through three main business uses: process automation, cognitive insight, and cognitive engagement. It also argues that organizations should begin with practical, incremental projects rather than highly ambitious AI "moon shots."	Managerial article based on a survey of executives and a study of 152 cognitive technology projects across companies.	The article is managerial and practice-oriented rather than strongly theoretical. Its evidence is based largely on cases, executive survey results, and applied examples, which limits deep empirical generalization and gives less attention to customer experience innovation as a distinct outcome.	Highly relevant because it supports the argument that AI adoption creates organizational value when aligned with business needs, managerial readiness, and realistic implementation strategy. It also helps justify studying AI adoption as a practical organizational process rather than as a purely technological phenomenon.

3	(Hajkowicz et al., 2023)	Examines the diffusion of AI across 333 research fields from 1960 to 2021 and shows that AI adoption has expanded rapidly across nearly all disciplines, especially in recent years. It highlights the interdisciplinary spread and growing significance of AI.	Bibliometric analysis of 3.1 million AI-related peer-reviewed publications identified within 137 million scholarly publications in The Lens database, using 214 OECD-derived AI phrases and the ASJC classification system.	Focuses on publication patterns in research fields rather than direct firm-level outcomes. It shows the breadth and intensity of AI diffusion, but does not directly measure customer experience, service quality, or organizational performance.	Relevant because it supports the argument that AI adoption has become broad, interdisciplinary, and increasingly important across applied domains. It also helps justify studying AI as a transformative capability in contexts beyond purely technical fields.
4	(Bonhomme, 2024)	Examines the role of artificial intelligence and massive data in decision-making processes, especially in the context of urban planning. It shows how AI can influence decision framing, organizational judgment, and the practical integration of data-driven systems into complex decision environments.	Doctoral thesis based on a case-study approach, combining theoretical discussion with field experience and applied analysis in the context of urban planning and decision-making.	The study is highly context-specific, focusing on urban planning and smart-city issues rather than customer experience or telecommunications. Its findings are therefore more useful as a complementary perspective on AI-enabled decision-making than as direct evidence on customer-facing outcomes.	Relevant because it supports the idea that AI does not only automate tasks, but can also shape complex organizational decision processes. In the literature review, it works as a secondary supporting source for understanding AI's broader managerial and decision-related implications.
5	(Wirtz et al., 2018)	Explores how service robots and AI are transforming frontline service delivery. The article explains how AI-enabled service environments reshape service encounters through speed, consistency, personalization, and new forms of customer-firm interaction, while also discussing customer acceptance and ethical implications.	Conceptual paper rooted in the service, robotics, and AI literature.	The study is conceptual rather than empirical, so it does not directly test customer outcomes in a specific industry. It focuses strongly on service robots and frontline service contexts, which means its conclusions are broader than telecommunications and not based on one sector alone.	Highly relevant because it supports the argument that digital and AI-enabled service settings transform how customers evaluate service experiences, especially through speed, ease, immediacy, and personalization. It is one of the key sources for the digital customer experience section.
6	(Ameen et al., 2021)	Empirically examines how AI-enabled shopping services influence	Empirical study based on an online survey of 434 customers	The empirical setting is limited to beauty retail and customers of one	Highly relevant because it provides direct empirical evidence that AI-

		customer experience. The study shows that AI-enabled service quality, convenience, personalization, trust, and relationship commitment can improve AI-enabled customer experience, while perceived sacrifice can reduce it.	who had used an AI-enabled service, analyzed using partial least squares structural equation modelling (PLS-SEM).	brand, which may reduce generalizability to other sectors such as telecommunications. The study also focuses on one AI-enabled shopping context rather than a broader range of service environments.	enabled services can improve customer experience through personalization, convenience, trust, and service quality. It is one of the key sources supporting the customer experience section of the literature review.
7	(T. Davenport et al., 2020)	Explains how AI is likely to transform marketing strategies and customer behavior through process automation, customer engagement, predictive analytics, personalization, and AI-supported service interactions. It also highlights privacy, bias, and ethics as important concerns.	Conceptual / theoretical paper drawing on extant research and extensive interactions with practitioners.	The paper is forward-looking and conceptual rather than empirical. It focuses broadly on marketing and customer-related AI applications, so it does not directly test customer experience outcomes in one specific industry such as telecommunications.	Highly relevant because it supports the argument that AI improves customer-facing processes through personalization, predictive capabilities, and service augmentation. It is one of the main sources for personalization and predictive analytics in customer experience contexts.
8	(Kumar & Koshy, 2025)	Examines how AI can improve customer experience and retention through chatbots, predictive analytics, personalization, and sentiment analysis. The study argues that AI helps firms anticipate customer needs, improve engagement, and strengthen retention.	Mixed-methods study combining a structured questionnaire with qualitative insights; the paper also presents descriptive statistics, crosstabs, and correlation-based analysis.	The article is published in a multidisciplinary journal and appears broad and applied in orientation. Its empirical depth is more limited than that of stronger journal articles, and some claims are presented in a general way across sectors rather than tested in one tightly bounded context.	Relevant because it directly supports the discussion of hyper-personalization, predictive analytics, chatbot-based service, and retention outcomes. It is especially useful as a recent supporting source for AI-enabled customer experience mechanisms.
9	(Huang and Rust, 2018)	Develops a theory of AI job replacement in service by distinguishing four types of intelligence — mechanical,	Theoretical / conceptual article.	The paper is conceptual and predictive rather than empirical, so it does not directly test customer experience outcomes in one sector.	Highly relevant because it gives the strongest theoretical basis for the section on automation of service interactions. It helps explain why AI

		analytical, intuitive, and empathetic — and explains how AI can augment or replace human service tasks over time. It is especially useful for understanding automation, service quality, and the changing roles of humans and machines in service delivery.		Its value lies more in theory-building than in contextualized empirical evidence.	can improve efficiency and consistency, but also why higher-level service interactions still depend on the calibration of human and machine roles.
10	(Dwivedi et al., 2021)	Provides a multidisciplinary overview of AI opportunities, challenges, and policy implications across business, government, and society. The article highlights major risks linked to AI adoption, including data challenges, algorithmic opacity, ethical issues, managerial resistance, legal uncertainty, and workforce disruption.	Multidisciplinary review and agenda-setting article developed from expert contributions across academia, industry, and the public sector.	The paper is broad and synthetic rather than narrowly focused on one sector or one empirical setting. Its strength is breadth, but it does not directly test AI effects on customer experience innovation in a telecommunications context.	Highly relevant because it provides the strongest broad foundation for discussing the ethical, organizational, regulatory, and sociotechnical risks of AI adoption. It directly supports the section on challenges and risks of AI in customer experience contexts.
11	(Gupta, 2018)	Explains how digital transformation requires firms to rethink their business model, value chain, customer relationships, organizational design, and capabilities. It shows that successful transformation depends not only on technology adoption, but also on	Analytical / conceptual book based on business cases, strategic analysis, and managerial interpretation.	The book addresses digital transformation broadly rather than AI adoption alone, and it is managerial rather than empirical in design. Its usefulness is strongest for organizational and strategic interpretation, not for direct testing of customer experience outcomes.	Relevant because it supports the argument that AI-enabled transformation requires leadership support, organizational redesign, capability development, and strategic coherence. It strengthens the managerial side of the challenges and risks section.

Source: Author's own compilation

		leadership, strategic alignment, and organizational change.			
12	(World Economic Forum, 2025)	Provides a sector-specific overview of how AI is transforming telecommunications through network automation, predictive maintenance, personalized marketing, AI-enabled customer service, cybersecurity, and new digital business models. It also shows that AI is becoming central to cost reduction, growth, customer experience differentiation, and secure operations in telecom.	White paper / sector analysis developed in collaboration with Accenture and informed by industry stakeholders, telecom actors, and ecosystem partners.	The report is industry-oriented rather than academic and is designed as a strategic white paper, not as a formal empirical study. It provides strong sector insight, but its conclusions are more managerial and prospective than methodologically rigorous in the academic sense.	Highly relevant because it is the main sector-specific source. It directly supports the argument that telecommunications is a major field of AI adoption and that AI can improve service quality, customer experience, operational efficiency, and innovation in telecom settings.

Section 03: conceptual model

This first section presents the concept of artificial intelligence (AI) in its general form. It examines the definitional landscape of AI as it has evolved across disciplines, reconstructs its intellectual history, reviews its main technological components, and discusses its significance for organizations. The section draws on the principal reference base of the study and focuses on conceptual clarity rather than technical detail.

1. Artificial Intelligence

(McCarthy, 2007) defines intelligence as the computational component of the ability to achieve objectives in the real world. People, animals, and some machines all have different types and levels of intelligence.

1.1. Definition of Artificial Intelligence

Artificial intelligence is one of the most widely used and most variably defined concepts in contemporary academic and managerial literature. Its meaning varies according to the discipline, the historical period, and the objectives of analysis, which makes it difficult to establish a single general definition.

According to (McCarthy, 2007), artificial intelligence (AI) is the science and engineering of making intelligent machines, especially intelligent computer programs. He further explains that AI is related to the use of computers to understand human intelligence, although it is not limited to methods that imitate biologically observable human processes.

This characterization focuses on the engineering objective of AI, which is the deliberate construction of systems capable of performing tasks that require human intelligence.

In the same broad intellectual tradition, the Turing Test, originally introduced by Alan Turing in 1950 and discussed historically by (Nilsson, 2010), offered an early operational approach to machine intelligence by suggesting that a machine could be considered intelligent if its responses were indistinguishable from those of a human in written interaction.

(Haenlein & Kaplan, 2019) propose a definition that is especially relevant to managerial and organizational research: they describe artificial intelligence (AI) as a system's ability to interpret external data correctly, learn from such data, and use those learnings to achieve specific goals and tasks through flexible adaptation. This definition is particularly useful because it highlights three capabilities that are especially relevant in organizational settings interpretation, learning, and adaptive action. These features are especially relevant in organizational and service contexts, where the value of AI depends on its capacity to interpret information, learn from data, and adapt its responses to specific goals.

(Dwivedi et al., 2021) note that artificial intelligence (AI) has been defined in various ways in the literature but is generally associated with non-human intelligence programmed to perform specific tasks.

Working definition: “Artificial intelligence” designates a set of computational systems and techniques designed to simulate human cognitive capacities, including learning, reasoning,

perception, natural language understanding, and goal-direction adaption, in order to perform tasks that would ordinarily require human intelligence.

Constructed from (Dwivedi et al., 2021; Haenlein & Kaplan, 2019; McCarthy, 2007; Nilsson, 2010)

1.2.Historical evolution of Artificial Intelligence

The history of artificial intelligence is not simply a record of technological progress: it is also an intellectual history shaped by ambitious goals, repeated setbacks, paradigm shifts, and ultimately a sustained expansion into scientific and organizational life. (Nilsson, 2010) provides the most comprehensive historical account of this evolution, tracing the roots of AI from ancient philosophical reflections on mechanized reasoning to the computational and cognitive revolutions of the twentieth century.

(Haenlein & Kaplan, 2019) also show that the historical development of AI has been marked by alternating periods of optimism and disappointment, followed by renewed progress when advances in data availability and computing capacity made more complex applications feasible. And present the evolution of AI through three broad historical phases, which may be summarized in the table below:

Table 2: Evolution of artificial intelligence

Phase	Period	Dominant characteristics
Foundations and Early symbolic AI	1950s–1970s	This phase characterized by AI systems designed to perform specific, well-defined tasks. Relying mainly on symbolic reasoning, search procedures, and Rule-based logic. The Dartmouth Conference in 1956 is widely recognized as the moment in which artificial intelligence was formalized as a field, while Turing's earlier reflections provided an important conceptual foundation for later developments (Haenlein & Kaplan, 2019; Nilsson, 2010). This period was also marked by early disappointment when expectations exceeded technical capabilities, contributing to the first AI winter (Haenlein & Kaplan, 2019; Nilsson, 2010)
Setbacks, reorientation, and renewed development	1970s–2000s	This phase is characterized by a gradual transition from symbolic reasoning toward statistical and probabilistic approaches, together with the rise of machine learning and renewed development of neural networks (Haenlein & Kaplan, 2019; Nilsson, 2010). It also corresponds to a period in which AI expanded progressively into commercial applications, supported by improvements in computing power and growing data availability (Haenlein & Kaplan, 2019).

Data-driven and deep learning AI	2010s–present	This phase is marked by the rapid development of deep learning, large language models, natural language processing, computer vision, and generative AI applications. AI has diffused quickly across industries as advances in data availability and computational capacity made large-scale deployment increasingly feasible (T. H. Davenport & Ronanki, 2018; Haenlein & Kaplan, 2019). At the same time, the long-term development of artificial intelligence remains a subject of ongoing reflection and controversy in the literature (Nilsson, 2010)

Source: Adapted from (Haenlein & Kaplan, 2019)with historical support from (Nilsson, 2010)

Turing's early reflection on machine intelligence in 1950, the Dartmouth Conference in 1956, the emergence of expert systems in the 1970s and 1980s, the renewed development of neural networks and machine learning from the late 1980s, and the rapid development of deep learning and, more recently, generative AI starting in the 2010s are some of the major turning points in the history of artificial intelligence.

(Nilsson, 2010) emphasizes that the development of AI was not linear. Two major periods of reduced investment and enthusiasm “known as AI winters” occurred in the 1970s and again in the late 1980s and early 1990s, when the gap between the ambitions of AI researchers and the practical capabilities of available systems became apparent. Each of these periods was followed by a recovery progress supported by new theoretical insights or computational resources.

The contemporary resurgence of AI since the 2010s has been driven primarily by three convergent developments: the availability of very large datasets for training machine learning models, the expansion of computational power (particularly through graphical processing units), and theoretical advances in deep learning architectures. (Confalonieri et al., 2021) trace the parallel development of explainable AI as a response to the growing opacity of AI systems, showing that the history of AI is also a history of debates about transparency, interpretability, and human oversight.

(T. H. Davenport & Ronanki, 2018) document the transition from AI as an academic research field to AI as a set of commercially deployed tools, describing how organizations have increasingly integrated AI into operational and strategic functions. (Enholm et al., 2022) confirm this trajectory in their literature review, finding a sharp increase in peer-reviewed publications on AI and business value from the mid-2010s onward.

1.3.Main technologies and types of Artificial Intelligence

Artificial intelligence is not a single technology but rather a broad family of techniques and systems. Understanding the principal types is essential for situating AI's role in specific domains such as service delivery and customer interaction.

(T. H. Davenport & Ronanki, 2018) differentiate three main organizational uses of artificial intelligence (AI):

- The first is process automation, which relies on robotic process automation to execute routine digital and administrative tasks across back-office systems.
- The second is cognitive insight, which uses machine-learning techniques to identify patterns in large datasets, generate predictions, and support analytical decision-making.
- The third is cognitive engagement, which involves AI systems capable of interacting directly with employees or customers through language, recommendation, or assistance.

This typology is especially useful because it classifies AI according to organizational functions rather than purely technical characteristics.

(T. Davenport et al., 2020), writing specifically about AI in marketing and customer-facing contexts, identify machine learning, natural language processing, and computer vision as key AI technologies shaping value creation in customer relationships. Machine learning enables systems to improve their performance on a task through exposure to data without being explicitly programmed for each case. Natural language processing allows machines to interpret and generate human language, enabling applications such as chatbots, sentiment analysis, and automated communication. Computer vision enables machines to interpret visual information, supporting applications such as facial recognition, product identification, and visual search.

(Nguyen, 2024),in a telecommunications-focused study, highlights the growing importance of intelligent virtual assistants and AI-powered chatbots and virtual assistants in digitally transformed customer service environments.

(Dwivedi et al., 2021)situate these technologies within a broader multidisciplinary AI landscape, emphasizing the wide range of applications , challenges , and opportunities associated with AI development and adoption.

The following table summarizes the principal AI technologies and types most relevant to contemporary organizational and service contexts.

Table 3 the principal AI technologies and types

AI Technology / Type	Definition and Principal Application
Machine Learning (ML)	Systems that learn patterns from data and improve performance without explicit programming. Applied in recommendation engines, churn prediction, fraud detection, and personalization (T. Davenport et al., 2020).
Natural Language Processing (NLP)	Techniques enabling machines to understand and generate human language. Applied in chatbots, virtual assistants, sentiment analysis, and automated communication (T. Davenport et al., 2020; Nguyen, 2024)
Computer Vision	Systems that interpret visual data. Applied in image recognition, quality control, and customer identification , visual analysis (T. Davenport et al., 2020)
Predictive Analytics	Statistical and machine learning methods that forecast future outcomes from historical data. Applied in customer retention, demand forecasting, and risk management (Haftor et al., 2024)
Expert Systems	Rule-based systems encoding domain knowledge. to support decision-making and problem-solving. Applied in diagnostic tools and decision-support contexts(T. H. Davenport & Ronanki, 2018)
Intelligent Virtual Assistants	Conversational AI systems combining NLP and ML to interact with users. Applied extensively in customer service, self-service, and query resolution (Nguyen, 2024; World Economic Forum, 2025)

Source: Constructed from (T. Davenport et al., 2020; T. H. Davenport & Ronanki, 2018; Haftor et al., 2024; Nguyen, 2024; World Economic Forum, 2025)

The academic importance of artificial intelligence for organizations rests on two interconnected arguments: the argument from efficiency and the argument from value creation. The first holds that AI enables organizations to perform existing tasks more rapidly, consistently, and at lower cost. The second holds that AI creates new forms of value in customer relationships, strategic positioning, and competitive differentiation that were not previously available through conventional means.

(Enholm et al., 2022), in a systematic literature review of AI and business value, identify that AI contributes to organizational value through three principal pathways: operational efficiency gains (cost reduction and process acceleration), decision-quality improvements (more accurate forecasting and pattern recognition), and customer value enhancement (more personalized, responsive, and contextually relevant interactions). These pathways are not

mutually exclusive; in practice, AI investments frequently produce outcomes across all three simultaneously.

1.4.Importance of Artificial Intelligence in organizations

(T. H. Davenport & Ronanki, 2018)observe that organizations are more likely to obtain positive results from AI when they begin with specific and manageable use cases, invest in the necessary data and organizational capabilities, and deploy AI as a complement to human judgment rather than as a complete substitute for it. This observation is consistent with (Perifanis & Kitsios, 2023), who argue that the business value of AI depends critically on the organizational context in which it is deployed, including leadership, data governance, and strategic alignment.

(Gupta, 2018) frames AI as one of the central enablers of digital strategy, arguing that its transformative potential lies not merely in automating existing processes but in enabling entirely new business models and customer propositions. (Dwivedi et al., 2021)reinforce this point by noting that AI raises not only opportunities but also significant challenges for organizations, including issues of transparency, bias, workforce displacement, and regulatory compliance. (Kumar & Koshy, 2025)suggest that AI adoption in service industries can strengthen competitive positioning, particularly when organizations successfully integrate AI into customer-facing functions and improve satisfaction and retention.

In the telecommunications sector specifically, the (World Economic Forum, 2025)documents that AI applications, including network optimization, predictive maintenance, intelligent customer service, and personalized offer configuration, have become central to competitive strategy. (Asadi, 2025) identifies AI and machine learning as transformative forces in telecommunications, enabling operators to improve service quality, reduce costs, and deliver more differentiated customer experiences.

1.5.Challenges of Artificial Intelligence in organizations:

Despite its strategic importance, artificial intelligence also creates major challenges for organizations. (Dwivedi et al., 2021) show that these challenges are not only technical. Their framework groups them into social, economic, data-related, organizational and managerial, technological, political/legal, and ethical challenges. This suggests that successful AI adoption depends not only on the quality of algorithms but also on the wider organizational and institutional environment in which AI systems are introduced.

One of the most important areas of difficulty concerns data. AI systems rely heavily on data availability, quality, integration, and governance. When data are biased, incomplete, fragmented, or poorly managed, the results produced by AI become less reliable, which can reduce trust in their organizational use. At the same time, firms may face internal barriers such as limited expertise, resistance to change, weak alignment between AI initiatives and organizational strategy, and uncertainty about how AI should be embedded in existing routines and decision-making processes.

Ethical and legal issues are also central. (Dwivedi et al., 2021) emphasize concerns such as discrimination, accountability, privacy, transparency, and regulatory compliance. In the same

direction, (Confalonieri et al., 2021) argue that explainability has become increasingly important as organizations rely more on AI systems whose internal logic is often difficult for users to understand. When AI systems are not explainable, trust may decline, accountability becomes harder to establish, and their effective use may be limited, especially in contexts where transparency is essential.

(Enholm et al., 2022) shows that AI creates business value only when certain enabling conditions are present, including adequate data, appropriate technological infrastructure, organizational readiness, managerial support, and compatibility with existing processes. This means that AI does not generate value automatically. Its success depends on good governance, human oversight, and the organization's ability to align technological innovation with operational and strategic needs.

2. Customer experience

2.1. Definition of experience

Experience may be understood as a personal and subjective phenomenon that emerges through and individual's interaction with inputs, in customer experience literature, it is considered not a standardized product impartially provided to all, but rather a subjective experience influenced by personal interpretation and individual life experiences.

(Becker & Jaakkola, 2020)show that customer experience research draws on different research traditions and that experience is inherently subjective and phenomenological. (Gentile et al., 2007)also present experience as a holistic phenomenon involving the person at different levels. In their discussion, experience goes beyond purely rational evaluation and includes emotional, sensorial, physical, relational, and spiritual involvement.

2.2. Definition of customer experience

(Becker & Jaakkola, 2020)argue that customer experience is a distinct concept from related notions such as satisfaction, service quality, and value, and that its distinctiveness lies in its phenomenological character: experience is inherently subjective and is constituted by the customer, not delivered by the firm. The firm creates conditions and touchpoints; the customer constructs an experience through personal interpretation, context, memory, and expectation. This constitutive character makes customer experience irreducibly individual, even when objective service conditions are identical across customers.

(Lemon & Verhoef, 2016), in one of the most widely cited conceptual frameworks in the field, define customer experience as a multidimensional construct focusing on a customer's cognitive, emotional, behavioral, sensorial, and social responses to a firm's offerings during the customer's entire purchase journey. This definition has three notable features: it is explicitly multidimensional, encompassing responses of different types; it is temporal, extending across the entire journey rather than being restricted to discrete transactions; and it is relational, referring to the customer's responses to the firm's offerings rather than to an isolated product or service.

(DeKeyser et al., 2015)similarly define customer experience as the totality of the customer's responses to the stimuli he or she encounters throughout the search, purchase, consumption, and post-consumption stages of the purchase cycle. Their framework emphasizes that no single element of a service interaction is experienced in isolation; every touchpoint contributes to a cumulative and integrative experience that the customer evaluates holistically.

(Gentile et al., 2007)contribute a complementary perspective, emphasizing that the customer experience originates from a set of interactions between a customer and a product, a company, or part of its organization, which provoke a reaction. They underline that this reaction is entirely personal and implies the customer's involvement at different levels-rational, emotional, sensorial, physical, and spiritual. Their formulation is notable for its recognition that experience is not merely cognitive but involves the whole person.

2.3.Dimensions of customer experience

Customer experience is multidimensional by definition, and the academic literature has proposed several overlapping but complementary frameworks for organizing its constituent elements. The most influential are reviewed below.

(Gentile et al., 2007)identify six dimensions of customer experience, each corresponding to a different mode of customer engagement with the firm. These dimensions are not independent — they interact and combine in the customer's overall experiential response.

Table 4: dimensions of customer experience

Dimension	Description
Sensorial component	Stimulation of the senses, sight, sound, smell, taste, touch that contributes to aesthetic pleasure, excitement, or dissatisfaction.
Emotional component	Affective states and moods induced through interaction with the brand, product, or service environment.
Cognitive component	Processes of thinking, imagination, and learning engaged by the interaction, often involving problem-solving or creativity.
Pragmatic component	Practical acts carried out in the use of the product or service, particularly the usability and instrumentality of the offering.
Lifestyle component	The affirmation or expression of the customer's values, beliefs, and way of living through the consumption experience.
Relational component	The social dimension of experience, including interaction with other people and the sense of belonging to a community.

Source: (Gentile et al., 2007)

(Lemon & Verhoef, 2016) organize customer experience along a temporal dimension — the customer journey — which they divide into pre-purchase, purchase, and post-purchase stages. Within each stage, the customer encounters multiple touchpoints, which (Lemon & Verhoef, 2016) classify into four categories:

- brand-owned touchpoints (controlled by the firm)
- partner-owned touchpoints (controlled by partners)
- customer-owned touchpoints (independent of the firm)
- and social/external touchpoints (including peer influence and word-of-mouth). This journey-based framework is important because it positions experience as a process rather than a moment.

(Klaus & Maklan, 2013) propose a more parsimonious framework consisting of four experiential quality dimensions: product experience (quality and fit of the offering), outcome focus (whether the interaction achieves the customer's goal), moments of truth (specific critical encounters that disproportionately shape the overall evaluation), and peace of mind (confidence and ease in the relationship with the firm). Their framework is notable for its emphasis on the outcome dimension of experience alongside the process dimension.

(DeKeyser et al., 2015) complement these frameworks by identifying five response types cognitive, emotional, physical, sensorial, and social and arguing that they operate simultaneously across all touch points and journey stages. They also introduce the concept of contextual factors (individual, social, cultural, and temporal) that shape how customers interpret and respond to service stimuli. This contextual layer is important because it explains why the same objective service conditions can produce very different experiential evaluations across customers.

(Becker & Jaakkola, 2020) argue for a stricter conceptualization that reserves the term “customer experience” for those customer responses that arise from firm-related stimuli and that are not the direct result of intentional behavior by the firm. They distinguish experience from the deliberate seeking of stimuli, suggesting that experience is always in part unintended and emergent. Their contribution is important because it clarifies that firms can design for customer experience but cannot fully control it.

2.4.Evolution of customer experience in the academic literature

The concept of customer experience as a distinct academic object has a relatively recent but rapidly expanding history. Its emergence as a formal field of inquiry can be traced through several identifiable intellectual stages.

Table 5: evolution of customer experience.

Period	Intellectual Development
1980s–1990s	Foundational contributions from (Holbrook & Hirschman, 1982) and (Pine & Gilmore, 1998) establish the notion that consumption is fundamentally experiential and that experience constitutes a distinct economic offering. Service quality literature (Parasuraman et al., 1988) dominates service research but focuses on attribute-level evaluation rather than holistic experience.
Early 2000s	Customer experience begins to be treated as a multidimensional construct that goes beyond satisfaction and service quality. (Gentile et al., 2007) formalize customer experience through sensorial, emotional, cognitive, pragmatic, lifestyle, and relational dimensions.
2010s	Rapid expansion of the customer experience literature(Klaus & Maklan, 2013) develop more rigorous measurement frameworks. (Lemon & Verhoef, 2016) provide an integrative conceptual framework covering the full customer journey. Experience becomes a central construct in services marketing and strategic management.
2020s–present	Growing attention to digital and AI-enabled experience. (Becker & Jaakkola, 2020)sharpen the theoretical foundations of the concept. (Ameen et al., 2021) and others examine how artificial intelligence transforms the nature and structure of customer experience. Omnichannel and digital journey frameworks become standard.

Source: Established by the author based on (Holbrook & Hirschman, 1982) and (Parasuraman et al., 1988) and (Pine & Gilmore, 1998) and (Gentile et al., 2007) and (Klaus & Maklan, 2013) and (Lemon & Verhoef, 2016) (Becker & Jaakkola, 2020) and (Ameen et al., 2021)

A notable feature of this intellectual trajectory is that the concept of customer experience began as a critique of existing frameworks—particularly service quality and satisfaction models—that were seen as insufficiently capturing the subjective, holistic, and temporal character of how customers engage with firms. As (Becker & Jaakkola, 2020)observe, the definition of customer experience has evolved significantly and remains contested, but there is broad consensus that it is more than the sum of individual service transactions and more than cognitive evaluation of quality.

2.5.Importance of customer experience

The academic and managerial importance of customer experience rests on a substantial and convergent body of evidence linking positive customer experiences to a range of desirable outcomes at both the individual and organizational levels.

At the individual level, (Lemon & Verhoef, 2016) document that customer experience influences repurchase intention, brand loyalty, willingness to pay, and advocacy behavior. (DeKeyser et al., 2015) argue that firms which successfully design and manage customer experience create stronger and more durable bonds with their customers because experiential outcomes are more difficult to replicate than product or price advantages. (Gentile et al., 2007)

connect customer experience directly to value co-creation, arguing that experience is the primary mechanism through which customer's appropriate value from their interactions with firms.

At the organizational level, (Klaus & Maklan, 2013) provide empirical evidence that experiential quality dimensions are significantly more powerful predictors of customer loyalty and word-of-mouth than traditional service quality measures. This finding has important implications for organizations seeking to build sustainable competitive positions in markets where product and price differentiation is difficult. (Becker & Jaakkola, 2020) argue that customer experience has become a fundamental theoretical construct for services marketing because it captures the essential character of service interactions, their subjectivity, temporality, and emotional depth, better than any predecessor concept.

(Ameen et al., 2021) demonstrate that in the context of artificial intelligence, customer experience takes on additional dimensions of complexity: the introduction of AI-powered interactions creates new experiential possibilities but also new risks, including trust concerns, reduced human interaction, perceived sacrifice, and the complexity of AI-enabled service experiences. This is why understanding customer experience as a general concept is a necessary foundation for any analysis of how AI transforms it

3. Service quality in AI-enabled environments

3.1.Definition of service quality

Service quality is one of the most extensively studied concepts in services marketing and management. In its classical formulation, service quality refers to the customer's overall assessment of the superiority or excellence of the service, based on a comparison between expected and perceived performance across a set of relevant attributes. This gap-based definition, most fully articulated in the SERVQUAL model developed by (Parasuraman et al., 1988), established the conceptual foundation that dominated service quality research for two decades.

Building on this foundation, (Wirtz et al., 2018) show that the use of service robots and AI transforming frontline service delivery and creating new challenges for how service performance is evaluated in technology-mediated environments.

(Ameen et al., 2021) show that in AI-enabled service settings, customer evaluations depend not only on conventional service factors but also on trust, personalization, convenience, persived sacrifice, and the quality of AI-enabled interactions

service quality must be understood as an emergent property of the interaction between human agents, technological systems, and customer expectations that evolve as customers become more familiar with AI-enabled service modes. Quality is no longer simply a function of staff behavior and physical environment; it is increasingly a function of how well artificial intelligence systems understand, anticipate, and respond to individual customer needs.

3.2.Classical foundations of service quality

The classical literature on service quality is built on three foundational contributions that established the core concepts, dimensions, and measurement frameworks that continue to inform contemporary research.

The most influential contribution is the SERVQUAL model developed by (Parasuraman et al., 1988), which proposed that service quality could be measured as the gap between customer expectations and perceived service performance across five dimensions. These dimensions "reliability, responsiveness, assurance, empathy, and tangibles" remain the most widely referenced typology literature and continue to be used, adapted, and extended in contemporary research. Although the SERVQUAL model was developed in the context of human-delivered services, its underlying logic — that service quality is fundamentally a matter of meeting or exceeding customer expectations — remains valid in AI-enabled contexts.

(Wirtz et al., 2018) connect the classical service quality literature to the contemporary AI-enabled context by noting that the core dimensions identified by (Parasuraman et al., 1988). are still present in AI-mediated service interactions, but are expressed through fundamentally different mechanisms. Reliability, for example, no longer depends solely on the consistency of human staff performance but on the algorithmic accuracy and system uptime of AI tools. Responsiveness is no longer limited by the availability of human agents but is potentially unlimited through 24/7 automated service systems.

The significance of the classical SERVQUAL framework for the present study lies in this continuity: the concept of service quality has not been abandoned in AI-enabled contexts, but it has been transformed. Understanding the classical dimensions is therefore a prerequisite for understanding how AI reshapes and extends them.

Table 6:the classical SERVQUAL dimensions and their definition

Classical SERVQUAL dimension	Original definition
Reliability	The ability to perform the promised service dependably and accurately.
Responsiveness	The willingness to help customers and provide prompt service.
Assurance	The knowledge and courtesy of employees and their ability to inspire trust and confidence.
Empathy	The caring, individualised attention that the firm provides to its customers.
Tangibles	The appearance of physical facilities, equipment, personnel, and communication materials.

Source: (Parasuraman et al., 1988)

3.3.Evolution of service quality in digital and AI-enabled contexts

The progressive digitization of service environments, and more recently the integration of artificial intelligence into service delivery, has placed classical service quality framework under pressure to evolve. This evolution has occurred through both the adaptation of existing service concepts to technology-mediated settings and the growing importance of new evaluative issues specific to AI-enabled interactions.

(Wirtz et al., 2018), show that service robots and AI are transforming frontline service delivery and changing how service performance is evaluated in technology-mediated environments. Their analysis highlights that customer evaluations increasingly depend not only on functional performance but also on factors such as trust, social presence, rapport, and the fit between customer needs and robot capabilities.

(T. H. Davenport & Ronanki, 2018) indicate that AI-powered systems can move service processes beyond purely reactive responses by using data to generate insights, automate activities , and support targeted customer engagement. In this sense, AI-enabled service systems allow organizations to act more proactively by identifying patterns and customer needs before they are explicitly expressed.

(Confalonieri et al., 2021) draw attention to the growing significance of explainability in AI-based systems, demonstrating how transparency and interpretability become more crucial when automated systems influence choices, suggestions, and interactions with customers.

(Chen & Prentice, 2025)examining the integration of AI and customer experience in service contexts, confirm that the evolution of service quality in AI-enabled environments involves both a transformation of classical dimensions and the emergence of new ones. Their analysis positions personalization as a particularly important evolved dimension: AI enables a degree of individualization in service delivery that was previously impossible at scale, and customers have come to expect—and evaluate service quality against—this personalized standard.

(Abu Daqar & Smoudy, 2019) provide empirical evidence that AI-powered tools, particularly chatbots and intelligent recommendation systems, can improve customer experience through more personalized customer service and more effective customer support, particularly by reducing waiting time and improving service processes.

3.4.Main dimensions of service quality in AI-enabled environments

Drawing on the literature reviewed, service quality in AI-enabled environments may be analytically organized around four principal dimensions that incorporate both evolved classical attributes and genuinely new properties introduced by artificial intelligence. These dimensions are not mutually exclusive; they interact and combine in the customer's overall quality evaluation.

Table 7:the dimensions of service quality in AI-enabled environments

Dimension	Description and Sources
Responsiveness and availability	AI-powered service systems can improve responsiveness by enabling faster replies, broader service availability, and, in some cases, more proactive forms of customer engagement.(T. H. Davenport & Ronanki, 2018; Wirtz et al., 2018; World Economic Forum, 2025)
Personalization	AI systems can analyze customer data, preferences, and behavioral patterns to tailor interactions, recommendations, and communications more precisely to individual users(Ameen et al., 2021; Chen & Prentice, 2025; T. Davenport et al., 2020)
Reliability and consistency	In AI-enabled contexts, service reliability increasingly depends on the accuracy, consistency, and availability of technological systems, which can reduce some of the variability associated with human-delivered service(T. H. Davenport & Ronanki, 2018; Wirtz et al., 2018)
Transparency and explainability	As AI systems take a more direct role in service delivery, transparency and explainability become increasingly important in how customers evaluate automated decisions, recommendations, and interactions.(Confalonieri et al., 2021; Dwivedi et al., 2021)

Source: Established by the author based on the literature review

3.5.Importance of service quality in AI-enabled environments

The importance of service quality as a concept in the context of AI-enabled service delivery is both theoretical and practical. Theoretically, service quality provides the conceptual link between AI adoption at the organizational level and customer experience at the individual level: it is through the quality of AI-mediated service interactions that AI capabilities translate into customer outcomes.

(Wirtz et al., 2018) indicate that organizations that deploy AI in service delivery must attend carefully to the quality of AI-mediated interactions, because poorly implemented AI can actively damage service quality, introducing errors, creating frustrating interactions, and eroding customer trust, even as it achieves operational efficiencies. The introduction of AI into the service environment does not automatically improve service quality; it introduces new quality challenges alongside new quality opportunities.

(Ameen et al., 2021) provide empirical evidence that customers evaluate AI-enabled service interactions on the same core dimensions as human-delivered service—responsiveness, personalization, and reliability — but apply additional criteria related to the naturalness and trustworthiness of AI interactions. This finding suggests that AI-enabled service quality is a genuinely hybrid concept, incorporating both traditional service quality logic and AI-specific evaluation criteria.

(Enholm et al., 2022) identify service quality improvement as one of the principal mechanisms through which AI generates measurable business value, noting that organizations that invest in AI-powered service delivery consistently report improvements in customer

satisfaction metrics alongside operational efficiency gains. This dual outcome, efficiency and quality, distinguishes AI-enabled service quality improvement from purely cost-driven automation initiatives.

4. Customer experience innovation

4.1. Definition of customer experience innovation

Customer experience innovation refers to the introduction of new or significantly transformed approaches to the design, delivery, and management of customer interactions that produce qualitatively different experiential outcomes for customers. It is distinguished from incremental improvement in customer experience, which involves doing the same things better, by its transformative character: customer experience innovation changes the nature, structure, or fundamental character of how customers interact with a firm, not merely the quality of existing interaction modes.

Drawing on the reviewed literature, customer experience innovation may be understood as the transformation of customer interactions through new capabilities that enable more proactive, personalized, continuous, and automated forms of engagement. AI-enabled systems can reshape customer experience by moving beyond traditional service constraints and making possible new forms of interaction that differ qualitatively from conventional service encounters (Ameen et al., 2021; Chen & Prentice, 2025; Kumar & Koshy, 2025)

(Ameen et al., 2021)frame AI-related transformation in customer experience as a form of innovation, arguing that AI introduces entirely new modes of customer interaction — proactive engagement, hyper-personalization, seamless Omnichannel continuity — that represent a departure from the experiential norms of traditional service delivery. These new models are not simply improved versions of existing interactions; they are structurally different, enabled by capabilities that did not previously exist in commercial service contexts.

(Chen & Prentice, 2025)describe the integration of AI into customer experience as producing a qualitative shift in the customer-firm relationship: interactions that were previously episodic and reactive become continuous and anticipatory; interactions that were previously standardized become individualized; and interactions that required customer effort become increasingly automated and proactive. These shifts collectively constitute what can be understood as innovation in customer experience.

(Kumar & Koshy, 2025)use the concept of AI-enabled innovation in customer relationships to describe the ways in which AI allows organizations to move beyond the constraints of traditional service delivery particularly the limitations of human availability, attention, and consistency to offer interaction quality that is persistently high, individually relevant, and proactively oriented. The concept of customer experience innovation in this sense refers to the outcomes of this transformation as perceived and evaluated by customers.

4.2. Distinction between customer experience and customer experience innovation

The distinction between customer experience and customer experience innovation is important and must be stated clearly, because the two concepts are related but not identical, and conflating them leads to conceptual imprecision.

Customer experience, as established in Section 2, refers to the holistic, subjective, and cumulative set of responses that customers construct through interactions with a firm across all touchpoints and journey stages. It is a general construct that describes the phenomenological nature of customer-firm interaction. Customer experience can be positive or negative, improving or deteriorating, but its existence as a construct does not imply any particular direction of change.

Customer experience innovation, by contrast, is a directional and transformative concept. It specifically refers to instances where the nature or structure of customer experience is fundamentally changed — where new capabilities, approaches, or designs create experiential possibilities that did not previously exist or that represent a discontinuous departure from prior experiential norms (Ameen et al., 2021; Chen & Prentice, 2025)**.**

The distinguishing criterion is not merely quantitative improvement (doing the same thing better) but qualitative transformation (doing something structurally or categorically different). (Becker & Jaakkola, 2020)

Table 8: Distinction between CX and CEI

Dimension	Customer experience	Customer experience innovation
Focus	Holistic subjective responses to firm interactions	Qualitatively new modes of interaction enabled by innovation
Temporal scope	Ongoing and cumulative across the journey	Marks a point of structural departure from prior experience norms
Direction	Can be positive or negative	Implies qualitative advancement or structural change
Enabler	All firm activities and stimuli	New capabilities — particularly technological — that create previously unavailable interaction modes
Key authors	(DeKeyser et al., 2015; Gentile et al., 2007; Lemon & Verhoef, 2016)	(Ameen et al., 2021; Chen & Prentice, 2025; Kumar & Koshy, 2025)

Source: (Becker & Jaakkola, 2020)

(Becker & Jaakkola, 2020) provide a conceptual basis for this distinction by arguing that customer experience is constituted by the customer and cannot be fully controlled or determined by the firm. Customer experience innovation, however, is a category of firm action — it describes what firms do (introduce new capabilities, redesign interactions, deploy new technologies) that creates conditions for qualitatively new experiential responses. The innovation is in the design and capability; the experience is in the customer's response

4.3.Main dimensions of customer experience innovation

Customer experience innovation in AI-enabled service contexts may be understood along several analytically distinct dimensions, which together capture the different ways in which AI transforms the nature of customer interactions.

Table 9: Dimensions of CEI

Dimension	Description and sources
Modernity and innovation	AI-enabled services contribute to a more modern and innovative customer experience by introducing automated, intelligent, and data-driven service interactions. (T. H. Davenport & Ronanki, 2018)explain that AI supports organizations through process automation, cognitive insight, and cognitive engagement(T. Davenport et al., 2020) show that AI transforms customer-facing processes by enabling new forms of marketing, service interaction, and customer engagement.
Personalization	Personalization refers to the capacity of AI to adapt services, offers, recommendations, and communications to individual customer profiles. (T. Davenport et al., 2020)explain that AI allows firms to use customer data to improve targeting and recommendation quality(Ameen et al., 2021) show that personalization in AI-enabled services contributes positively to customer experience.
Proactivity	Proactivity refers to the ability of AI-enabled systems to anticipate customer needs or problems before they are explicitly expressed. (T. Davenport et al., 2020)associate AI with predictive analytics, which allows firms to identify customer needs, risks, and opportunities in advance(World Economic Forum, 2025) also highlights the use of AI in telecommunications for predictive maintenance, customer service improvement, and proactive service management.
Seamlessness	Seamlessness refers to the continuity and smoothness of customer interactions across different service touchpoints(Lemon & Verhoef, 2016) explain that customer experience is formed across the full customer journey through multiple touchpoints. (Ameen et al., 2021) show that AI-enabled services can improve customer experience by increasing convenience and improving the quality of digital service interactions.
Speed and efficiency	Speed and efficiency refer to the ability of AI-enabled services to reduce waiting time, automate routine tasks, and provide faster responses to customer requests. (T. H. Davenport & Ronanki, 2018)explain that AI can automate business processes and improve operational efficiency. (Abu Daqar & Smoudy, 2019) show that AI-powered tools, particularly chatbots, can improve customer service by reducing waiting time and supporting faster interaction.

Emotional engagement	Emotional engagement refers to the customer's affective response to AI-enabled service interactions, especially when the interaction is perceived as useful, convenient, personalized, and responsive. (Ameen et al., 2021) show that AI-enabled service quality, personalization, convenience, and trust contribute to customer experience (Wirtz et al., 2018) emphasize that AI-enabled frontline service encounters are evaluated not only through functional performance but also through social, relational, and emotional dimensions.

Source: Established by the author based on the literature review

Artificial intelligence does not transform customer experience through a single mechanism. Instead, it contributes to customer experience innovation through several complementary dimensions. AI can modernize service interactions, personalize customer offers, anticipate needs, improve continuity across touchpoints, increase speed and efficiency, and influence the emotional quality of the interaction. These dimensions provide the conceptual basis for the empirical measurement of customer experience innovation in this study.

4.4.Importance of customer experience innovation

The academic and managerial importance of customer experience innovation as a concept lies in its capacity to describe and explain a phenomenon that neither customer experience alone nor service quality alone can fully capture: the structural transformation of customer-firm interaction through new capabilities, and the competitive significance of that transformation.

(Ameen et al., 2021) argue that AI-enabled customer experience innovation is one of the most significant strategic developments in contemporary service industries, because it enables organizations to offer interaction quality and personalization that is difficult or impossible to achieve through conventional means. This makes customer experience innovation a potential source of sustainable competitive differentiation in markets where product and price competition are intense.

(Kumar & Koshy, 2025) provide evidence that AI-enabled innovations in customer interaction — including proactive retention, personalized recommendations, and intelligent self-service — contribute measurably to customer retention and lifetime value. Their findings suggest that customer experience innovation is not merely a conceptual label but a measurable business outcome with significant commercial implications.

(Chen & Prentice, 2025) emphasize that the importance of customer experience innovation lies not only in its direct effects on customer behavior but in its implications for the customer-firm relationship as a whole: organizations that consistently deliver innovative customer experiences create stronger relational bonds, higher switching costs, and greater advocacy among their customers. In this sense, customer experience innovation is both a competitive tool and a relational investment.

(Gupta, 2018) situates customer experience innovation within the broader context of digital strategy, arguing that the organizations most likely to sustain competitive advantage in the digital era are those that use technological capabilities — including AI — not simply to improve existing operations but to reimagine the fundamental nature of their relationship with customers. Customer experience innovation is the experiential manifestation of this re-imagination.

From the perspective of academic research, the concept of customer experience innovation is important because it directs attention to the transformative rather than merely the incremental effects of AI on customer interactions. (Dwivedi et al., 2021)argue that AI represents a genuinely disruptive force in service industries and that research frameworks must be capable of capturing not merely whether AI improves known quality attributes but whether it creates qualitatively new forms of value for customers. Customer experience innovation is the concept that enables this analysis

This first chapter has presented the conceptual foundations of the study through the systematic examination of four interrelated notions: artificial intelligence, customer experience, service quality in AI-enabled environments, and customer experience innovation.

Artificial intelligence was presented as a family of computational techniques, centered on machine learning, natural language processing, and predictive analytics — whose intellectual history spans seven decades and whose organizational importance has grown substantially with the data-rich and computationally powerful environment of the past decade. Its significance for service industries lies in its capacity to transform both the operational infrastructure of service delivery and the experiential character of customer interactions.

Customer experience was established as a holistic, multidimensional, and subjective construct encompassing cognitive, emotional, behavioral, sensorial, and social responses across the full customer journey. Its academic importance lies in its capacity to capture dimensions of customer response that narrower constructs — service quality and satisfaction cannot reach, and in its demonstrated links to loyalty, advocacy, and competitive advantage.

Service quality in AI-enabled environments was examined as a concept that builds on classical foundations — particularly the SERVQUAL framework — while extending and transforming them to accommodate the distinctive properties of AI-mediated service interactions. Its principal contemporary dimensions responsiveness and availability, personalization, reliability and consistency, and transparency and explain ability reflect both the continuity and the transformation of classical service quality logic in the face of AI.

Customer experience innovation was defined as the introduction of qualitatively new or significantly transformed modes of customer interaction, enabled by AI capabilities, that produce experiential outcomes substantially different from those achievable through conventional service approaches. It was distinguished from incremental improvement in customer experience by its transformative character, and its principal dimensions — proactive engagement, hyper-personalization, seamless Omni channel continuity, and real-time intelligent responsiveness — were presented and discussed.

Together, these four conceptual sections provide the theoretical vocabulary and definitional clarity necessary for the subsequent chapters of the study, which will examine the relationships between these concepts in a specific organizational and sectorial context, and will investigate empirically the mechanisms through which artificial intelligence shapes customer experience outcomes.

Chapter 02: Methodological framework and host organisation

This chapter outlines the study's contextual and methodological framework. Following the development of the theoretical underpinnings in Chapter 01, this chapter describes the methodological decisions made in order to carry out the empirical inquiry. The research process, epistemological stance, research approach, study design, time horizon, data collection method, data analysis processes, population, sampling strategy, and ethical considerations are presented first. The host company, Ooredoo Algeria, is next presented in order to place the study within its sectorial and organizational framework. Therefore, the methodological foundation needed for the analysis of the empirical results is provided in this chapter.

Section 01: Methodological framework

1. Research process

The research process refers to the set of methodological choices through which a study is structured, from the formulation of the research problem to the collection and analysis of empirical data. It includes the epistemological position, the research approach, the research design, the time horizon, the data collection method, and the techniques used to analyze the results (Al-Ababneh, 2020; Saunders et al., 2023).

In this study, the research process examines the relationship between AI adoption, AI-enabled service quality, and customer experience innovation in the context of Ooredoo Algeria. This methodological structure is appropriate for a quantitative study because the variables are measurable, the hypotheses are testable, and the relationships can be analyzed statistically using SPSS (Hair Jr et al., 2019; Saunders et al., 2023).

1.1. Epistemological positioning

Epistemology refers to the nature of knowledge and to the way scientific knowledge is produced, justified, and validated. In management research, epistemological positioning is important because it determines the researcher's assumptions about reality and influences the choice of methodology and methods (Al-Ababneh, 2020).

In the present study, a **positivist epistemological position** was adopted. Positivism assumes that social phenomena can be studied objectively through observable and measurable facts. It is generally associated with structured methodology, quantifiable observations, hypothesis testing, and statistical analysis (Al-Ababneh, 2020; Saunders et al., 2023).

This position is appropriate because the present research examines measurable relationships between AI adoption, AI-enabled service quality, and customer experience innovation. These constructs were measured through questionnaire items and analyzed statistically, which makes the positivist paradigm consistent with the objective of the study (Hair Jr et al., 2019; Saunders et al., 2023).

1.2. Research approach

The research approach refers to the logic through which theory and empirical data are connected. Methodological literature generally distinguishes between deductive and inductive approaches. A deductive approach is based on existing theories, from which hypotheses are formulated and then tested using empirical data, whereas an inductive approach is generally used to develop theory from observations collected in the field (Al-Ababneh, 2020; Saunders et al., 2023)

This research work follows a deductive approach. This choice is justified because the research is grounded in theoretical foundations developed in Chapter 01, including the Technology Acceptance Model (Davis, 1989), the AI-enabled service quality literature (Huang and Rust, 2018), and the customer experience innovation framework (Lemon & Verhoef, 2016; Pine & Gilmore, 1998) Based on these foundations, hypotheses were formulated and tested through quantitative data collected from Ooredoo Algeria customers (Saunders et al., 2023)

This approach was adopted because the objective of the study is to examine relationships between predefined variables rather than to generate a new theory from open-ended field exploration. The deductive approach is therefore suitable for testing whether AI adoption influences customer experience innovation directly and indirectly through AI-enabled service quality (Al-Ababneh, 2020; Saunders et al., 2023)

1.3.Research design

Research design refers to the general plan through which the research problem, research objectives, data collection method, and analysis techniques are connected. It allows the researcher to organize the empirical study in a coherent way and to ensure that the selected method is appropriate for answering the research questions (Saunders et al., 2023)

The research is based on a quantitative explanatory design. This design is quantitative because the variables were measured numerically through a structured questionnaire. It is explanatory because the relationships between artificial intelligence adoption, AI-enabled service quality, and customer experience innovation were examined rather than merely described (Al-Ababneh, 2020; Saunders et al., 2023)

This design was adopted because the study is not limited to describing the use of artificial intelligence at Ooredoo Algeria. Rather, it aims to analyze whether AI adoption contributes to customer experience innovation and whether AI-enabled service quality plays a mediating role in this relationship. Such a design is therefore consistent with the objective of testing the hypothesized direct and indirect relationships between AI adoption, AI-enabled service quality, and customer experience innovation (Hair Jr et al., 2019; Hayes, 2013)

1.4.Time horizon

The time horizon refers to the period during which the data are collected. Methodological literature generally distinguishes between cross-sectional studies, where data are collected once during a limited period, and longitudinal studies, where data are collected repeatedly over time in order to examine change and evolution (Al-Ababneh, 2020; Saunders et al., 2023)

In the present study, a cross-sectional time horizon was adopted. The questionnaire was administered once during a specific period of the fieldwork at Ooredoo Algeria. The purpose is to capture respondents' perceptions of artificial intelligence adoption, AI-enabled service quality, and customer experience innovation at a given moment (Al-Ababneh, 2020).

This choice is appropriate because the study does not aim to follow the evolution of these perceptions over time. Instead, it analyses the relationships between the variables at one point in time, which is consistent with the quantitative explanatory nature of the research (Saunders et al., 2023)

1.5.Data collection method

The primary data collection method adopted in this study is the **self-administered structured questionnaire**. This method is consistent with the positivist, deductive, and quantitative orientation of the research, as it allows variables to be measured through standardized items and enables the collected data to be analyzed statistically (Saunders et al., 2023).

The questionnaire has been designed as a Google Forms instrument addressed exclusively to Ooredoo Algeria customers. This choice is justified by the objective of the study, which aims to measure customers' perceptions of artificial intelligence adoption, AI-enabled service quality, and customer experience innovation. Since the dependent variable of the research is customer experience innovation, customers represent the most appropriate respondents for the empirical analysis.

The questionnaire was designed in three languages—French, English, and Arabic—in order to ensure accessibility across Ooredoo Algeria's multilingual customer base. All measurement items use a five-point Likert scale, ranging from 1 = strongly disagree and 5 = strongly agree. This scale instrument comprises four sections: Section A collects general demographic and profile information; Section B measures perceived AI adoption as the independent variable; Section C measures AI-enabled service quality as the mediating variable; and Section D measures customer experience innovation across its six dimensions as the dependent variable.(Saunders et al., 2023)

Although the internship provided contextual information about internal AI use at Ooredoo Algeria, the statistical analysis of this study is based only on customer responses. This methodological choice ensures direct alignment between the respondents, the research model, and the objective of measuring customer experience innovation.

The full questionnaire used for data collection is presented in **Appendix A**.

- **Structure of the questionnaire**

The questionnaire was developed to measure the three main constructs of the research model from the customer perspective. It includes perceived AI adoption as the independent variable, AI-enabled service quality as the mediating variable, and customer experience innovation as the dependent variable across six sub-dimensions. This path provides the primary dataset for testing all hypotheses of the study.

Table 10: The questionnaire structure

Section	Construct	Role in the model	Items
A (A1–A6)	Respondent profile + channel usage + frequency	Profile / control variables	6 items
B (B1–B6)	Perceived AI Adoption	Independent Variable (IV) — H1 & H2	6 items
C (C1–C5)	AI-Enabled Service Quality	Mediating Variable (M) — H2 & H3	5 items
D (D1–D17)	Customer Experience Innovation (6 dimensions)	Dependent Variable (DV) — H1 & H3 & H1a–H1f	17 items
Total			34 items

Source: Elaborated by the researcher

- **Operationalization of the main constructs**

The questionnaire items were developed through an operationalization process based on the conceptual model of the study and the literature reviewed in Chapter 01. Each construct was translated into measurable items according to its theoretical meaning and its relevance to the telecommunications context. Items related to perceived AI adoption were inspired by technology acceptance and AI-in-service literature. Items related to AI-enabled service quality were adapted from service quality and AI-enabled customer experience literature. Items related to customer experience innovation were developed from customer experience, customer journey, and experience innovation literature. The wording of all items was contextualized to Ooredoo Algeria's digital and AI-enabled services in order to ensure clarity and relevance for respondents.

Table 11: Operationalization of the main constructs

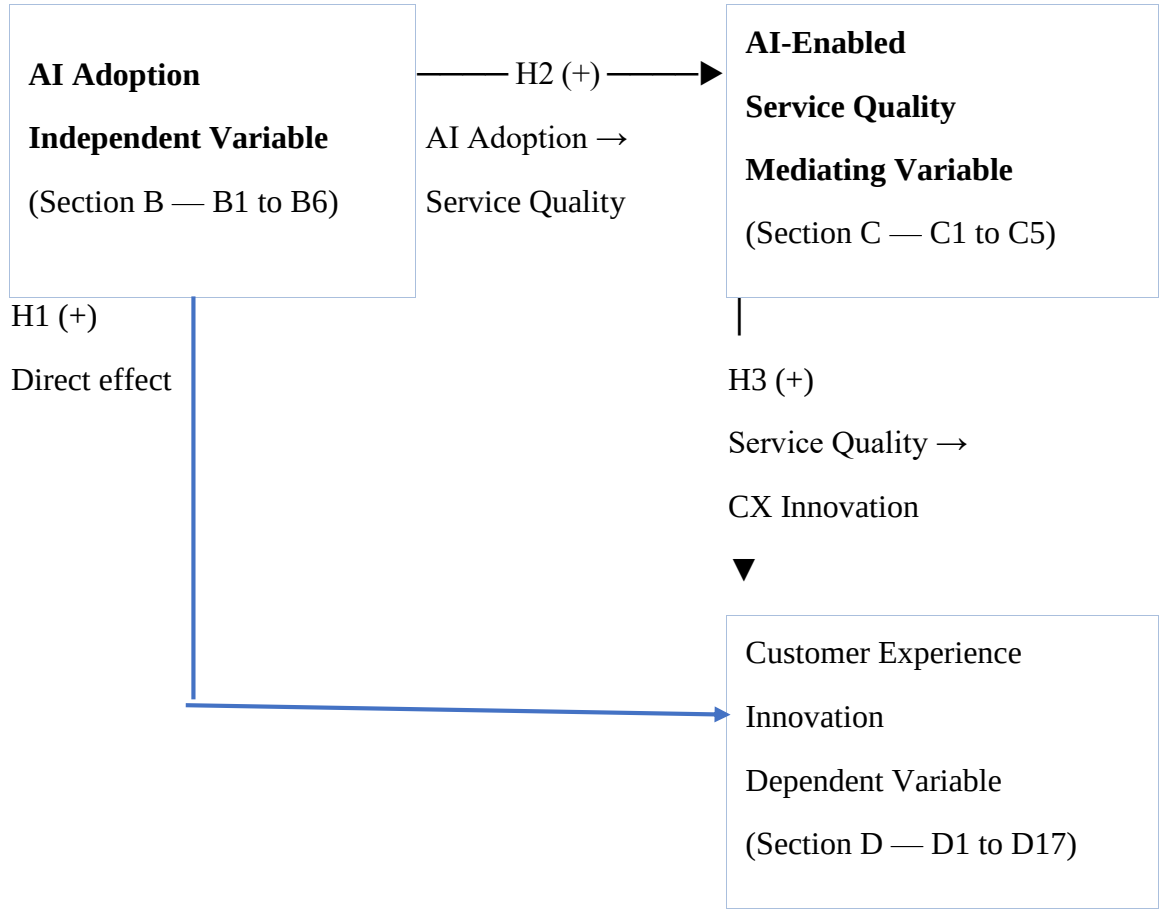
Construct	Role in the model	Items	Main dimensions	Main theoretical support
Perceived AI Adoption	Independent variable	CUST_B1–CUST_B6	Advanced technologies, automation, smart interaction, chatbots, and real-time information	(Ameen et al., 2021; T. H. Davenport & Ronanki, 2018; Davis, 1989; Huang and Rust, 2018)
AI-Enabled Service Quality	Mediating variable	CUST_C1–CUST_C5	Responsiveness, reliability, needs fulfillment, convenience, and overall service quality	(Ameen et al., 2021; Huang and Rust, 2018; Parasuraman et al., 1988; Wirtz et al., 2018)
Customer Experience Innovation	Dependent variable	CUST_D1–CUST_D17	Modernity and innovation, personalization, proactivity, seamlessness, speed and efficiency, and emotional engagement	(Ameen et al., 2021; Gentile et al., 2007; Lemon & Verhoef, 2016; Pine & Gilmore, 1998)
Respondent profile	Descriptive / control	CUST_A1–CUST_A6	Channel use, gender, age, education, customer duration, frequency of digital channel use	(Hair Jr et al., 2019; Saunders et al., 2023)

Source: Established by the researcher based on literature reviewed in Chapter 01.

- **Conceptual model and research hypotheses**

The figure below presents the conceptual model of the study, illustrating the direct and indirect relationships between the three main constructs. Four main hypotheses (H1, H2, H3, H4) and six sub-hypotheses (H1a to H1f) are derived from this model. The mediation relationship will be examined using Hayes' PROCESS macro model 4 in SPSS.

Figure 2: Conceptual model: AI adoption, AI-enabled service quality, and customer experience innovation



Source: Established by the author based on

In addition to the four main hypotheses, six sub-hypotheses examine the effect of AI adoption on each individual dimension of customer experience innovation, as detailed in the table below.

Table 12:Sub-hypotheses H1a to H1f: AI adoption effects on CEI dimensions

Sub-Hypothesis	Effect	Dimension of CEI	Questionnaire Items
H1a	AI Adoption → (+)	Modernity & Innovation	D1 – D4
H1b	AI Adoption → (+)	Personalization	D5 – D7
H1c	AI Adoption → (+)	Proactivity	D8 – D10
H1d	AI Adoption → (+)	Seamlessness	D11 – D12
H1e	AI Adoption → (+)	Speed & Efficiency	D13 – D14
H1f	AI Adoption → (+)	Emotional Engagement	D15 – D17

Source: Established by the author

Summary of all hypotheses: H1: AI adoption has a positive effect on customer experience innovation. H2: AI adoption has a positive effect on AI-enabled service quality. H3: AI-enabled service quality has a positive effect on customer experience innovation. H4: AI-enabled service quality mediates the relationship between AI adoption and customer experience innovation. H1a–H1f examine the effect of AI adoption on the six dimensions of customer experience innovation: modernity and innovation, personalization, proactivity, seamlessness, speed and efficiency, and emotional engagement.

- **Questionnaire pre-test and validation**

Before final distribution, the questionnaire was pre-tested with a small group of respondents in order to verify the clarity of the wording, the comprehension of the items, and the logical flow of the sections. This step was necessary because the questionnaire items were developed from theoretical constructs and adapted to the telecommunications context of Ooredoo Algeria. Minor wording adjustments were made before wider distribution.

The pre-test helped ensure that customers could understand the meaning of AI-enabled services, digital channels, service quality, and customer experience innovation. All participation was voluntary and anonymous, and respondents were informed that their answers would be used exclusively for academic research purposes.

1.6. Population and sampling method

The general population of the study consists of Ooredoo Algeria customers. According to information provided during the internship, Ooredoo Algeria serves approximately **15.6 million customers**. However, the target population of the empirical study is more specific: it consists of active Ooredoo Algeria customers who have interacted with at least one digital or AI-enabled service, such as My Ooredoo, Ooredoo Chat, automated assistance, personalized offers, or other digital service channels. This restriction is necessary because the research model examines perceived AI adoption, AI-enabled service quality, and customer experience innovation from the customer perspective.

Since access to the complete customer database of Ooredoo Algeria is not possible, a non-probability convenience sampling method is adopted. Respondents are reached through Google Forms using a shareable link and QR code, as well as through direct sharing with accessible Ooredoo service users. This approach is consistent with management research contexts where probability sampling is not feasible (Saunders et al., 2023).

The internship at Ooredoo Algeria began on **1 March 2026** and is still ongoing at the time of writing. This internship period allowed the researcher to understand the organizational context, discuss AI-enabled customer experience practices with the company tutor, and observe the relevance of AI tools to customer experience management. However, the questionnaire distribution began later, on **5 April 2026**, through Google Forms. At the current stage of data collection, **211 customer responses** have been collected. The final sample size will correspond to the number of valid responses retained after data cleaning.

Considering the large size of Ooredoo Algeria's customer base, the recommended minimum sample size can be estimated using the standard formula for large populations, with a 95% confidence level, a 5% margin of error, and an estimated population proportion of 0.5. This calculation gives an estimated minimum sample size of approximately **384 respondents**. However, due to time and accessibility constraints, the present study relies on a convenience sample of 235 customer responses. Therefore, the results will be interpreted with caution and will not be presented as statistically representative of all Ooredoo Algeria customers.

$$n = \frac{z^2 \times p \times (1-p)}{e^2}$$

$$n = \frac{(1.96)^2 \times 0.5 \times (1-0.5)}{(0.05)^2}$$

$$n = 384.16 \approx 384$$

Where n represents the required sample size, $Z = 1.96$ corresponds to a 95% confidence level, $p = 0.5$ represents the estimated population proportion, and $e = 0.05$ represents the margin of error. Based on this calculation, the recommended minimum sample size is approximately **384** respondents. However, due to time and accessibility constraints, the present study relies on a convenience sample of 235 customer responses.

1.7. Data processing and analysis software

The data collected through the questionnaire were coded and processed using **SPSS**. SPSS is suitable for quantitative questionnaire-based research because it allows descriptive statistics, reliability analysis, correlation analysis, regression analysis, and other inferential tests to be conducted (Hair Jr et al., 2019; Saunders et al., 2023) .

The analysis follows a sequential structure. First, data quality checks will be performed, including the identification of missing values and outliers. This step is important because the quality of statistical results depends on the quality and consistency of the data entered into the software (Hair Jr et al., 2019). Second, descriptive statistics will be computed to summarize the socio-demographic profile of respondents and the general tendency of their answers. Third, reliability analysis using Cronbach's alpha will be conducted to evaluate the internal consistency of each measurement scale, with a minimum acceptable threshold of $\alpha \geq 0.70$ (Hair Jr et al., 2019)

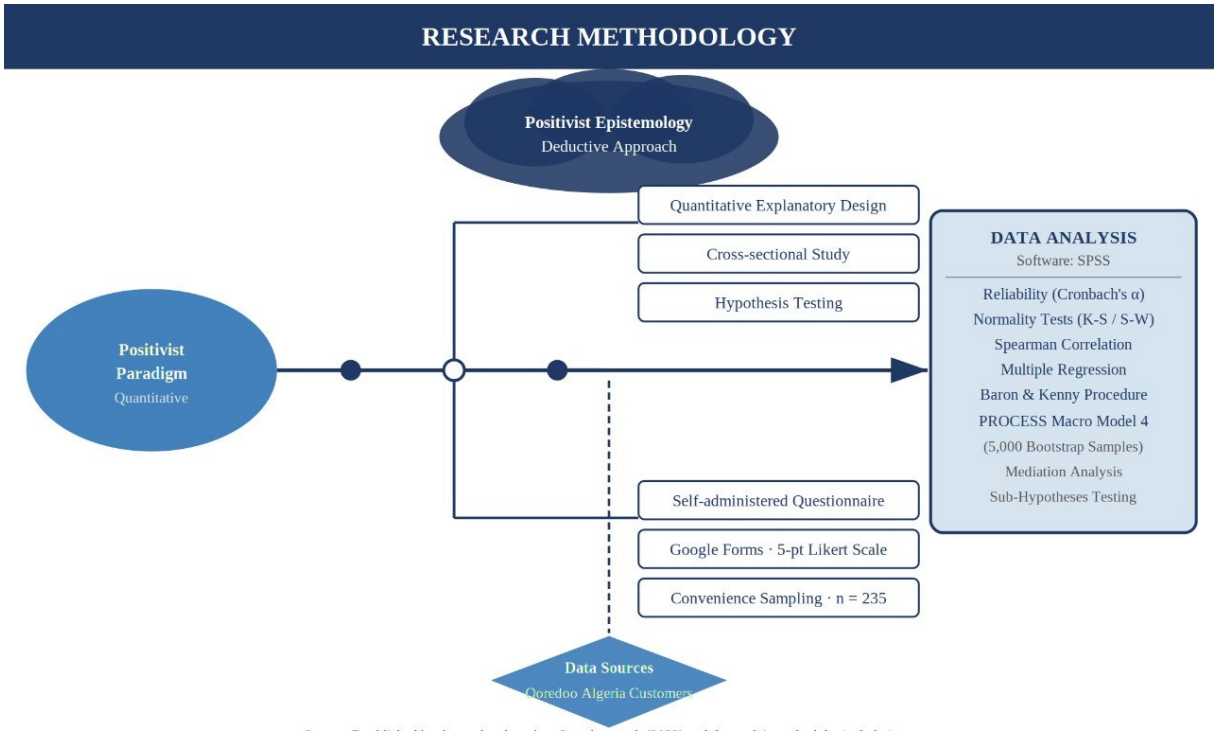
After the reliability tests, composite variables will be calculated by computing the mean scores of the items corresponding to each construct. The main variables will include perceived AI adoption, AI-enabled service quality, and customer experience innovation. Correlation and regression analyses will then be used to examine the relationships between the variables.

Finally, the mediation relationship will be tested using Hayes' PROCESS Macro Model 4 in SPSS in order to examine whether AI-enabled service quality mediates the relationship between AI adoption and customer experience innovation. (Hayes, 2013)

1.8. Summary of methodological choices

The schema below synthesizes the main methodological decisions adopted in the present study. Each choice has been discussed and justified in the preceding sub-sections, and together they constitute a coherent and internally consistent research design appropriate for testing the hypotheses of the study.

Figure 3: Methodological Framework of the Study



Source: Established by the author based on (Saunders et al., 2023)

1.9.Ethical considerations

Ethical considerations are an essential part of the research process because they protect respondents and ensure that the study is conducted responsibly. In questionnaire-based research, ethical principles include voluntary participation, respondent anonymity, informed consent, and the exclusive academic use of collected data (Saunders et al., 2023)

In the present study, respondents were informed that participation is voluntary and that the questionnaire is conducted exclusively for academic purposes. No personally identifying information was requested, and all answers are treated anonymously. This ethical procedure is particularly important because the study is conducted in an organizational context and concerns perceptions of artificial intelligence, digital tools, service quality, and customer experience in the context of Ooredoo Algeria.

In addition to general academic ethical principles, the treatment of questionnaire data will be aligned with the Algerian legal framework on personal data protection. In particular, **Law n° 18-07 of June 10th, 2018** establishes rules concerning the protection of individuals in the processing of personal data and emphasizes privacy, consent, and the rights of the person concerned. Therefore, participation will remain voluntary, anonymity will be ensured, and the

collected data will be used exclusively for academic purposes s(Loi N° 18-07, 2018; Saunders et al., 2023)

Ensuring anonymity encourages respondents to answer honestly and reduces the risk of socially desirable response bias (Saunders et al., 2023).

Section 02: Contextual framework:

This section presents the host organization of the study, Ooredoo Algeria. It provides an overview of the company's history, institutional identity, values, technical and commercial network, brand evolution, and relevance to the present research. This contextual presentation is necessary because the empirical study is conducted in relation to Ooredoo Algeria, a major telecommunications operator operating in a highly digitalized and customer-oriented environment (Ooredoo Algérie, n.d.)

1. Presentation of Ooredoo Algeria

Ooredoo Algeria, legally registered as **Wataniya Telecom Algerie** (WTA), is a major actor in the Algerian telecommunications sector and contributes to the country's socio-economic and digital development. According to the company's official website, Ooredoo Algeria presents itself as a key telecommunications actor that supports connectivity, innovation, and digital transformation in Algeria (Ooredoo Algérie, n.d.)

Founded in August 2004, Ooredoo Algeria rapidly established itself in the national telecommunications market through a strong network, a customer-oriented positioning, and an innovation-driven strategy. The company particularly strengthened its position among young Algerian consumers by combining network development, commercial proximity, and technological modernization (Ooredoo Algérie, n.d.)

Ooredoo Algeria has played an important role in the modernization of mobile telecommunications services in Algeria. The company states that it was a pioneer in launching 3G services in 2013 and 4G services in 2016, and that its network currently covers 99% of the Algerian population. Ooredoo Algeria serves approximately 15.6 million customers. These elements show the company's contribution to digital connectivity and telecommunications development in Algeria (Ooredoo Algérie, n.d.)

Beyond its operational and technological activities, Ooredoo Algeria highlights its commitment to employees and society. The company emphasizes its human resource policies, its social initiatives, and its contribution to national development through programs such as Machrou3i and the Media Star competition. This positioning reflects a strategic orientation that combines telecommunications services, innovation, social responsibility, and digital transformation (Ooredoo Algérie, n.d.)

2. Historical evolution and brand development

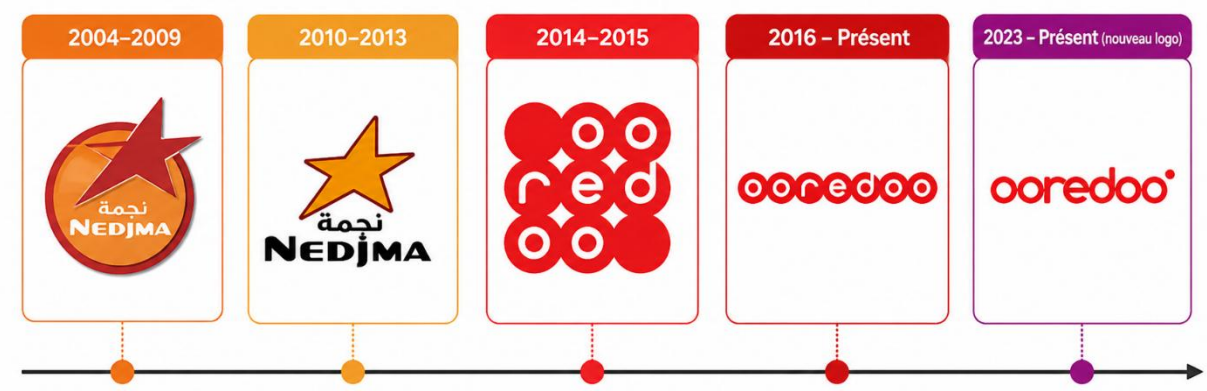
The historical development of Ooredoo Algeria is marked by a transition from its former commercial identity, **Nedjma,** to the current **Ooredoo** brand.

The official Ooredoo brand was launched in Algeria on **21 November 2013**, while maintaining continuity with the achievements, mark presence, and values previously associated with Nedjma (Ooredoo Algérie, n.d.)

This rebranding represented a strategic transformation in the company's identity. It allowed Ooredoo Algeria to move from a nationally recognized brand identity toward the

international identity of the Ooredoo Group, while preserving its market presence and its relationship with Algerian customers. The new brand identity was therefore introduced as part of a broader orientation toward innovation, connectivity, and service modernization (Ooredoo Algérie, n.d.)

Figure 4:Evolution of Nedjma / Ooredoo Brand Identity (2004–Present)



Source: Established by the researcher based on (Ooredoo Algérie, n.d.) and and company documentation

The figure above illustrates the main stages of Ooredoo Algeria's visual identity development. It shows the transition from the Nedjma brand identity to the Ooredoo brand identity, reflecting the company's strategic rebranding and its integration into the international Ooredoo Group identity. This evolution is consistent with the official launch of the Ooredoo brand in Algeria on 21 November 2013 (Ooredoo Algérie, n.d.)

3. Identity sheet of Ooredoo Algeria

The following identity sheet summarizes the main institutional, commercial, and strategic information related to Ooredoo Algeria. It includes the company's name, sector of activity, headquarters, digital presence, customer base, network coverage, commercial network, values, and internship location. The identity sheet is useful because it provides a concise overview of the organization in which the present research is situated (Ooredoo Algérie, n.d. .; researcher's internship information).

Table 13: Identity Sheet of Ooredoo Algeria

Element	Information
Company Name	Ooredoo Algeria
Legal Name	Watanya Telecom Algerie (WTA)
Former Name	Nedjma
Sector of Activity	Telecommunications
Date of Establishment	August 2004
Ooredoo Brand Launch Date	21 November 2013
Number of Customers	Approximately 15.6 million customers
Internship Location / Site	Ooredoo Ouled Fayet / Chéraga

Address	66, Route de Ouled Fayet, Chéraga, Algiers, 16001, Algeria
Website	www.ooredoo.dz
Phone	0550 000 330 / 0550 000 333 / 333
Landline	021 38 44 79
Email	oevents@ooredoo.dz
Facebook Page	OoredooDZ
Twitter / X Page	Ooredoo Algérie
Instagram Page	ooredooalgerie
LinkedIn Page	Ooredoo Algérie
General Manager	Mr. Roni Tohme (since 2023)
Group CEO	Aziz Aluthman Fakhroo (since November 2020)
Network Coverage	99% of the Algerian population
Commercial Network	107 Ooredoo Retail Stores, 3 VIP Stores, 74 City Stores, 9 Shop-in-Shop Locations, 345 Ooredoo Service Centers
Values	Caring — Connecting — Challenging
Quality and Security Certifications	ISO 9001; ISO/IEC 27001
Strategic Vision	Enriching people's daily lives and helping them achieve their ambitions
Strategic Orientation	Innovation, digital transformation, customer proximity, and social responsibility

Source: Established by the researcher based on Ooredoo Algeria's official website and internship information (Ooredoo Algérie, n.d.)

4. Values and strategic orientation

Ooredoo Algeria's values are presented around three main principles: **Connecting, Caring, and Challenging.** The value of Connecting reflects the company's **commitment** to collaboration and integration within the Algerian community. The value of **Caring** refers to support, trust, respect for others, and responsibility. The value of **Challenging** expresses the company's aspiration for progress, continuous improvement, and differentiation (Ooredoo Algérie, n.d.)

These values are aligned with the company's broader strategic orientation. Ooredoo Algeria positions itself as an innovative telecommunications operator that combines service excellence, digital transformation, social responsibility, and customer proximity. This orientation is particularly relevant to the present study because customer experience innovation depends not only on technology but also on the organization's ability to transform digital tools into valuable, responsive, and personalized services (Ooredoo Algérie, n.d.)

5. Technical and commercial network

Ooredoo Algeria operates through a technical network that covers **99% of the Algerian population.** This wide coverage represents an important infrastructure foundation for the company's telecommunications services and supports its ability to deliver mobile and digital services across the national territory (Ooredoo Algérie, n.d.)

The company presentation also highlights Ooredoo Algeria's technological orientation. Ooredoo invested in the deployment of high-quality **2G, 3G, and 4G networks**, and is presented as the first operator to have tested and launched **3G in September 2013** and **4G in July 2016**. The same document also indicates that Ooredoo was the first operator in Africa to launch **100 Gbit/s** and then **400 Gbit/s** capacity on fiber optic infrastructure. In addition, **90% of its IT platform is virtualized and located in Algeria**, while its Mobile Packet Core network is fully virtualized using recent **Telco-cloud** technologies

In addition to its technical network, Ooredoo Algeria has a dense commercial presence. The company's official website refers to **more than 250 points of sale** across the country and specifies a commercial network composed of **107 Espaces Ooredoo, 3 VIP Shops, 74 City Shops, 9 Shops in Shop, and 345 Espaces Services Ooredoo**. This commercial network strengthens the company's proximity to customers and supports service accessibility at the national level (Ooredoo Algérie, n.d.)

This technical and commercial infrastructure is relevant to the present study because AI-enabled services and innovative customer experiences necessitate both dependable digital infrastructure and easily accessible customer interaction channels. Ooredoo Algeria's network coverage, digital infrastructure, and commercial proximity offer a suitable setting for investigating how artificial intelligence may enhance service quality and customer experience innovation.

6. Quality and information security certifications

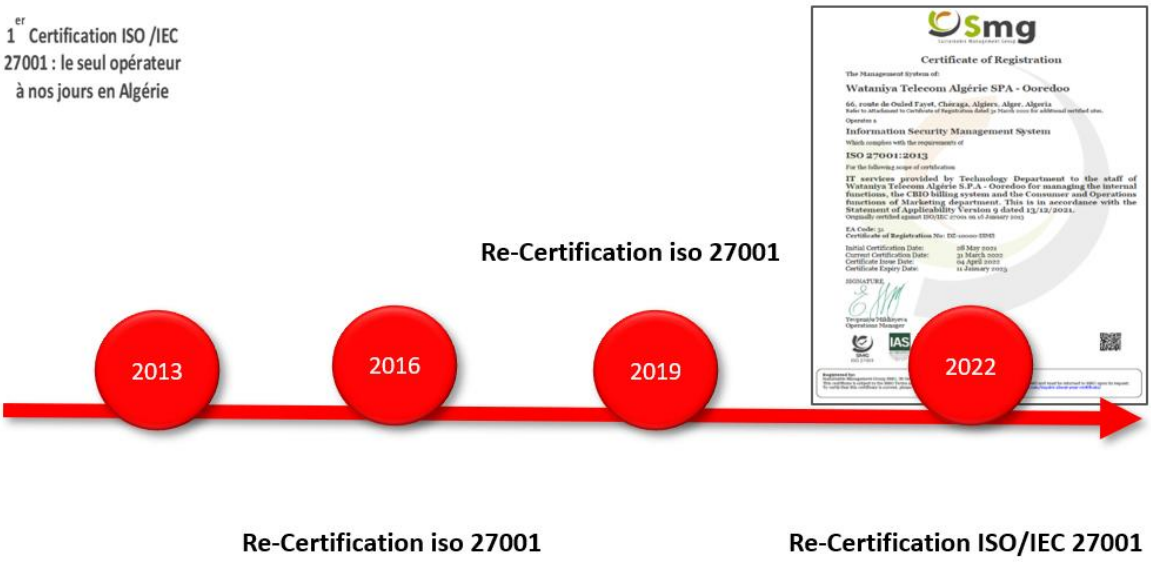
ISO 9001 is an international standard for quality management systems. It provides requirements for establishing, implementing, maintaining, and continually improving a quality management system, with the objective of improving organizational performance and meeting customer expectations. Ooredoo Algeria has maintained high standards of quality and information security through internationally recognized certification frameworks. Since 2008, the company has maintained ISO 9001 certification, which reflects its commitment to quality management and continuous improvement. The most recent renewal of the ISO 9001 certificate was achieved in December 2022 (Wataniya Telecom Algérie, 2024

Figure 5: ISO 9001 Quality Certification Timeline of Ooredoo Algeria

Source: internal document

ISO/IEC 27001 is an international standard for information security management systems. It provides requirements for establishing, implementing, maintaining, and continually improving an information security management system, including the assessment and treatment of information security risks. In 2013, Ooredoo Algeria implemented an Information Security Management System in accordance with the ISO/IEC 27001 standard. Annual audits are conducted to ensure compliance with this standard as part of a continuous improvement approach. The most recent renewal of the ISO/IEC 27001:2013 certificate dates from March 2022 and is valid for three years. The company is also working on upgrading its information security management system to the ISO/IEC 27001:2022 version, particularly in relation to cyber security, personal data protection, cloud technologies, automation, and risk management.

Figure 6: ISO 27001 Quality Certification Timeline of Ooredoo Algeria



Source: internal document

These certifications are relevant to the present study because AI-enabled services depend on reliable digital infrastructure, secure information systems, and customer trust in data processing. ISO/IEC 27001 is particularly important in the context of AI-enabled customer interactions because such services may involve the processing of customer data through digital channels.

7. Organizational structure

Ooredoo Algeria operates through a hierarchical organizational structure headed by the General Directorate. The organizational chart shows three main strategic poles: the Commercial Pole, the Support Pole, and the Technology Pole. These poles include specialized directorates responsible for commercial activities, customer service, marketing, information systems, network engineering, finance, human resources, legal affairs, governance, and operational support.

This structure is relevant to the present study because AI-enabled customer experience innovation requires coordination between technological functions, customer-facing departments, marketing and customer experience activities, and information systems. The Technology Pole supports the digital and technical infrastructure needed for AI-enabled services, while the Commercial Pole includes customer-facing functions directly connected to service delivery and customer experience.

The complete organizational chart of Ooredoo Algeria is presented in **Appendix B**.

8. Digital transformation and customer context

Ooredoo Algeria operates in a telecommunications environment where digital services, customer interaction channels, and technological innovation are central to competitiveness. The company's website highlights digital service channels such as **My Ooredoo**, which allows customers to manage their line simply, and **Ooredoo Chat**, which appears as a virtual agent on the official website. These elements show the increasing role of digital customer-facing services in the company's service model (Ooredoo Algérie, n.d.)

The presence of digital channels such as mobile applications, online assistance, chatbot support, and personalized digital offers is directly related to the topic of this research. These tools may influence customer experience by improving service accessibility, responsiveness, personalization, and interaction quality. For this reason, Ooredoo Algeria represents a relevant case for examining how artificial intelligence adoption may enhance AI-enabled service quality and contribute to customer experience innovation (Ooredoo Algérie, n.d.)

9. Ooredoo Group and leadership

Ooredoo Algeria belongs to the wider **Ooredoo Group**, formerly known as Qtel. According to the company presentation, Ooredoo Group was created in 1987, launched its first GSM (**Global System for Mobile Communications)** services in the Middle East and North Africa region in 1994, and later expanded internationally to become one of the major

telecommunication groups. Today, the group is present in ten countries and serves more than 150 million subscribers across mobile, broadband, and enterprise.

At the national level, Ooredoo Algeria operates under the strategic orientation of the Ooredoo Group while adapting its services to the Algerian telecommunications market. Its organizational direction supports a positioning based on technological development, service accessibility, innovation, customer proximity, and social responsibility (Ooredoo Algérie, n.d.).

10. Link between Ooredoo Algeria and the present study

The choice of Ooredoo Algeria as the empirical context of this study is justified by its strategic position in the Algerian telecommunications sector and by its orientation toward digital transformation. In a competitive telecommunications market where service offers may appear similar, customer experience becomes an important source of differentiation. This makes Ooredoo Algeria a relevant context for studying artificial intelligence adoption, AI-enabled service quality, and customer experience innovation (Ooredoo Algérie, n.d.)

The internship was conducted at Ooredoo Algeria's Ouled Fayet / Chéraga site, located at 66, Route de Ouled Fayet, Chéraga, Algiers. This site represents the organizational setting in which the empirical fieldwork of the study is situated. The internship context provides access to a real telecommunications environment where digital systems, customer service processes, and AI-enabled tools can be examined in relation to customer experience innovation.

Therefore, the contextual framework of Ooredoo Algeria supports the relevance of the research problem. The company's technological orientation, network coverage, commercial proximity, digital service channels, and innovation strategy provide an appropriate case for analysing how artificial intelligence may contribute to the improvement and innovation of customer experience in the Algerian telecommunications sector (Ooredoo Algérie, n.d.)

11. AI-enabled customer experience practices reported during the internship:

During the internship conducted within the Marketing and Customer Experience context of Ooredoo Algeria, several AI-enabled and digital customer experience practices were discussed with the company tutor and observed in relation to the company's customer experience management activities. These fieldwork observations are presented in this section in order to contextualize the empirical study and to show how artificial intelligence is connected to customer feedback analysis, customer journey understanding, segmentation, and experience-related decision-making at Ooredoo Algeria. They are used as contextual information and do not replace the statistical analysis based on the customer questionnaire.

- **Organizational understanding of customer experience**

According to the explanations provided during the internship, customer experience at Ooredoo Algeria is understood through a customer-centered and emotional perspective. Internally, this logic was explained through the expression "porter la casquette du client," which means adopting the customer's point of view in order to understand what the customer feels

across different interactions with the company. From this perspective, customer experience is not limited to functional service performance; it also includes emotional reactions such as trust, satisfaction, frustration, loyalty, and the risk of customer departure.

This understanding is particularly relevant in the telecommunications sector, where service offers may appear similar between operators. In such a context, the quality of customer interactions, the ability to respond effectively to problems, and the emotional perception created during the customer journey become important sources of differentiation. This internal conception of customer experience is consistent with the academic framework adopted in the present study, especially the customer journey perspective and the emotional engagement dimension measured in the questionnaire.

- **Customer lifecycle and customer segmentation**

The company tutor also explained that Ooredoo Algeria analyzes customer experience through a customer lifecycle perspective. This lifecycle includes five main stages: information, purchase, usage, support, and outcome. During the information stage, customers become aware of Ooredoo's offers through advertising, word-of-mouth, digital channels, or physical commercial presence. During the purchase stage, customers acquire a service, such as a SIM card, a mobile plan, a broadband subscription, or a device. The usage stage represents the customer's ongoing interaction with the network, the My Ooredoo application, digital services, and commercial offers. The support stage concerns moments when customers seek assistance, request information, or attempt to solve a problem. Finally, the outcome stage refers to the customer's decision to continue the relationship, recommend the brand, or leave for a competing operator.

In addition to this lifecycle logic, Ooredoo Algeria uses customer segmentation to better understand and manage different subscriber profiles. According to the explanations provided during the internship, customers may be grouped into three broad categories: high-end customers, mid-end customers, and low-end customers. This segmentation helps the company adapt communication, offers, support actions, and customer relationship practices according to the value, needs, and behavior of each customer group. From the perspective of the present study, this practice is directly related to the dimensions of personalization and proactivity in customer experience innovation.

- **Typology of AI tools used at Ooredoo Algeria**

During the internship, three categories of AI-supported tools were discussed. The first category includes AI tools developed externally by specialized providers and used internally by employees. These tools support activities such as customer feedback analysis, reporting, and experience-related decision-making. The second category includes AI tools developed internally by Ooredoo Algeria's IT or technical teams and used by employees to support internal operational needs. The third category includes customer-facing AI tools, such as digital assistance and automated interaction channels, which are designed to support customers through digital service platforms.

According to the company tutor, the main objective of using AI-supported tools at Ooredoo Algeria is to save time, optimize internal processes, improve responsiveness, and support employees in their daily work. In this sense, AI is not presented only as a customer-facing technology, but also as an internal support tool that helps collaborators process information more quickly, react more effectively to customer needs, and improve the quality of service-related decisions.

This typology shows that AI adoption at Ooredoo Algeria is not limited to one single tool. Rather, AI-supported solutions may be used both internally, to help employees analyze information and make decisions, and externally, to improve customer-facing interactions. This distinction is important for the present research because it shows that AI adoption at Ooredoo Algeria exists both internally and externally. However, the empirical analysis of this study focuses on the customer perspective, since the objective is to examine how customers perceive AI adoption, AI-enabled service quality, and customer experience innovation.

- **Omnichannel feedback processing and the CX assistant**

One important AI use case discussed during the internship concerns the treatment of customer comments and feedback. According to the company tutor, Ooredoo Algeria collects and analyzes customer feedback through several customer touchpoints, including chatbots, virtual assistants, automated customer service channels, the My Ooredoo application, the official website, physical shops, points of sale, call center interactions, complaint/reclamation channels, customer reviews, social media platforms, and Voice of Customer (VoC) mechanisms. These touchpoints generate a large volume of customer comments, complaints, suggestions, and evaluations that need to be collected, organized, and analyzed efficiently.

To support this process, Ooredoo Algeria uses a customer experience assistant powered by Qualtrics, an American provider specializing in experience management solutions. According to the explanations provided during the internship, this tool supports the collection and treatment of customer feedback by helping classify comments into categories such as positive feedback, negative feedback, suggestions or recommendations, and non-actionable content. The tool is used by the Data Science team, while internally developed AI tools may involve the IT function depending on the operational need.

This use of AI-supported feedback processing is relevant to customer experience management because it helps transform dispersed customer comments into structured information. Such information can support the identification of recurring problems, customer satisfaction signals, improvement opportunities, and potential sources of dissatisfaction. In this way, AI contributes not only to the collection of customer data, but also to the organization and interpretation of customer feedback across multiple touchpoints.

A screenshot of the Ooredoo CX Assistant interface observed during the internship is provided in **Appendix C**.

- **AI-based digital platforms: REDCORE and ORED**

In addition to the AI-supported CX Assistant observed during the internship, the meeting with the Data Science team also highlighted two AI-based platforms associated with Ooredoo's digital service ecosystem: **REDCORE** and **ORED**. These tools are included as contextual evidence of Ooredoo Algeria's orientation toward AI-enabled digital innovation, not as direct variables in the statistical model.

REDCORE was presented as an AI personal assistant associated with Ooredoo. Its interface describes it as *"votre assistant personnel IA"*, meaning "your AI personal assistant," and includes functions such as conversational interaction, image creation, and document analysis. This illustrates the use of AI to support digital assistance, information processing, and intelligent customer interaction.

ORED was presented as an AI-based creative platform associated with Ooredoo. The platform describes itself as *"L'IA qui comprend vos idées"*, meaning "the AI that understands your ideas," and as Ooredoo's creative AI that transforms words into images, videos, and music. It therefore reflects Ooredoo's exploration of AI-enabled creative services and digital content generation.

Screenshots of the REDCORE and ORED platforms observed during the internship are presented in **Appendix D**.

- **Relevance to the research model**

The AI-enabled practices reported during the internship are directly connected to the research model of the present study. The existence and use of AI-supported tools, including the CX Assistant, REDCORE, and ORED, reflect the construct of AI adoption. The use of AI to process customer comments, classify feedback, support segmentation, assist digital interaction, and improve customer relationship management reflects AI-enabled service quality. Finally, the use of these tools to support personalization, responsiveness, proactivity, convenience, digital creativity, and emotional engagement illustrates the logic of customer experience innovation.

Therefore, the field information provided during the internship reinforces the empirical relevance of the research model. It shows that Ooredoo Algeria represents an appropriate context for examining how AI adoption may enhance AI-enabled service quality and contribute to customer experience innovation in the telecommunications sector.

This chapter defined the methodological and contextual framework of the study. By presenting the research process, the data collection method, the questionnaire structure, the sampling approach, and the planned data analysis techniques, it established the methodological basis required to ensure the coherence and rigor of the empirical investigation.

The presentation of Ooredoo Algeria also provided a concrete organizational context for the study. It highlighted the company's telecommunications activity, digital orientation, technical and commercial infrastructure, and AI-enabled customer experience practices observed during the internship.

These methodological and contextual elements make it possible to move to the next chapter, which will be devoted to the analysis and interpretation of the empirical results in relation to the research problem and hypotheses.

Chapter 03: Empirical Results, Analysis, and Discussion

This chapter presents the empirical findings of the quantitative study conducted among Ooredoo Algeria customers. It aims to analyze and interpret the data collected through the questionnaire in order to test the proposed research model and examine the relationships between artificial intelligence adoption, AI-enabled service quality, and customer experience innovation.

The chapter is organized into several sections. It begins with data preparation and screening, followed by an assessment of the reliability of the measurement scales, missing values analysis, normality assessment, and multicollinearity diagnosis. The respondents' profile is then presented in order to describe the main demographic and behavioral characteristics of the sample.

After these preliminary analyses, descriptive statistics are reported for the main study variables and for the dimensions of customer experience innovation. Correlation analysis is then conducted using Spearman's rank-order correlation coefficient in order to examine the relationships among the constructs. Subsequently, regression analyses are used to test the direct hypotheses of the study.

The core analytical part of the chapter presents the mediation analysis. First, the Baron and Kenny procedure is used as a preliminary mediation test. Then, Hayes' PROCESS Macro Model 4 with 5,000 bootstrap samples is applied to test the indirect effect of artificial intelligence adoption on customer experience innovation through AI-enabled service quality. The chapter concludes with a summary of hypothesis testing, a structured discussion of the findings, and a brief conclusion.

Section 01: Results

This section aims to present the results obtained from the analysis of the empirical data collected through the questionnaire. It begins with the verification of the quality of the collected data, including reliability analysis, missing value analysis, normality assessment, and multicollinearity diagnosis. It then presents the respondents profile, descriptive statistics, correlation analysis, and hypothesis testing results.

1. Verification of the Quality of the Collected Data

Before proceeding to the main statistical analyses, it was necessary to verify the quality of the collected data. This step aims to ensure that the dataset is complete, that the measurement scales are reliable, and that the statistical assumptions required for the analysis are appropriately examined.

In this study, the verification of data quality was conducted through four main procedures. First, the reliability of the measurement scales was assessed using Cronbach's alpha coefficient. Second, missing values were examined in order to verify whether the dataset contained incomplete responses. Third, the normality of the main variables was tested using the Kolmogorov-Smirnov and Shapiro-Wilk tests. Finally, multicollinearity was assessed using tolerance and variance inflation factor values.

The results of these tests are presented in the following subsections.

1.1.Reliability Analysis

Before proceeding to the interpretation of the questionnaire results, it was necessary to assess the internal consistency of the measurement scales used in this study. Reliability analysis allows the researcher to verify whether the items measuring the same construct are coherent and consistent with one another. In this study, reliability was assessed using Cronbach's alpha coefficient.

Cronbach's alpha values were interpreted according to the scale presented in Table 14

Table 14: interpretation of Cronbach's alpha

Cronbach's Alpha Value	Interpretation
$\alpha \geq 0.90$	Excellent
$0.80 \leq \alpha < 0.90$	Good
$0.70 \leq \alpha < 0.80$	Acceptable
$0.60 \leq \alpha < 0.70$	Questionable
$0.50 \leq \alpha < 0.60$	Poor
$\alpha < 0.50$	Unacceptable

Source: (Shahirah Siti & Nyet Moi, 2019)

The reliability analysis was first conducted for the overall questionnaire, which included all 28 measurement items. Then, the reliability of each construct was examined separately in order to verify the internal consistency of the three main variables of the study: AI Adoption,

AI-enabled Service Quality, and Customer Experience Innovation. In addition, the results are presented below.

Table 15: Overall Reliability of the Questionnaire

Reliability Statistics	
Cronbach's Alpha	N of Items
.931	28

Source: Established by the student based on SPSS outputs.

As shown in Table 15, the overall questionnaire obtained a Cronbach's alpha value of .931 across 28 items. According to the interpretation scale presented above, $\alpha \geq 0.90 = Exellent$; this value indicates **excellent internal consistency**. This means that the questionnaire items are highly coherent and suitable for measuring the constructs included in the study.

- **Reliability of the AI adoption scale:**

The first construct examined was AI Adoption, which was measured through six items (CUST_B1-CUST_B6). The purpose of this test was to verify whether these items consistently measure the same construct.

Table 16: Reliability of the AI ADOPTION SCALE

Reliability Statistics	
Cronbach's Alpha	N of Items
.721	6

Source: Established by the student based on SPSS outputs.

As shown in Table 16, the AI Adoption scale obtained a Cronbach's alpha value of .**721** across six items. According to the interpretation scale adopted in this study, $0.70 \leq \alpha < 0.80 = acceptable$; this value indicates an acceptable level of internal consistency. Therefore, the six items used to measure AI adoption are sufficiently reliable and can be retained for the subsequent statistical analyses.

- **Reliability of the AI-enabled service quality scale:**

The second construct examined was AI-enabled service quality, which was measured through five items (CUST_C1-CUST_C5). The purpose of this test was to verify whether these items consistently measure customers' perceptions of service quality in an AI-enabled context.

Table 17: Reliability of the AI-enabled service quality scale

Reliability Statistics	
Cronbach's Alpha	N of Items
.825	5

Source: Established by the student based on SPSS outputs

As shown in Table 17, the AI-enabled service quality scale obtained a Cronbach's alpha value of **.825** across five items. According to the interpretation scale adopted in this study$0.80 \leq \alpha < 0.90 = good$; this value indicates a **good** level of internal consistency. Therefore, the five items used to measure AI-enabled service quality are reliable and can be retained for the subsequent statistical analyses.

- **Reliability of Customer Experience Innovation scale:**

The third construct examined was Customer Experience Innovation, which was measured through seventeen items (CUST_D1-CUST_D17). The purpose of this test was to verify whether these items consistently measure customers' perceptions of innovation in their experience with Ooredoo Algeria

Table 18: Reliability of Customer Experience Innovation scale

Reliability Statistics	
Cronbach's Alpha	N of Items
.916	17

Source: Established by the student based on SPSS output

As shown in Table 18, the "Customer Experience Innovation Scale" obtained a Cronbach's alpha value of .**916** across seventeen items $\alpha \geq 0.90 = excellent$. According to the interpretation scale adopted in this study, this value indicates an **excellent** level of internal consistency. Therefore, the seventeen items used to measure customer experience innovation are highly reliable and can be retained for the subsequent statistical analyses.

2. Missing Values Analysis

Before conducting the main statistical analyses, the dataset was examined for missing values. Missing values analysis is important because incomplete responses can reduce the accuracy of statistical results and may lead to biased interpretations if they are not handled appropriately.

In this study, the missing values analysis showed that all 235 responses were valid and that no missing values were detected across the items used in the questionnaire. Therefore, no cases were excluded from the analysis, and no imputation procedure was required.

Table 19: Missing Values Analysis

Variable / section	Valid N	Missing values	Percentage of missing values
Gender	235	0	0.0%
Age	235	0	0.0%
Most used Ooredoo digital channel	235	0	0.0%
Education level	235	0	0.0%
Customer tenure with Ooredoo	235	0	0.0%
Frequency of digital channel use	235	0	0.0%
AI Adoption	235	0	0.0%
AI-enabled Service Quality	235	0	0.0%
Customer Experience Innovation	235	0	0.0%
Overall questionnaire	235	0	0.0%

Source: Established by the student based on SPSS outputs.

As shown in Table 19, no missing values were recorded in the dataset. This indicates that the data were complete and suitable for further statistical analysis. Consequently, the full sample of 235 respondents was retained for the subsequent analyses, and no imputation procedure was required..

3. Respondents' Profile (Description of the Sample):

This section presents the main demographic and behavioral characteristics of the respondents who participated in the study. A total of 235 valid questionnaire responses were collected from Ooredoo Algeria customers and retained for statistical analysis. The sample was characterized according to six dimensions: most used Ooredoo digital channel, gender, age, education level, customer tenure with Ooredoo, and frequency of digital channel use.

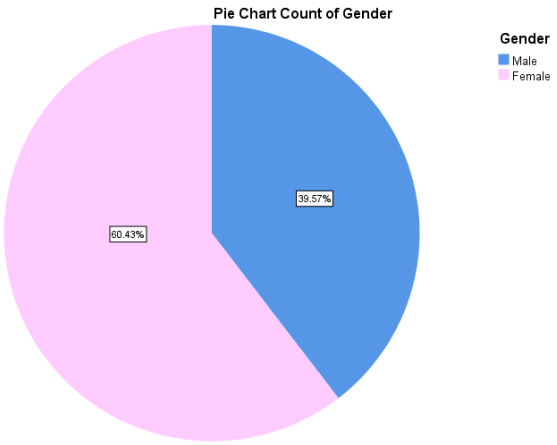
Table 20: Respondents' Profile

Variable	Category	Frequency	Percentage
Most used Ooredoo digital channel	Mobile app	113	48.1%
	Website	47	20.0%
	Instagram	24	10.2%
	Call center	20	8.5%
	Facebook	9	3.8%
	AI Chatbot	9	3.8%
	Physical agency	9	3.8%
	WhatsApp	4	1.7%
Gender	Male	93	39.6%
	Female	142	60.4%
Age	Under 25	114	48.5%
	25–34	52	22.1%
	35–44	41	17.4%
	45–54	15	6.4%
	55 and above	13	5.5%
Education level	Secondary	23	9.8%
	Bachelor's	40	17.0%
	Master's	104	44.3%
	Doctorate	40	17.0%
	Other	28	11.9%
Customer tenure with Ooredoo	Less than 30 days	11	4.7%
	30–90 days	21	8.9%
	6 months–1 year	36	15.3%
	1–3 years	55	23.4%
	More than 3 years	112	47.7%
Frequency of digital channel use	Once a day or more	29	12.3%
	Several times per week	26	11.1%
	Once per week	63	26.8%
	1–3 times per month	77	32.8%
	Rarely	40	17.0%

Source: Established by the student based on SPSS outputs

According to Table 20, the mobile application represents the most frequently used Ooredoo digital channel among respondents, with 113 responses, corresponding to 48.1% of the sample. The website comes in second place with 47 respondents, representing 20.0%. This indicates that most respondents interact with Ooredoo mainly through digital platforms, particularly the mobile application and the website.

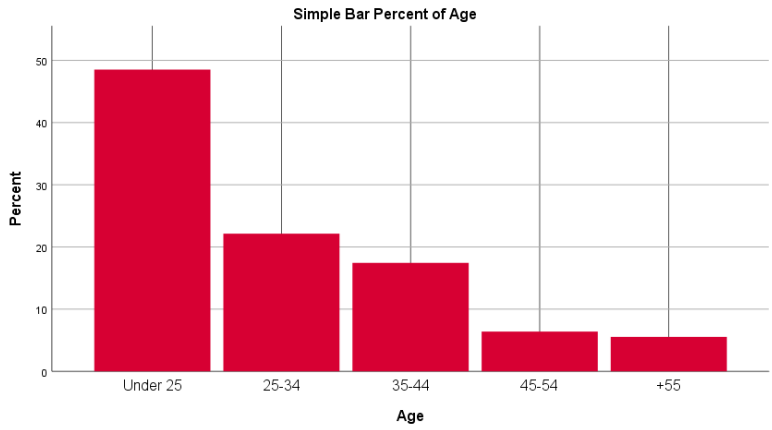
Figure 7: Gender Distribution of Respondents



Source: Established by the student based on SPSS outputs

Regarding gender, female respondents represent the majority of the sample, with 142 participants, corresponding to 60.4%, while male respondents represent 93 participants, or 39.6%. This distribution shows that the sample includes both genders, with a higher representation of female respondents.

Figure 8: Age Distribution of Respondents

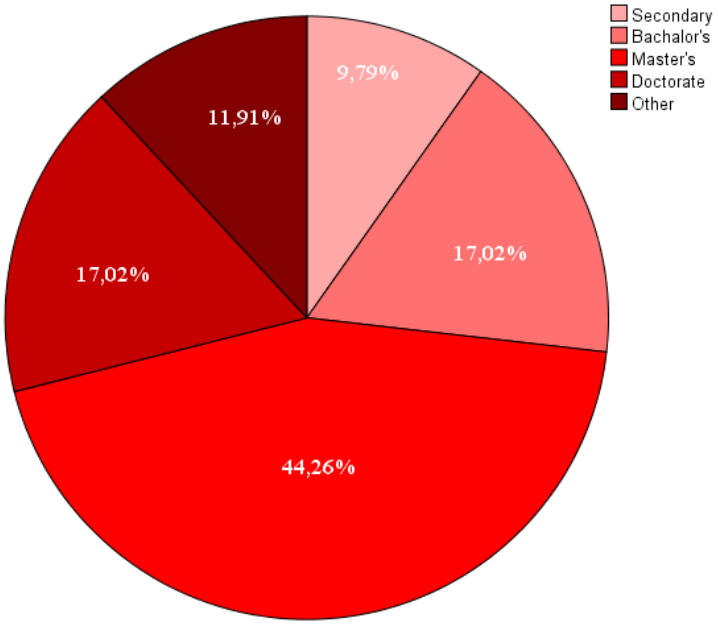


Source: Established by the student based on SPSS outputs

In terms of age, the largest group is composed of respondents under 25 years old, representing 48.5% of the sample. Respondents aged between 25 and 34 years represent 22.1%, while those aged between 35- and 44-years account for 17.4%. This shows that the sample is relatively young, which is relevant because younger customers are generally more exposed to

digital services and AI-enabled customer interactions**.** As shown in Figure 3.2, the largest age group is composed of respondents under 25 years old, representing 48.5% of the sample, followed by respondents aged 25–34 years, representing 22.1%.

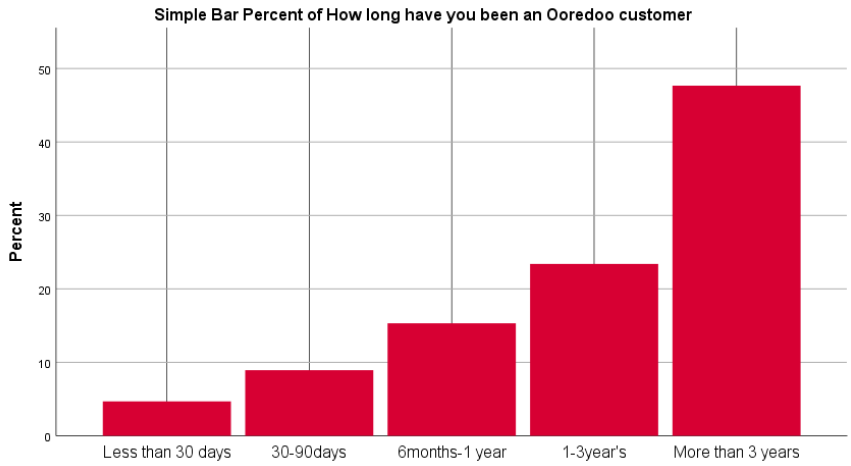
Figure 9: Education level Distribution of Respondents



Source: Established by the student based on SPSS outputs

With regard to education level, the majority of respondents hold a master's degree, representing 44.3% of the sample. Bachelor's degree holders and Doctorate holders each represent 17.0%, while respondents with secondary education and other educational backgrounds represent smaller proportions. This indicates that the sample is generally highly educated, which may help respondents understand and evaluate digital and AI-enabled services.

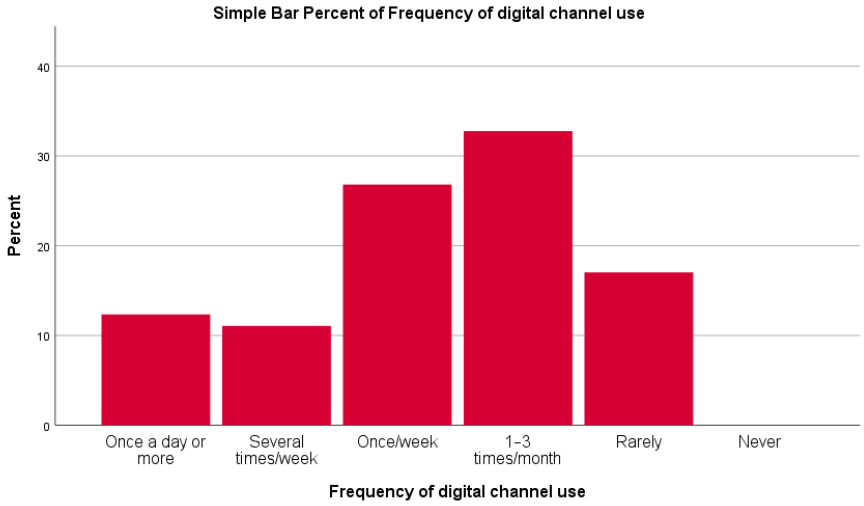
Figure 10: Customer tenure Distribution of Respondents



Source: Established by the student based on SPSS outputs

Concerning customer tenure, nearly half of the respondents have been Ooredoo customers for more than three years, representing 47.7% of the sample. In addition, 23.4% have used Ooredoo services for one to three years. This suggests that most respondents have sufficient experience with Ooredoo services to provide informed evaluations of service quality and customer experience.

Figure 11: Frequency of digital channel use Distribution



Source: Established by the student based on SPSS outputs

Finally, regarding the frequency of digital channel use, the largest group uses Ooredoo digital channels one to three times per month, representing 32.8% of the sample. This is followed by respondents who use them once per week, representing 26.8%. These results indicate that respondents have a meaningful level of interaction with Ooredoo's digital channels, which supports the relevance of their perceptions regarding AI adoption, AI-enabled service quality, and customer experience innovation.

4. Descriptive statistics:

In order to interpret the descriptive statistics of the questionnaire items, the mean scores were classified using the relative weight method. Since the questionnaire was based on a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree, the interpretation intervals were calculated by subtracting the lowest scale value from the highest scale value and dividing the result by the number of response categories. Accordingly, the interval length was calculated as follows:

$$\frac{5-1}{5} = 0.80$$

Based on this calculation, each response category covers an interval of 0.80. Therefore, the mean scores were interpreted as indicated in table 21. This method allows the interpretation

of mean values in a systematic way by linking each average score to its corresponding level of agreement (Al-Ababneh, 2020)

Table 21: Interpretation of Mean Scores

Mean interval	**[1.00–1.80[**	**[1.80–2.60[**	**[2.60-3.40[**	**[3.40-4.20[**	**[4.20-5.00[**
Interpretation	Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Source: Established by the student based on the five-point Likert scale.

4.1. Descriptive Statistics of the Main Variables

The descriptive statistics of the three main study variables are presented in Table 22. These variables are AI adoption, AI-enabled service quality, and customer experience innovation.

Table 22: Descriptive Statistics of the Main Variables

Descriptive Statistics			
	N	Mean	Std. Deviation
AIADOPT	235	3.8288	.51909
AISQ	235	3.7637	.70316
CXINNOV	235	3.6514	.65362
Valid N	235		

Source: Established by the student based on SPSS outputs .

As shown in Table 22, all three main variables fall within the “Agree” interval. AI Adoption recorded the highest mean score (M = 3.8288, SD = .51909), indicating that respondents generally agree that Ooredoo Algeria adopts AI-enabled and advanced digital technologies in its services. AI-enabled Service Quality recorded a mean score of 3.7637 (SD = .70316), suggesting that respondents also evaluate the quality of AI-enabled services positively. Customer Experience Innovation obtained a mean score of 3.6514 (SD = .65362), which indicates that respondents generally perceive their customer experience with Ooredoo as innovative.

Overall, these results suggest that the three core constructs of the research model are positively perceived by respondents.

4.2. Descriptive Statistics of AI Adoption

AI adoption was measured using six items (CUST_B1-CUST_B6) related to customers' perceptions of Ooredoo's use of advanced digital technologies, automated systems, smart technologies, chatbot services, and real-time AI-enabled tools. The descriptive statistics for these items are presented in Table 23.

Table 23: Descriptive Statistics of AI Adoption

Descriptive Statistics			
	N	Mean	Std. Deviation
Ooredoo uses advanced digital technologies in its services	235	3.69	.847
Ooredoo uses automated systems to respond to customer requests	235	3.88	.804
Ooredoo uses smart technologies to improve customer interactions	235	3.94	.825
Ooredoo's services seem faster and smarter thanks to digital technologies	235	3.82	.868
Ooredoo's chatbot effectively improves my interactions with customer service	235	3.67	.919
Ooredoo's AI-enabled tools provide me with information in real time	235	3.79	.864
Valid N (listwise)	235		

Source: Established by the student based on SPSS output .

The results in Table 23 show that all AI adoption items fall within the "agree" interval, with mean values ranging from 3.67 to 3.94. This indicates that respondents generally agree that Ooredoo adopts AI-enabled and advanced digital technologies in its service delivery. The highest-rated item is "Ooredoo uses smart technologies to improve customer interactions" (M = 3.94, SD = 0.825), followed by "Ooredoo uses automated systems to respond to customer requests" (M = 3.88, SD = 0.804). This suggests that customers particularly recognize the presence of smart and automated technologies in Ooredoo's interactions. The lowest-rated item is "Ooredoo's chatbot effectively improves my interactions with customer service" (M = 3.67, SD = 0.919). Although this item remains within the agree range, it indicates that chatbot effectiveness is perceived slightly less positively than other AI-related aspects. Overall, the findings suggest a positive customer perception of AI adoption at Ooredoo Algeria.

- **Descriptive Statistics: AI-enabled Service Quality (AISQ)**

Table 24: Descriptive Statistics: AI-enabled Service Quality (AISQ)

Descriptive Statistics			
	N	Mean	Std. Deviation
Ooredoo responds quickly to my requests	235	3.78	.974
Ooredoo provides its services in a reliable and consistent way	235	3.69	.949
Ooredoo provides services that correspond to my needs	235	3.77	.939
Ooredoo makes service interactions easy and convenient	235	3.66	.984
Overall, Ooredoo provides high-quality service	235	3.82	.972
Valid N (listwise)	235		

Source: Established by the student based on SPSS outputs.

The results in Table 24 indicate that all AI-enabled service quality items are located within the "agree" interval, with mean scores ranging from 3.66 to 3.82. This shows that respondents generally agree that Ooredoo provides AI-enabled services of acceptable quality. The highest-rated item is "Overall, Ooredoo provides high-quality service" (M = 3.82, SD = 0.972), followed by "Ooredoo responds quickly to my requests" (M = 3.78, SD = 0.974). These results indicate that customers perceive Ooredoo's service quality positively, particularly in terms of overall quality and responsiveness.

The lowest-rated item is "Ooredoo makes service interactions easy and convenient" (M = 3.66, SD = 0.984), but it still falls within the agree range. Overall, the findings indicate a positive perception of AI-enabled Service Quality among Ooredoo Algeria customers.

- **Descriptive Statistics: Customer Experience Innovation (CXINNOV)**

Customer experience innovation was measured using seventeen items covering several aspects of the customer experience, including modernity, innovation, personalization, proactivity, channel consistency, seamlessness , service speed, and emotional engagement. The descriptive statistics for these items are presented in Table 25.

Table 25: Descriptive Statistics: Customer Experience Innovation (CXINNOV)

Descriptive Statistics			
	N	Mean	Std. Deviation
Ooredoo offers a CX that feels modern	235	3.87	.970
Ooredoo is More innovative than traditional telecom operators	235	3.74	1.012
Ooredoo Uses advanced methods that improve my CX	235	3.71	1.000
Ooredoo Overall creates an innovative CX	235	3.77	1.011
Recommendations match my personal preferences	235	3.64	1.125
Ooredoo understands my individual needs	235	3.56	1.166
Offers feel relevant to my situation	235	3.65	1.124
Informs me before I have to ask	235	3.11	1.180
I receive relevant and timely alerts	235	2.95	1.210
CX feels smarter and more proactive	235	3.59	1.036
Experience is consistent across all channels	235	3.52	1.118
Don't need to repeat information across channels	235	3.61	1.070
Services allow me to resolve requests quickly	235	3.69	.996
Digital services available 24/7 without delay	235	3.84	1.050
Interactions leave me with a positive feeling	235	3.81	.984
I feel valued as a customer	235	3.80	1.026
I find my digital experience enjoyable	235	3.83	.980
Valid N (listwise)	235		

Source: Established by the student based on SPSS outputs.

As shown in Table 25, most Customer Experience Innovation items fall within the "Agree" interval, indicating that respondents generally perceive Ooredoo's customer experience as modern, innovative, efficient, and emotionally positive. The highest-rated item is "Ooredoo offers a CX that feels modern" (M = 3.87, SD = .970), followed by "Digital services are available 24/7 without delay" (M = 3.84, SD = 1.050) and "I find my digital experience enjoyable" (M = 3.83, SD = .980). These results suggest that respondents particularly recognize the modernity, availability, and enjoyability of Ooredoo's digital customer experience.

However, two items recorded lower mean scores and fall within the “Neutral” interval: “I receive relevant and timely alerts” (M = 2.95, SD = 1.210) and “Informs me before I have to ask” (M = 3.11, SD = 1.180). This indicates that the proactive dimension of customer experience innovation is perceived less positively than other aspects. Overall, the findings suggest a generally positive perception of Customer Experience Innovation, while highlighting proactivity as a potential area for improvement.

4.3.Descriptive Statistics of Customer Experience Innovation Dimensions

Customer experience innovation was also analyzed according to its main dimensions in order to identify which aspects of the customer experience were perceived more positively by respondents. These dimensions include modernity and innovation, personalization, proactivity, seamlessness, speed and efficiency, and emotional engagement. The results are presented in Table 26.

Table 26: Descriptive Statistics of Customer Experience Innovation Dimensions

Descriptive Statistics			
	N	Mean	Std. Deviation
CX_Modernity	235	3.7745	.84174
CX_Personalization	235	3.6156	1.00532
CX_Proactivity	235	3.2184	.87681
CX_Seamlessness	235	3.5660	.95234
CX_Speed	235	3.7660	.89306
CX_Emotional	235	3.8128	.87213
Valid N (listwise)	235		

Source: Established by the student based on SPSS outputs.

As shown in Table 26, most Customer Experience Innovation dimensions fall within the “Agree” interval, except for Proactivity, which falls within the “Neutral” interval. The highest-rated dimension is Emotional Engagement (M = 3.8128, SD = .87213), followed by Modernity and Innovation (M = 3.7745, SD = .84174) and Speed and Efficiency (M = 3.7660, SD = .89306). This indicates that respondents perceive Ooredoo’s customer experience most positively in terms of emotional value, modernity, and service efficiency.

Personalization (M = 3.6156, SD = 1.00532) and Seamlessness (M = 3.5660, SD = .95234) also fall within the “Agree” interval, showing that respondents generally perceive Ooredoo’s services as relevant and relatively consistent across channels. However, Proactivity

recorded the lowest mean score (M = 3.2184, SD = .87681), placing it within the "Neutral" interval. This suggests that respondents are less convinced that Ooredoo anticipates their needs or provides proactive alerts before they request assistance.

Overall, these results show that Customer Experience Innovation is perceived positively, especially in terms of emotional engagement, modernity, and speed. Nevertheless, proactivity appears to be the weakest dimension and may require managerial attention.

5. Normality test:

Before selecting the appropriate correlation test, the normality of the main study variables was examined. Normality assessment is important because it helps determine whether parametric or non-parametric statistical tests should be used. In this study, the Kolmogorov-Smirnov test with Lilliefors correction and the Shapiro-Wilk test were used to assess the normality of the three main variables: AI adoption, AI-enabled service quality, and customer experience innovation.

The hypotheses of the normality test are formulated as follows:

H_0: The data follow a normal distribution.

H_1: The data do not follow a normal distribution.

The decision rule is based on the significance value. If the $sig > 0.05$, the null hypothesis is retained, indicating that the data are normally distributed. If the $sig < 0.05$, the null hypothesis is rejected, indicating that the data do not follow a normal distribution.

Table 27: Kolmogorov-Smirnov and Shapiro-Wilk Tests of Normality

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
AIADOPT	.103	235	.000	.978	235	.001
AISQ	.092	235	.000	.975	235	.000
CXINNOV	.057	235	.060	.986	235	.025
a. Lilliefors Significance Correction						

Source: Established by the student based on SPSS outputs.

The Kolmogorov-Smirnov test was used as the main formal normality test because the sample size exceeded 50 respondents. The results show that AI adoption and AI-enabled service quality have significance values below sig<0.05, indicating that these two variables do not follow a normal distribution. In contrast, Customer Experience Innovation has a Kolmogorov-

Smirnov significance value of $p = 0.060$, which is greater than sig> 0.05, indicating that this variable follows a normal distribution according to Kolmogorov-Smirnov test.

Table 28: Skewness and Kurtosis values

Descriptive Statistics					
	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
AIADOPT	235	.098	.159	-.167	.316
AISQ	235	-.278	.159	-.244	.316
CXINNOV	235	-.262	.159	-.158	.316
Valid N (listwise)	235				

Source: Established by the student based on SPSS outputs.

However, the examination of skewness and kurtosis values provides additional evidence regarding the shape of the distributions. The skewness values ranged from -0.278 to 0.098, while the kurtosis values ranged from -0.244 to -0.158. Since all these values fall within the acceptable interval of -1 to +1, the distributions can be considered approximately normal, or quasi-normal.

Therefore, the normality assumption was not fully confirmed by the Kolmogorov-Smirnov test, but the skewness and kurtosis results indicate that the variables do not present serious deviations from normality. Consequently, the data demonstrate acceptable quasi-normality. Nevertheless, Spearman's rank-order correlation coefficient was retained for the correlation analysis because the Kolmogorov-Smirnov test did not confirm full normality for all variables and because the questionnaire data were measured using a five-point Likert scale.

6. Multicollinearity check:

Before conducting the regression and mediation analyses, multicollinearity was examined in order to verify whether the predictor variables were excessively correlated with each other. Multicollinearity may affect the stability and interpretation of regression coefficients when two or more independent variables are highly related.

In this study, multicollinearity was assessed using Tolerance and Variance Inflation Factor values. Following the threshold adopted in this study, Tolerance values should be greater than .10 and VIF values should not exceed 5. The results are presented in Table 29.

Table 29: Multicollinearity statistics

Coefficients[a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	AIADOPT	.830	1.204
	AISQ	.830	1.204

a. Dependent Variable: CXINNOV

Source: Established by the student based on SPSS outputs.

As shown in Table 29, both predictor variables recorded tolerance values of 0.830, which are above the minimum threshold of .10. Their VIF values were 1.204, which are below the adopted threshold of 5. These results indicate that there is no multicollinearity problem between AI adoption and AI-enabled service quality. Therefore, both variables can be included in the regression and mediation analyses. In the same regression output, both predictors were statistically significant according to the t-test, as AI Adoption recorded $t = 4.745$, $p < 0.001$, and AI-enabled Service Quality recorded $t = 11.442$, $p < .001$. However, these coefficients will be interpreted in detail in the regression and mediation analysis sections.

7. Spearman Correlation Analysis

Since the normality assessment did not confirm full normality for all main variables, Spearman's rank-order correlation coefficient was used to examine the relationships among the study variables. This test was selected because it is appropriate for assessing the strength and direction of association between variables when the normality assumption is not fully satisfied.

Table 30: Spearman correlation matrix

Correlations

			AIADOPT	AISQ	CXINNOV
Spearman's rho	AIADOPT	Correlation Coefficient	1.000	.477**	.508**
		Sig. (2-tailed)	.	.000	.000
		N	235	235	235
	AISQ	Correlation Coefficient	.477**	1.000	.704**
		Sig. (2-tailed)	.000	.	.000
		N	235	235	235
	CXINNOV	Correlation Coefficient	.508**	.704**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	235	235	235

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Established by the student based on SPSS outputs.

All three pairwise correlations are positive and statistically significant at the 0.01 level. AI adoption is moderately and positively associated with AI-enabled service quality (ρ =0.477, $p < .001$), indicating that higher levels of perceived AI adoption are associated with higher perceived service quality. AI adoption is similarly moderately and positively associated with customer experience innovation (ρ = 0.508, $p < .001$). The strongest correlation is observed between AI-enabled service quality and customer experience innovation (ρ = 0.704, $p < .001$),

suggesting a strong positive association between the mediating variable and the dependent variable. These results provide preliminary support for the proposed model and justify the subsequent mediation analysis. Correlation results do not establish causality, direction of effect; therefore, the hypotheses are tested more rigorously in the following sections.

8. Hypotheses Testing: Main Regression Results

- **Effect of AI Adoption on Customer Experience Innovation**

The first regression analysis was conducted to test the effect of AI Adoption on Customer Experience Innovation. This regression corresponds to the first main hypothesis of the study.

H1: AI Adoption has a positive effect on Customer Experience Innovation.

Table 31: Regression Results for the Effect of AI Adoption on Customer Experience Innovation

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.478[a]	.229	.226	.57518
a. Predictors: (Constant), AIADOPT				

Source: Established by the student based on SPSS outputs.

Dependent variable: Customer Experience Innovation.

Table 32: Regression Coefficients for H1

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.345	.280		4.805	.000	.793	1.896
	AIADOPT	.602	.072	.478	8.317	.000	.460	.745
a. Dependent Variable: CXINNOV								

Source: Established by the student based on SPSS output

As shown in Tables 31 and 32, the regression model is statistically significant, $F(1, 233) = 69.173$, $p < .001$. The coefficient of determination indicates that AI adoption explains 22.9% of the variance in customer experience innovation ($R^2 = .229$).

The regression coefficient of AI adoption is positive and statistically significant (B = .602, β = .478, t = 8.317, p < .001). This means that higher perceived

AI adoption is associated with higher customer experience innovation. Therefore, AI adoption has a positive and statistically significant effect on customer experience innovation, **and H1 is** supported**.**

- **Effect of AI Adoption on AI-enabled Service Quality**

The second regression analysis was conducted to test the effect of AI adoption on AI-enabled service quality. This regression corresponds to the second main hypothesis of the study:

H2: AI adoption has a positive effect on AI-enabled service quality.

Table 33:Regression Model Summary for H2

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.412[a]	.170	.166	.64210
a. Predictors: (Constant), AIADOPT				

Source: Established by the student based on SPSS output

Dependent variable: AI-enabled service quality.

Table 34: Regression Coefficients for H2

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.627	.312		5.208	.000	1.012	2.243
	AIADOPT	.558	.081	.412	6.901	.000	.399	.717
a. Dependent Variable: AISQ								

Source: Established by the student based on SPSS output

As shown in Tables 33 and 34, the regression model is statistically significant, F(1, 233) = 47.625, p < .001. The coefficient of determination indicates that AI Adoption explains 17.0% of the variance in AI-enabled Service Quality (R^2 = .170).

The regression coefficient of AI Adoption is positive and statistically significant (B = .558, β = .412, t = 6.901, p < .001). This means that higher perceived AI Adoption is associated with higher perceived AI-enabled service quality. Therefore, AI adoption has a positive and statistically significant effect on AI-enabled service quality, **and H2 is** supported**.**

- **Effect of AI-enabled Service Quality on Customer Experience Innovation**

The third regression analysis was conducted to examine the effect of AI-enabled service quality on customer experience innovation. This regression corresponds to the third main hypothesis of the study:

H3: AI-enabled service quality has a positive and significant effect on customer experience innovation.

Table 35: Regression Model Summary for H3

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.678[a]	.459	.457	.48167
a. Predictors: (Constant), AISQ				

Source: Established by the student based on SPSS output

Dependent variable: Customer Experience Innovation.

Table 36: Regression Coefficients for H3

Coefficients[a]										
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	1.281	.171		7.469	.000	.943	1.618		
	AISQ	.630	.045	.678	14.067	.000	.542	.718	1.000	1.000
a. Dependent Variable: CXINNOV										

Source: Established by the student based on SPSS output

As shown in **Tables 35 and 36**, a simple linear regression was conducted to test the effect of AI-enabled Service Quality on Customer Experience Innovation. The results

showed that the model was statistically significant, **F(1, 233) = 197.881, p < .001**, with an **R^2 value of .459**. This indicates that AI-enabled Service Quality explains **45.9%** of the variance in Customer Experience Innovation. The coefficient of AI-enabled Service Quality was positive and statistically significant (**B = .630, β = .678, t = 14.067, p < .001, 95% CI [.542, .718]**). Therefore, **H3 is** supported, confirming that higher perceived AI-enabled Service Quality contributes to higher Customer Experience Innovation.

- Baron and Kenny Mediation Analysis

Before confirming the mediation effect using Hayes' PROCESS Macro, a preliminary mediation analysis was conducted following the Baron and Kenny procedure. This approach examines whether the mediator explains part of the relationship between the independent variable and the dependent variable.

In this study, AI Adoption represents the independent variable, AI-enabled Service Quality represents the mediating variable, and Customer Experience Innovation represents the dependent variable.

Table 37: Baron and Kenny Mediation Steps

Step	Relationship tested	B	t	Sig.	Result
Step 1	AI Adoption → Customer Experience Innovation	.602	8.317	<0.001	Significant
Step 2	AI Adoption → AI-enabled Service Quality	.558	6.901	<0.001	Significant
Step 3	AI-enabled Service Quality → Customer Experience Innovation, controlling for AI Adoption	.538	11.442	<0.001	Significant
Step 4	AI Adoption → Customer Experience Innovation, controlling for AI-enabled Service Quality	.302	4.745	<0.001	Significant

Source: Established by the student based on SPSS regression outputs.

As shown in Table 37, all conditions of the Baron and Kenny procedure are satisfied. AI adoption has a significant effect on customer experience innovation; AI adoption has a significant effect on AI-enabled service quality, and AI-enabled service quality has a significant effect on customer experience innovation when AI adoption is controlled for. In addition, the effect of AI adoption on customer experience innovation decreases from B = .602 to B = .302

after introducing AI-enabled service quality into the model while remaining statistically significant. This indicates the presence of partial mediation. Therefore, AI-enabled service quality partially mediates the relationship between AI adoption and customer experience innovation.

8.1. PROCESS Macro Model 4: Bootstrapping Results:

To confirm the mediating role of AI-enabled service quality, Hayes' PROCESS Macro Model 4 was applied using 5,000 bootstrap samples. In this model, AI adoption was entered as the independent variable, AI-enabled service quality as the mediating variable, and customer experience innovation as the dependent variable.

Bootstrapping was used to test the statistical significance of the indirect effect. The mediation effect is considered statistically significant when the bootstrap confidence interval does not include zero.

The PROCESS command used in SPSS was as follows:

```
PROCESS

y = CXINNOV

/x = AIADOPT

/m = AISQ

/model = 4

/boot = 5000

/conf = 95

/stand = 1

/total = 1
```

For transparency and reproducibility, the PROCESS Macro syntax and the full SPSS output generated for the mediation analysis are presented in **Appendix E**.

Table 38: PROCESS Macro Model 4 Mediation Results

Path / Effect	B / Effect	SE / BootSE	t	p	95% Confidence Interval
Path a: AI Adoption → AI-enabled Service Quality	.5580	.0809	6.9011	<0.001	[.3987, .7174]
Path b: AI-enabled Service Quality → Customer Experience Innovation	.5380	.0470	11.4420	<0.001	[.4454, .6307]
Total effect c: AI Adoption → Customer Experience Innovation	.6025	.0724	8.3170	<0.001	[.4597, .7452]
Direct effect c′: AI Adoption → Customer Experience Innovation	.3022	.0637	4.7446	<0.001	[.1767, .4277]
Indirect effect: AI Adoption → AI-enabled Service Quality → Customer Experience Innovation	.3002	.0513	—	—	[.2059, .4061]

Source: Established by the student based on SPSS PROCESS Macro outputs.

Note: Bootstrap samples = 5,000; confidence level = 95%.

As shown in Table 38, the first path of the mediation model indicates that AI Adoption has a positive and statistically significant effect on AI-enabled Service Quality (B = .5580, SE = .0809, t = 6.9011, p < 0.001). This means that higher perceived AI Adoption is associated with higher perceived AI-enabled Service Quality.

The second path shows that AI-enabled Service Quality has a positive and statistically significant effect on Customer Experience Innovation when AI Adoption is controlled for (B = .5380, SE = .0470, t = 11.4420, p < 0.001). This indicates that higher AI-enabled Service Quality contributes significantly to higher Customer Experience Innovation.

The total effect of AI Adoption on Customer Experience Innovation is also positive and statistically significant (B = .6025, SE = .0724, t = 8.3170, p < 0.001). After introducing AI-enabled Service Quality as a mediator, the direct effect of AI Adoption on Customer Experience Innovation remains positive and statistically significant (B = .3022, SE = .0637, t = 4.7446, p < 0.001). However, the coefficient decreased from .6025 to .3022, indicating that part of the

effect of AI Adoption on Customer Experience Innovation is transmitted through AI-enabled Service Quality.

The bootstrapped indirect effect is positive and statistically significant (Effect = .3002, BootSE = .0513). The 95% bootstrap confidence interval ranges from .2059 to .4061 and does not include zero. This suggests the existence of a significant indirect effect of AI Adoption on Customer Experience Innovation through AI-enabled Service Quality.

Therefore, the PROCESS Macro Model 4 results support the conclusion that AI-enabled Service Quality **partially mediates** the relationship between AI Adoption and Customer Experience Innovation. Consequently, **H4 is supported as a partial mediation relationship.**

9. Sub-Hypotheses Testing

In addition to the main hypotheses, six sub-hypotheses were tested in order to examine the effect of AI Adoption on each dimension of Customer Experience Innovation. For this purpose, six simple linear regression analyses were conducted. AI Adoption was entered as the independent variable, while each dimension of Customer Experience Innovation was entered separately as a dependent variable.

Table 39: Sub-Hypotheses Testing Results

Sub-hypothesis	Relationship tested	R^2	B	β	t	Sig.	Decision
H1a	AI Adoption → Modernity and Innovation	.163	.654	.403	6.730	<0.001	supported
H1b	AI Adoption → Personalization	.130	.699	.361	5.907	<0.001	supported
H1c	AI Adoption → Proactivity	.025	.265	.157	2.427	.016	supported, lowest coefficient
H1d	AI Adoption → Seamlessness	.114	.618	.337	5.462	<0.001	supported
H1e	AI Adoption → Speed and Efficiency	.164	.696	.404	6.749	<0.001	supported
H1f	AI Adoption → Emotional Engagement	.156	.664	.395	6.562	<0.001	supported

Source: Established by the student based on SPSS regression outputs.

As shown in Table 39, AI Adoption is significantly and positively associated with all six dimensions of Customer Experience Innovation. This indicates that the adoption of AI-enabled technologies contributes not only to the general perception of customer experience innovation, but also to its specific dimensions.

- For **H1a**, AI Adoption has a positive and statistically significant effect on Modernity and innovation (B = .654, β = .403, t = 6.730, p <0.001). The model explains 16.3% of the variance in this dimension (R^2 = .163). Therefore, **H1a is supported**.
- For **H1b**, AI Adoption has a positive and statistically significant effect on Personalization (B = .699, β = .361, t = 5.907, p < 0.001). The model explains 13.0% of the variance in Personalization (R^2 = .130). Therefore, **H1b is supported**.
- For **H1c**, AI Adoption has a positive and statistically significant effect on Proactivity (B = .265, β = .157, t = 2.427, p = .016). However, the explanatory power of the model is low (R^2 = .025), meaning that AI Adoption explains only 2.5% of the variance in Proactivity. Therefore, **H1c is supported, but the effect is weak**.
- For **H1d**, AI Adoption has a positive and statistically significant effect on Seamlessness (B = .618, β = .337, t = 5.462, p < 0.001). The model explains 11.4% of the variance in Seamlessness (R^2 = .114). **Therefore, H1d is supported**.
- For **H1e**, AI Adoption has a positive and statistically significant effect on Speed and Efficiency (B = .696, β = .404, t = 6.749, p < 0.001). The model explains 16.4% of the variance in this dimension (R^2 = .164). Therefore, **H1e is supported**.
- For **H1f**, AI Adoption has a positive and statistically significant effect on Emotional Engagement (B = .664, β = .395, t = 6.562, p < .001). The model explains 15.6% of the variance in Emotional Engagement (R^2 = .156). **Therefore, H1f is supported.**

  Overall, the results of the sub-hypotheses show that AI Adoption positively affects all dimensions of Customer Experience Innovation. The strongest effects are observed for Speed and Efficiency, Modernity and Innovation, and Emotional Engagement. In contrast, Proactivity displayed the lowest coefficient, which is consistent with the descriptive statistics showing that it also had the lowest mean score among the Customer Experience Innovation dimensions.

10.Summary of Hypotheses Testing

After conducting the regression and mediation and sub-hypotheses analyses, the results of hypotheses testing were summarized in order to provide a clear overview of the empirical findings. The hypothesis testing results are presented in Table 40.

Table 40: Summary of Main Hypotheses Testing

Hypothesis	Statement	Main statistical result	Decision
H1	AI Adoption has a positive effect on Customer Experience Innovation.	B = .602, β = .478, t = 8.317, p < .001	supported
H1a	AI Adoption has a positive effect on Modernity and Innovation.	B = .654, β = .403, t = 6.730, p < .001	supported
H1b	AI Adoption has a positive effect on Personalization.	B = .699, β = .361, t = 5.907, p < .001	supported
H1c	AI Adoption has a positive effect on Proactivity.	B = .265, β = .157, t = 2.427, p = .016	supported, weak effect
H1d	AI Adoption has a positive effect on Seamlessness.	B = .618, β = .337, t = 5.462, p < .001	supported
H1e	AI Adoption has a positive effect on Speed and Efficiency.	B = .696, β = .404, t = 6.749, p < .001	supported
H1f	AI Adoption has a positive effect on Emotional Engagement.	B = .664, β = .395, t = 6.562, p < .001	supported
H2	AI Adoption has a positive effect on AI-enabled Service Quality.	B = .558, β = .412, t = 6.901, p < .001	supported
H3	AI-enabled Service Quality has a positive effect on Customer Experience Innovation.	B = .630, β = .678, t = 14.067, p < .001	supported
H4	AI-enabled Service Quality mediates the relationship between AI Adoption and Customer Experience Innovation.	Indirect effect = .3002, BootSE = .0513, 95% CI [.2059, .4061]	supported: partial mediation

Source: Established by the student based on SPSS PROCESS Macro outputs**.**

As shown in Table 40, all four main hypotheses and all six sub-hypotheses of the study were supported. The results indicate that AI Adoption significantly and positively associated with Customer Experience Innovation and on all its dimensions.

The strongest dimensional effects were observed for Speed and Efficiency, Modernity and Innovation, and Emotional Engagement. By comparison, Proactivity displayed the lowest coefficient among the six dimensions, while remaining statistically significant..

The results also show that AI Adoption is significantly and positively related to AI-enabled Service Quality, and that AI-enabled Service Quality is significantly and positively related to Customer Experience Innovation. Finally, the PROCESS Macro results indicated that AI-enabled Service Quality partially mediates the relationship between AI Adoption and Customer Experience Innovation. This means that AI Adoption contributes to Customer Experience Innovation both directly and indirectly through the improvement of AI-enabled Service Quality.

SECTION 02: Discussion of Findings

1. Discussion of Findings

The purpose of this study was to examine the extent to which artificial intelligence adoption contributes to customer experience innovation in the telecommunications sector, while AI-enabled service quality was considered as a mediating mechanism. The empirical results supported the main hypotheses and sub-hypotheses. Overall, the findings indicate that AI adoption is significantly associated with both customer experience innovation and AI-enabled service quality, and that AI-enabled service quality partially mediates the relationship between AI adoption and customer experience innovation.

These results suggest that AI contributes to customer experience innovation not merely as a modern technology, but as a service-related capability that becomes valuable when it improves the way customers perceive service quality, speed, personalization, accessibility, consistency, and efficiency. Therefore, the discussion of the findings is organized around the main hypotheses, the mediating role of AI-enabled service quality, the dimensions of customer experience innovation, and the specific context of Ooredoo Algeria.

2. Discussion of the Relationship between AI Adoption and Customer Experience Innovation

The first main finding shows that AI adoption has a positive and statistically significant effect on customer experience innovation. The regression results indicate that AI adoption explains 22.9% of the variance in customer experience innovation, with a statistically significant positive coefficient**.** This suggests that customers who perceive higher levels of AI adoption also tend to perceive Ooredoo Algeria's customer experience as more innovative, modern, and improved**.** Therefore, H1 is supported.

This finding is consistent with (T. H. Davenport & Ronanki, 2018), who argue that AI should be understood through the business capabilities it supports, particularly process automation, cognitive insight, and cognitive engagement. In the context of this study, this framework helps explain how AI adoption may contribute to customer experience innovation: process automation can support faster service delivery, cognitive insight can improve customer understanding and personalization, and cognitive engagement can support customer interaction through tools such as chatbots and intelligent agents.

The result is also consistent with (Enholm et al., 2022), who explain that AI can create business value through automation and augmentation, generating first-order effects such as process efficiency, insight generation, and business process transformation, which may later contribute to broader organizational outcomes such as improved products and services. These findings support this argument by demonstrating that AI adoption is not only an internal organizational capability, but also a customer-facing factor that can influence how customers evaluate their experience with the firm.

This finding is also supported by (Abu Daqar & Smoudy, 2019), who found a positive and significant relationship between artificial intelligence and customer experience in a study

involving banks and telecommunication companies. Their results are particularly relevant to the present study because they show that AI can contribute to customer experience improvement in service industries, including telecommunications.

In the telecommunications sector, this result is particularly meaningful. (World Economic Forum, 2025) presents AI as an essential enabler of telecommunications transformation, particularly through operational efficiency, customer service improvement, personalization, and the development of more proactive and cross-channel service models. Therefore, the positive relationship found in this study is aligned with the broader direction of the telecom industry, where AI is increasingly used to improve customer journeys, automate service interactions, and provide more personalized digital services.

This result is also aligned with (Chen & Prentice, 2025), who develop a conceptual framework explaining how AI influences customer experience along the customer journey through three main themes: AI experience, AI functions, and AI services. The present study contributes to this discussion by providing empirical evidence from the Algerian telecommunications context, where AI adoption is perceived by customers as a factor contributing to customer experience innovation.

3. Discussion of the Relationship between AI Adoption and AI-enabled Service Quality

The second main finding shows that AI adoption has a positive and statistically significant effect on AI-enabled service quality. The regression results indicate that AI adoption explains 17.0% of the variance in AI-enabled service quality. This means that customers who perceive Ooredoo Algeria as adopting AI and advanced digital technologies also tend to evaluate the quality of its service delivery more positively. Therefore, H2 is supported.

This result is consistent with (Huang & Rust, 2018), who explain that AI can perform different types of service tasks, particularly mechanical and analytical tasks. In the telecommunications context, many customer service activities can be interpreted as mechanical or analytical service tasks, such as responding to routine inquiries, providing account information, solving simple service issues, sending notifications, and supporting digital self-service. Therefore, (Huang and Rust, 2018) framework helps explain why AI adoption may improve perceived service quality by making service delivery faster, more consistent, and more accessible.

The finding is also coherent with (Ameen et al., 2021), who show that AI-enabled service quality is a key factor in AI-enabled customer experience, particularly through dimensions such as interface design, security, reliability, and customer service. Although their empirical study was conducted in a retail context rather than telecommunications, it supports the broader argument that customers evaluate AI-enabled services not only according to the presence of technology itself, but according to the quality of the service interaction that technology provides. In this sense, AI becomes valuable to customers when it improves responsiveness, convenience, personalization, trust, and the perceived quality of the service encounter.

(Wirtz et al., 2018) also support this interpretation from a service perspective. They explain that service robots and AI-enabled frontline technologies can provide predictable, homogeneous, reliable, and potentially customized service interactions when they are integrated with organizational knowledge bases and customer relationship management systems. Although their article is conceptual rather than empirical, it helps explain why customers may associate AI adoption with better service quality, especially for routine and repetitive service requests.

In the case of Ooredoo Algeria, this result suggests that customers do not evaluate AI adoption separately from service quality. Instead, they appear to perceive AI adoption positively when it improves the actual service experience, such as faster responses, easier access to information, and more reliable digital interactions.

4. Discussion of the Relationship between AI-enabled Service Quality and Customer Experience Innovation

The third main finding shows that AI-enabled service quality has a positive and statistically significant effect on customer experience innovation. In the multiple regression model, AI-enabled service quality was the strongest predictor of customer experience

innovation, with a standardized coefficient higher than that of AI adoption. This means that service quality plays a central role in explaining how customers perceive innovation in their experience. Therefore, H3 is supported.

This result is important because it suggests that customer experience innovation does not result from AI adoption alone. The mere presence of AI tools is not sufficient to create an innovative customer experience. Customers are more likely to perceive innovation when AI improves the quality-of-service delivery in practical and visible ways. For example, AI-enabled service quality may contribute to customer experience innovation when it makes services faster, more reliable, more convenient, more personalized, and easier to access.

This finding is consistent (Ameen et al., 2021), who demonstrate that AI-enabled service quality contributes to AI-enabled customer experience, particularly when AI services are perceived as secure, reliable, well-designed, and supported by appropriate customer service. Their study also shows that AI-enabled customer experience is shaped by a combination of AI-enabled service quality, personalization, perceived convenience, trust, perceived sacrifice, and relationship commitment, although some hypothesized paths were not statistically supported. The present study supports this broader logic and extends it to the telecommunications sector by showing that AI-enabled service quality is not only related to customer experience but also acts as a key predictor of customer experience innovation.

The result also supports the service logic proposed by (Wirtz et al., 2018). AI-enabled frontline technologies can improve the service encounter by increasing reliability, consistency, and personalization at scale. In the present study, this logic is reflected in the strong relationship between AI-enabled service quality and customer experience innovation. Customers appear to perceive experience innovation more strongly when AI-enabled services improve the quality of interaction, rather than when AI is present only as a technological feature.

Therefore, this finding supports one of the central arguments of the study: AI adoption becomes meaningful for customer experience innovation when it is translated into better service quality.

5. Discussion of the Mediating Role of AI-enabled Service Quality

The mediation analysis showed that AI-enabled service quality partially mediates the relationship between AI adoption and customer experience innovation. The PROCESS Macro results indicated a significant indirect effect because the bootstrap confidence interval did not include zero. At the same time, the direct effect of AI adoption on customer experience innovation remained statistically significant after introducing AI-enabled service quality. Therefore, H4 is supported as a partial mediation relationship.

This result means that AI adoption contributes to customer experience innovation in two ways. First, AI adoption has a direct effect on customer experience innovation. Customers may perceive AI adoption itself as a sign of modernity, innovation, and digital advancement. Second, AI adoption has an indirect effect through AI-enabled service quality. In this case, AI contributes to customer experience innovation because it improves the quality of the service encounter.

This finding represents an important contribution of the study. While previous studies have discussed the relationship between AI and customer experience, the present study shows that AI-enabled service quality can function as a mechanism through which AI adoption is translated into customer experience innovation. This is consistent with (Enholm et al., 2022), who explain that AI value creation can operate through first-order effects, including process efficiency, insight generation, and business process transformation, before producing broader organizational outcomes. In the present study, AI-enabled service quality can be understood as a customer-facing service-level mechanism that helps explain how AI adoption contributes to the higher-level outcome of customer experience innovation.

This finding also extends (Ameen et al., 2021) ,While their study confirms the importance of AI-enabled service quality for AI-enabled customer experience, it does not test AI-enabled service quality as a mediating mechanism between AI adoption and customer experience innovation. The present study therefore extends this logic by positioning AI-enabled service quality as the service-level mechanism through which AI adoption contributes to customer experience innovation.

The partial nature of the mediation is also important. Since the direct effect of AI adoption remained significant, AI adoption appears to influence customer experience innovation beyond service quality alone. Other possible mechanisms may include perceived technological modernity, digital trust, personalization, customer engagement, and the symbolic value of interacting with an innovative telecom operator. Therefore, AI-enabled service quality explains a substantial part of the relationship, but not the entire relationship.

6. Discussion of Customer Experience Innovation Dimensions

The sub-hypotheses provided a more detailed understanding of how AI adoption affects the different dimensions of customer experience innovation. The results showed that AI adoption has a positive and statistically significant effect on all six dimensions: modernity and innovation, personalization, proactivity, seamlessness, speed and efficiency, and emotional engagement. However, the strength of the effects differs across dimensions.

The strongest effect was observed for speed and efficiency. This result is theoretically coherent because AI is particularly effective in automating routine tasks, reducing waiting time, processing information quickly, and supporting digital self-service. This finding is consistent with (Huang and Rust, 2018), who explain that AI first performs mechanical and analytical service tasks, which are typically routine, repetitive, data-based, and rule-based. It is also consistent with (T. H. Davenport & Ronanki, 2018), who identify process automation as a major business use of AI, particularly for automating routine digital and administrative tasks. In the context of Ooredoo Algeria, customers appear to associate AI adoption most strongly with faster and more efficient service delivery.

The second strongest effect was found for modernity and innovation. This suggests that customers perceive AI adoption as a sign that Ooredoo Algeria is modernizing its services and using advanced technologies. This result is consistent with (World Economic Forum, 2025), which presents AI as a major driver of telecom transformation. In this sense, AI adoption has

not only a functional effect, but also a symbolic effect: it signals technological progress and service modernization.

The effect on emotional engagement was also statistically significant and relatively strong. However, this result should be interpreted carefully. It does not mean that AI replaces authentic human emotional interaction or that customers perceive AI as emotionally intelligent in the same way as humans. Rather, it suggests that AI adoption may contribute to positive feelings when it makes digital interactions faster, easier, more convenient, and less frustrating. This interpretation is consistent with (Huang and Rust, 2018) , who explain that empathetic intelligence is more difficult for AI than mechanical and analytical intelligence. It is also aligned with (Wirtz et al., 2018), who suggest that service robots and AI-enabled frontline technologies may support routine service encounters, while more complex emotional and relational services still require stronger human involvement. Therefore, emotional engagement in this study should be understood as customers' positive feelings toward the digital experience, not as evidence that AI fully replaces human emotional service.

The effect on personalization was also positive and significant. This result is consistent with (T. Davenport et al., 2020), who explain that AI can support customer personalization by analyzing customer data, predicting preferences, and enabling more relevant recommendations and offers. It is also consistent with (World Economic Forum, 2025), which highlights the role of AI in telecommunications for customer segmentation, next-best-action recommendations, personalized marketing, and hyper-personalized customer journeys. In Ooredoo Algeria's case, the result suggests that customers perceive AI adoption as contributing to more relevant and individualized service experiences.

The effect on seamlessness was positive and significant, indicating that AI adoption contributes to customers' perceptions of more consistent and integrated service interactions across channels. However, this effect was not among the strongest. This suggests that while customers perceive some improvement in consistency and channel integration, there may still be room for improvement in ensuring that customers do not need to repeat information and that their interactions remain coherent across digital and physical touchpoints.

The lowest coefficient was observed for Proactivity. Although the effect was statistically significant, it was much weaker than the effects observed for the other dimensions. This result is highly meaningful. It suggests that customers recognize the role of AI in improving speed, efficiency, personalization, and modernity, but they do not yet strongly perceive AI-enabled services as fully anticipatory or proactive. This interpretation is supported by the descriptive statistics, where proactivity recorded the lowest mean among the customer experience innovation dimensions. It is also supported by the item-level results, where the items related to being informed before asking and receiving relevant timely alerts recorded lower mean values than most other customer experience items.

This weaker proactivity result is consistent with the challenges identified in the literature. Proactive AI-enabled service requires more advanced capabilities, including integrated customer data, predictive analytics, real-time decision-making, and cross-channel coordination. (World Economic Forum, 2025) explains that telecom operators are moving

toward proactive, predictive, and cross-channel service models, while also facing barriers related to siloed data, legacy architectures, workforce capabilities, and responsible AI requirements. (Dwivedi et al., 2021) also emphasize that AI adoption is not purely technical, because organizations may face social, economic, data-related, managerial, technological, legal, and ethical challenges when implementing AI systems. Therefore, the weak proactivity result should not be interpreted as a failure of AI adoption, but as evidence that more advanced predictive and proactive AI capabilities may still be underdeveloped or not sufficiently visible to customers.

7. Contextual Interpretation in the Case of Ooredoo Algeria

In the context of Ooredoo Algeria, the findings suggest that AI adoption is positively perceived by customers and contributes to customer experience innovation. Customers appear to recognize AI adoption mainly through improvements in speed, service modernity, digital interaction, personalization, and perceived service quality. This is consistent with the respondent profile, where the mobile application was the most frequently used Ooredoo digital channel, followed by the website. This indicates that respondents already interact with Ooredoo through digital channels, which makes their perceptions relevant for evaluating AI adoption and AI-enabled service quality.

The results also show that AI-enabled service quality is the key mechanism through which AI adoption creates customer-facing value. In practical terms, this means that Ooredoo Algeria should not focus only on adopting AI technologies, but also on ensuring that these technologies improve the actual service experience perceived by customers. Customers do not evaluate AI adoption only in technical terms; they evaluate whether AI makes the service faster, easier, more reliable, more personalized, and more useful.

At the same time, the weaker proactivity result shows that AI-enabled services may still be perceived mainly as responsive rather than predictive. Customers appear to recognize AI's ability to respond, assist, and improve efficiency, but they are less convinced that Ooredoo anticipates their needs before they express them. This suggests that greater customer experience innovation may require stronger integration of customer data, predictive analytics, real-time alerts, and proactive customer support across channels.

This finding is particularly important for telecommunications because telecom operators operate in data-rich environments. However, the availability of data does not automatically produce proactive service. Data must be integrated, analyzed, governed, and translated into meaningful customer actions. Therefore, Ooredoo Algeria's future AI-related customer experience innovation may depend on its ability to move from responsive AI tools toward more predictive and proactive service systems.

8. Summary of the Discussion

Overall, the findings of this study are largely consistent with the reviewed literature. AI adoption was found to improve customer experience innovation, which supports the view that AI contributes to service transformation and business value creation. AI adoption also significantly improved AI-enabled service quality, suggesting that AI can enhance the way

services are delivered. Furthermore, AI-enabled service quality significantly predicted customer experience innovation and partially mediated the relationship between AI adoption and customer experience innovation.

The dimensional results provide a more detailed understanding of this relationship. AI adoption had the strongest effects on speed and efficiency, modernity and innovation, and emotional engagement, while its weakest effect was on proactivity. This suggests that customers currently perceive AI more strongly as a tool for faster, more modern, and more efficient service than as a fully predictive or anticipatory service system.

The main contribution of this study is therefore to show that AI adoption contributes to customer experience innovation in telecommunications, but that this contribution is largely explained by the improvement of AI-enabled service quality. In practical terms, telecom operators should not focus only on adopting AI technologies, but should ensure that these technologies produce visible improvements in the actual customer experience.

General Conclusion

This research examined the impact of artificial intelligence adoption on customer experience innovation at Ooredoo Algeria, while considering AI-enabled service quality as a mediating mechanism. Based on questionnaire data analyzed using SPSS, the findings show that AI adoption has a statistically significant positive effect on both customer experience innovation and AI-enabled service quality. The results also indicate that AI-enabled service quality positively affects customer experience innovation. Finally, the mediation analysis indicated that AI-enabled service quality partially mediates the relationship between AI adoption and customer experience innovation.

The results show that customers generally perceive Ooredoo Algeria as using AI-enabled digital technologies. They also evaluate AI-enabled service quality positively, although chatbot effectiveness and ease of interaction were rated relatively lower than other dimensions. Overall, customer experience innovation was positively perceived by respondents, but appears to depend on the perceived practical value of AI-enabled services.

The findings suggest that artificial intelligence can support customer experience innovation in telecommunications. However, AI does not automatically create value; its impact depends on the quality of the service experience perceived by customers. In this sense, AI-enabled service quality acts as the mediating mechanism linking AI adoption and customer experience innovation.

The main objective was to examine the impact of AI adoption on customer experience innovation at Ooredoo Algeria and to test the mediating role of AI-enabled service quality. This objective was achieved empirically, as the results supported the positive relationships between the three main variables and supported the mediating role of AI-enabled service quality. Therefore, the research question was addressed and empirically answered, and the conceptual model was empirically supported.

Limitations of the Research

Despite its contributions, this study has some limitations. First, the research was based on a convenience sample of Ooredoo Algeria customers, which means that the findings cannot be generalized to all customers of the company or to the entire Algerian telecommunications sector.

Second, the study used a cross-sectional design, meaning that data were collected at one point in time. As a result, the research cannot examine how customer perceptions of AI adoption and customer experience innovation evolve over time.

Third, the study relied only on customer perceptions and did not include the internal perspective of employees or managers who directly use AI tools in customer experience management. This limits the ability to fully understand the internal processes through which AI tools are implemented and used within the organization.

Finally, the study focused only on Ooredoo Algeria. A comparison with other telecommunications operators could have provided a broader understanding of AI-enabled customer experience innovation in the Algerian market.

Recommendations

Based on the findings, several recommendations can be proposed. First, Ooredoo Algeria should continue investing in AI-enabled services, but with a strong focus on service quality rather than technology adoption alone. AI tools should be designed to make customer interactions faster, clearer, more reliable, and more convenient.

Second, particular attention should be given to proactivity, since it appears to be the weakest dimension of customer experience innovation compared with the other dimensions. Ooredoo Algeria should use AI more actively to anticipate customer needs, detect potential problems before customers complain, and provide proactive notifications, personalized solutions, and preventive assistance. For example, AI could be used to identify service issues, predict customer dissatisfaction, suggest relevant offers, or alert customers before problems affect their experience.

Third, the company should improve chatbot performance and automated assistance systems, since these tools directly influence how customers perceive AI-enabled service quality. Chatbots should provide accurate answers, simple guidance, and smooth escalation to human agents when needed.

Fourth, Ooredoo Algeria should strengthen personalization by using AI to offer more relevant services, recommendations, and proactive support based on customer needs. This can help create a more innovative and customer-centered experience.

Finally, since Ooredoo Algeria already collects customer feedback through a structured satisfaction survey based on positive, neutral, and negative responses, the company should further exploit these data through AI-driven analysis. The feedback collected from customers can be used not only to identify satisfaction levels, but also to detect recurring problems, classify the main causes of dissatisfaction, and generate proactive improvement actions. This would allow Ooredoo Algeria to move from feedback collection to predictive and preventive customer experience management.

Future Research Perspectives

Future research could extend this study by using a larger and more representative sample of customers. It could also compare several telecommunications operators in Algeria in order to identify differences in AI adoption, service quality, and customer experience innovation.

Future studies may also adopt a longitudinal approach to examine how customer perceptions evolve over time as AI-enabled services become more developed. In addition, qualitative research involving managers, employees, or IT specialists could provide deeper insight into the internal challenges of AI implementation.

Future research could also extend the present study by collecting data from Ooredoo Algeria employees, particularly those who directly use AI tools in customer experience management. While this study focused on customers' perceptions of AI adoption, employees may provide deeper insight into the internal use of AI systems, such as tools used to process customer comments, classify feedback, analyze sentiment, and support decision-making. An employee-

based questionnaire, or a mixed-method approach combining customer and employee data, could therefore provide a more complete understanding of how AI contributes to service quality and customer experience innovation.

Finally, future research could examine additional mediating or moderating variables, such as customer trust, digital literacy, data privacy concerns, or customer satisfaction, in order to better understand the conditions under which AI adoption improves customer experience innovation.

Overall, this study confirms that artificial intelligence adoption can positively impact customer experience innovation, but its value depends strongly on the quality of AI-enabled services perceived by customers. In the case of Ooredoo Algeria, AI-enabled service quality represents a key mechanism for transforming technological adoption into meaningful and innovative customer experiences.

Bibliography

Abu Daqar, M. A. M., & Smoudy, A. K. A. (2019). The Role of Artificial Intelligence on Enhancing Customer Experience. *International Review of Management and Marketing*, *9*(4), 22–31. https://doi.org/10.32479/irmm.8166

Al-Ababneh, M. M. (2020). *Linking Ontology, Epistemology and Research Methodology*. *8*. https://doi.org/10.23756/sp.v8i1.500

Ameen, N., Tarhini, A., Reppel, A., & Anand, A. (2021). Customer experiences in the age of artificial intelligence. *Computers in Human Behavior*, *114*, 106548. https://doi.org/10.1016/j.chb.2020.106548

Asadi, S. S. (2025). The Role of Artificial Intelligence and Machine Learning in Transforming Telecommunications: Opportunities, Challenges, and Future Directions. *Oriental Journal of Computer Science and Technology*, *17*(1), 18–22. https://doi.org/10.13005/ojcst17.01.06

Becker, L., & Jaakkola, E. (2020). Customer experience: Fundamental premises and implications for research. *Journal of the Academy of Marketing Science*, *48*, 630–648. https://doi.org/10.1007/s11747-019-00718-x

Bonhomme, A. (2024). *L'intelligence artificielle dans le processus de prise de décision: Le cas de l'usage de l'IA et de la donnée massive dans la création d'un plan urbain*. Université Bordeaux Montaigne.

Chen, Y., & Prentice, C. (2025). Integrating Artificial Intelligence and Customer Experience. *Australasian Marketing Journal*, *33*(2), 141–153. https://doi.org/10.1177/14413582241252904

Confalonieri, R., Coba, L., Wagner, B., & Besold, T. R. (2021). *A historical perspective of explainable Artificial Intelligence*. *11*(1), e1391. https://doi.org/10.1002/widm.1391

Davenport, T., Guha, A., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. *Journal of the Academy of Marketing Science*, *48*, 24–42. https://doi.org/10.1007/s11747-019-00696-0

Davenport, T. H., & Ronanki, R. (2018). Artificial intelligence for the real world. *Harvard Business Review*, *96*(1), 108–116.

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, *13*(3), 319–340.

DeKeyser, A., Lemon, K. N., Klaus, P., & Keiningham, T. L. (2015). *A Framework for Understanding and Managing the Customer Experience* (Nos. 15–121; MSI Working Paper Series). Marketing Science Institute.

Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., Duan, Y., Dwivedi, R., Edwards, J., Eirug, A., Galanos, V., Ilavarasan, P. V., Janssen, M., Jones, P., Kar, A. K., Kizgin, H., Kronemann, B., Lal, B., Lucini, B., … Williams, M. D. (2021). Artificial Intelligence (AI): Multidisciplinary Perspectives on Emerging Challenges, Opportunities, and Agenda for Research, Practice and Policy. *International Journal of Information Management*, *57*. https://doi.org/10.1016/j.ijinfomgt.2019.08.002

Enholm, I. M., Papagiannidis, E., Mikalef, P., & Krogstie, J. (2022). Artificial Intelligence and Business Value: A Literature Review. *Information Systems Frontiers*, *24*(5), 1709–1734. https://doi.org/10.1007/s10796-021-10186-w

Gentile, C., Spiller, N., & Noci, G. (2007). How to Sustain the Customer Experience: An Overview of Experience Components that Co-create Value With the Customer. *European Management Journal*, *25*(5), 395–410. https://doi.org/10.1016/j.emj.2007.08.005

Gupta, S. (2018). *Driving Digital Strategy: A Guide to Reimagining Your Business*. Harvard Business Review Press.

Haenlein, M., & Kaplan, A. (2019). A Brief History of Artificial Intelligence: On the Past, Present, and Future of Artificial Intelligence. *California Management Review*, *61*(4), 5–14. https://doi.org/10.1177/0008125619864925

Haftor, D. M., Costa-Climent, R., & Ribeiro-Navarrete, S. (2024). Firms' Use of Predictive Artificial Intelligence for Economic Value Creation and Appropriation. *International Journal of Information Management*, *79*. https://doi.org/10.1016/j.ijinfomgt.2024.102836

Hair Jr, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate Data Analysis* (8th ed.). Cengage Learning EMEA.

Hajkowicz, S., Sanderson, C., Karimi, S., & Naughtin, C. (2023). Artificial Intelligence Adoption in the Physical Sciences, Natural Sciences, Life Sciences, Social Sciences and the Arts and Humanities: A Bibliometric Analysis of Research Publications from 1960–2021. *Technology in Society*, *74*. https://doi.org/10.1016/j.techsoc.2023.102260

Hayes, A. F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis*. Guilford Press.

Holbrook, M. B., & Hirschman, E. C. (1982). The Experiential Aspects of Consumption: Consumer Fantasies, Feelings, and Fun. *Journal of Consumer Research*, *9*(2).

Huang, M.-H., & Rust, R. T. (2018). Artificial Intelligence in Service. *Journal of Service Research*. https://doi.org/10.1177/1094670517752459

Klaus, P., & Maklan, S. (2013). Towards a Better Measure of Customer Experience. *International Journal of Market Research*, *55*. https://doi.org/10.2501/IJMR-2013-021

Kumar, D. V., & Koshy, E. R. (2025). Analysing the Role of Artificial Intelligence in Customer Experience and Enhancing Retention. *International Journal for Multidisciplinary Research*, *7*.

Lemon, K. N., & Verhoef, P. C. (2016). Understanding Customer Experience Throughout the Customer Journey. *Journal of Marketing*. https://doi.org/10.1509/jm.15.0420

Loi N° 18-07, Pub. L. Nos. 18–07, Journal officiel de la République algérienne démocratique et populaire (2018). https://www.joradp.dz/FTP/jo-francais/2018/F2018034.pdf

McCarthy, J. (2007, November 12). *What Is Artificial Intelligence?* Stanford University. http://www-formal.stanford.edu/jmc/whatisai.html

Nguyen, M. (2024). *Artificial Intelligence Chatbots in Telecommunications: Transforming Customer Service in the Digital Age*. Haaga-Helia University of Applied Sciences.

Nilsson, N. J. (2010). *The Quest for Artificial Intelligence: A History of Ideas and Achievements*. Cambridge University Press.

Ooredoo Algérie. (n.d.). *À propos de Ooredoo*. Retrieved https://www.ooredoo.dz/fr/tout-sur-ooredoo/a-propos

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality. *Journal of Retailing*.

Perifanis, N.-A., & Kitsios, F. (2023). Investigating the Influence of Artificial Intelligence on Business Value in the Digital Era of Strategy: A Literature Review. *Information*. https://doi.org/10.3390/info14020085

Pine, B. J., & Gilmore, J. H. (1998). Welcome to the Experience Economy. *Harvard Business Review*. Harvard Business Review article page

Saunders, M. N. K., Lewis, P., & Thornhill, A. (2023). *Research Methods for Business Students* (9th ed.). Pearson.

Shahirah Siti, S., & Nyet Moi, S. (2019). *Investigating the validity and reliability of Survey Attitude towards Statistics instrument among rural secondary school students*. (4). http://www.ijem.com/

Wirtz, J., Patterson, P. G., Kunz, W. H., Gruber, T., Lu, V. N., Paluch, S., & Martins, A. (2018). *Brave New World: Service Robots in the Frontline*. https://doi.org/10.1108/JOSM-04-2018-0119

World Economic Forum. (2025). *Artificial Intelligence in Telecommunications* [White paper]. World Economic Forum.

Appendices

Appendix A – Questionnaire

"Artificial Intelligence for Customer Experience Innovation: A Case Study of Ooredoo"

English

Good morning,

The objective of this study is to address the following research question: ***What is the impact of artificial intelligence adoption on customer experience innovation through AI-enabled service quality in the case of Ooredoo Algeria?*** This questionnaire examines the role of AI through three main dimensions: perceived AI adoption, AI-enabled service quality, and customer experience innovation. Responses are anonymous and used strictly for academic purposes.

Français

Ce questionnaire s'inscrit dans le cadre d'un mémoire de Master en management stratégique et systèmes d'information. Il vise a répondre à la question ***Quel est l'impact de l'adoption de l'intelligence artificielle sur l'innovation de l'expérience client à travers la qualité de service renforcée par l'IA dans le cas d'Ooredoo Algérie ?.*** Vos réponses sont anonymes et seront utilisées uniquement à des fins académiques.

العربية

يهدف هذا البحث إلى الإجابة عن الإشكالية التالية ***بما أثر تبنّي الذكاء الاصطناعي على ابتكار تجربة الزبون من خلال جودة الخدمة المدعّمة بالذكاء الاصطناعي في حالة أوريدو الجزائر؟*** يدرس هذا الاستبيان دور الذكاء الاصطناعي من خلال ثلاثة أبعاد رئيسية .الاستبيان مجهول الهوية وللأغراض الأكاديمية فقط.

Q23. Language / Langue / اللغة *

Please choose the language you are most comfortable with. / Veuillez choisir la langue avec laquelle vous êtes le plus à l'aise.

- ○ Français → Questions
- ○ English → Questions
- ○ العربية → Questions

VERSION FRANÇAISE

Pour chaque affirmation, choisissez de 1 à 5 — 1 = Pas du tout d'accord → 5 = Tout à fait d'accord.

Dans ce questionnaire, les « services d'Ooredoo » désignent : application mobile, site web, offres internet/mobile, service client, call center, agences physiques, chatbot/assistant virtuel, réseaux sociaux, support WhatsApp, offres digitales personnalisées.

Pas du tout d'accord	1	2	3	4	5	Tout à fait d'accord
	○	○	○	○	○	

Section B — Adoption perçue de l'IA

B1. Ooredoo utilise des technologies numériques avancées basées sur l'IA dans ses services. *

B2. Ooredoo utilise des systèmes automatisés pour répondre aux demandes des clients. *

B3. Ooredoo utilise des technologies intelligentes pour améliorer les interactions avec les clients. *

B4. Les services d'Ooredoo semblent plus rapides et plus intelligents grâce aux technologies numériques basées sur l'IA.

B5. Le chatbot d'Ooredoo améliore efficacement mes interactions avec le service client. *

B6. Les outils d'Ooredoo basés sur l'IA me fournissent des informations en temps réel. *

Section C — Qualité de service basée sur l'IA

C1. Ooredoo répond rapidement à mes demandes. *

C2. Ooredoo fournit ses services de manière fiable et cohérente. *

C3. Ooredoo fournit des services qui répondent à mes besoins. *

C4. Ooredoo rend les interactions de service simples et pratiques. *

C5. Dans l'ensemble, Ooredoo offre une qualité de service élevée. *

Section D — Innovation de l'expérience client

Dimensions : D1–D4 Modernité & Innovation | D5–D7 Personnalisation | D8–D10 Proactivité | D11–D12 Fluidité | D13–D14 Rapidité | D15–D17 Engagement émotionnel

D1. Ooredoo offre une expérience client qui paraît moderne. *

D2. Ooredoo fournit ses services d'une manière plus innovante que les opérateurs télécoms traditionnels. *

D3. Ooredoo utilise des méthodes avancées qui améliorent mon expérience client. *

D4. Dans l'ensemble, Ooredoo crée une expérience client innovante. *

D5. Ooredoo me propose des recommandations adaptées à mes préférences personnelles. *

D6. J'ai l'impression qu'Ooredoo comprend mes besoins individuels. *

D7. Les offres que je reçois d'Ooredoo me semblent pertinentes par rapport à ma situation. *

D8. Ooredoo m'informe des problèmes ou des offres avant que j'aie à le demander. *

D9. Je reçois des alertes pertinentes et en temps opportun de la part d'Ooredoo. *

D10. Ooredoo offre une expérience client qui paraît plus intelligente et plus proactive. *

D11. Mon expérience avec Ooredoo est cohérente sur tous les canaux (application, agence, chatbot…). *

D12. Je n'ai pas besoin de répéter mes informations lorsque je passe d'un canal à l'autre chez Ooredoo. *

D13. Les services d'Ooredoo me permettent de résoudre mes demandes rapidement. *

D14. Les services numériques d'Ooredoo sont disponibles 24h/24 et 7j/7 sans délai. *

D15. Mes interactions avec les services d'Ooredoo me laissent un sentiment positif. *

D16. Je me sens valorisé(e) en tant que client(e) lorsque j'utilise les services d'Ooredoo. *

D17. Je trouve mon expérience numérique avec Ooredoo agréable. *

Section A — Informations générales (Clients)

A1. Quel canal numérique Ooredoo utilisez-vous le plus fréquemment ? *

- ○ Application mobile
- ○ Site web (ooredoo.dz)
- ○ Page Facebook
- ○ Instagram
- ○ WhatsApp
- ○ Chatbot IA
- ○ Agence physique
- ○ Centre d'appels (333)

A2. Genre *

- ○ Homme
- ○ Femme

A3. Âge *

- ○ Moins de 25 ans
- ○ 25–34 ans
- ○ 35–44 ans

- ○ 45–54 ans
- ○ 55 ans et plus

A4. Niveau d'études *

- ○ Secondaire
- ○ Licence
- ○ Master
- ○ Doctorat
- ○ Autre

A5. Depuis combien de temps êtes-vous client(e) chez Ooredoo ? *

- ○ Moins de 30 jours
- ○ 30 à 90 jours
- ○ 6 mois à 1 an
- ○ 1 à 3 ans
- ○ Plus de 3 ans

A6. Fréquence d'utilisation des canaux digitaux Ooredoo *

- ○ 1 fois par jour ou plus
- ○ Plusieurs fois par semaine
- ○ 1 fois par semaine
- ○ 1 à 3 fois par mois
- ○ Rarement
- ○ Jamais

ENGLISH VERSION

For each statement, choose from 1 to 5 — 1 = Strongly disagree → 5 = Strongly agree.

'Ooredoo services' refers to: mobile application, website, internet and mobile offers, customer service, call center, physical agency, chatbot/virtual assistant, social media pages, WhatsApp support, and personalized digital offers.

Strongly disagree	1	2	3	4	5	Strongly agree
	○	○	○	○	○	

Section B — Perceived AI Adoption

B1. Ooredoo uses AI-enabled digital technologies in its services. *

B2. Ooredoo uses automated systems to respond to customer requests. *

B3. Ooredoo uses smart technologies to improve customer interactions. *

B4. Ooredoo's services seem faster and smarter because of AI-enabled digital technologies. *

B5. Ooredoo's chatbot effectively improves my interactions with customer service. *

B6. Ooredoo's AI-enabled tools provide me with information in real time. *

Section C — AI-Enabled Service Quality

C1. Ooredoo responds quickly to my requests. *

C2. Ooredoo provides its services in a reliable and consistent way. *

C3. Ooredoo provides services that correspond to my needs. *

C4. Ooredoo makes service interactions easy and convenient. *

C5. Overall, Ooredoo provides high-quality service. *

Section D — Customer Experience Innovation

Dimensions: D1–D4 Modernity & Innovation | D5–D7 Personalization | D8–D10 Proactivity | D11–D12 Seamlessness | D13–D14 Speed & Efficiency | D15–D17 Emotional Engagement

D1. Ooredoo offers a customer experience that feels modern. *

D2. Ooredoo provides services in a more innovative way than traditional telecom operators. *

D3. Ooredoo uses advanced methods that improve my customer experience. *

D4. Overall, Ooredoo creates an innovative customer experience. *

D5. Ooredoo offers me recommendations that match my personal preferences. *

D6. I feel that Ooredoo understands my individual needs. *

D7. The offers I receive from Ooredoo feel relevant to my situation. *

D8. Ooredoo informs me about issues or offers before I have to ask. *

D9. I receive relevant and timely alerts from Ooredoo. *

D10. Ooredoo offers a customer experience that feels smarter and more proactive. *

D11. My experience with Ooredoo is consistent across all channels (app, store, chatbot…). *

D12. I do not need to repeat my information when switching between Ooredoo's service channels. *

D13. Ooredoo's services allow me to resolve my requests quickly. *

D14. Ooredoo's digital services are available 24/7 without delay. *

D15. My interactions with Ooredoo's services leave me with a positive feeling. *

D16. I feel valued as a customer when using Ooredoo's services. *

D17. I find my digital experience with Ooredoo enjoyable. *

Section A — General Information (Customers)

A1. Which Ooredoo digital channel do you use most frequently? * *

- ○ Mobile app
- ○ Website (ooredoo.dz)
- ○ Facebook page
- ○ Instagram
- ○ WhatsApp
- ○ AI Chatbot
- ○ Physical agency
- ○ Call center (333)

A2. Gender * *

- ○ Male
- ○ Female

A3. Age * *

- ○ Under 25
- ○ 25–34
- ○ 35–44
- ○ 45–54
- ○ 55 and above

A4. Education level * *

- ○ Secondary
- ○ Bachelor's
- ○ Master's
- ○ Doctorate
- ○ Other

A5. How long have you been an Ooredoo customer? * *

- ○ Less than 30 days
- ○ 30–90 days
- ○ 6 months–1 year
- ○ 1–3 years
- ○ More than 3 years

A6. Frequency of using Ooredoo's digital channels * *

- ○ Once a day or more
- ○ Several times a week
- ○ Once a week
- ○ 1 to 3 times a month
- ○ Rarely
- ○ Never

النسخة العربية

لكل عبارة، اختر من 1 إلى 5 — 1 = لا أوافق بشدة ← 5 = أوافق بشدة.

يُقصد بـ» خدمات أوريدو :«تطبيق الهاتف المحمول، الموقع الإلكتروني، عروض الإنترنت والهاتف المحمول، خدمة العملاء، مركز الاتصال، الوكالات الفيزيائية، الدردشة الآلية أو المساعد الافتراضي، صفحات التواصل الاجتماعي، الدعم عبر واتساب، والعروض الرقمية المخصصة.

أوافق بشدة	5	4	3	2	1	لا أوافق بشدة
	○	○	○	○	○	

القسم ب — تبّني الذكاء الاصطناعي

ب .1.تستخدم أوريدو تقنيات رقمية مدعومة بالذكاء الاصطناعي في خدماتها* .

ب .2.تستخدم أوريدو أنظمة آلية للرد على طلبات العملاء* .

ب .3.تستخدم أوريدو تقنيات ذكية لتحسين التفاعل مع العملاء* .

ب .4.تبدو خدمات أوريدو أسرع وأذكى بفضل التقنيات الرقمية المدعومة بالذكاء الاصطناعي* .

ب .5.يُحسّن الروبوت المحادثة لأوريدو (Chatbot) تفاعلاتي مع خدمة العملاء بفعالية* .

ب .6.توفر لي أدوات أوريدو المبنية على الذكاء الاصطناعي معلومات في الوقت الفعلي* .

القسم ج — جودة الخدمة المبنية على الذكاء الاصطناعي

ج .1.تستجيب أوريدو بسرعة لطلباتي* .

ج .2.تقدم أوريدو خدمات تلبي احتياجاتي* .

ج .3.تجعل أوريدو التفاعلات مع الخدمة سهلة ومريحة* .

ج .4.تقدم أوريدو معلومات دقيقة وموثوقة* .

ج .5.بشكل عام، تقدم أوريدو جودة خدمة عالية* .

القسم د — ابتكار تجربة العميل

د .1.تقدم أوريدو تجربة عملاء تبدو حديثة* .

د .2.تقدم أوريدو خدماتها بطريقة أكثر ابتكاراً من مشغلي الاتصالات التقليديين* .

د .3.تستخدم أوريدو أساليب متقدمة تُحسّن تجربتي كعميل* .

د .4.بشكل عام، تخلق أوريدو تجربة عملاء مبتكرة* .

د .5.تقدم لي أوريدو توصيات تتناسب مع تفضيلاتي الشخصية* .

د .6.أشعر أن أوريدو تفهم احتياجاتي الفردية* .

د .7.العروض التي أتلقاها من أوريدو تبدو مناسبة لوضعي* .

د .8.تُعلمني أوريدو بالمشكلات أو العروض قبل أن أضطر للسؤال* .

د .9.أتلقى تنبيهات ذات صلة وفي الوقت المناسب من أوريدو* .

د .10.تقدم أوريدو تجربة عملاء تبدو أكثر ذكاءً واستباقية* .

د .11.تجربتي مع أوريدو متسقة عبر جميع القنوات) التطبيق، الوكالة، الدردشة الآلية* .(...

د .12.لا أحتاج إلى تكرار معلوماتي عند التنقل بين قنوات خدمة أوريدو* .

د .13.تتيح لي خدمات أوريدو حل طلباتي بسرعة* .

د .14.الخدمات الرقمية لأوريدو متاحة على مدار الساعة دون تأخير* .

د .15.تتركني تفاعلاتي مع خدمات أوريدو بشعور إيجابي* .

د .16.أشعر بأنني عميل مُقدَّر عند استخدام خدمات أوريدو* .

د .17.أجد تجربتي الرقمية مع أوريدو ممتعة* .

القسم أ — معلومات عامة (الزبائن)

1. أيّ قناة رقمية لأوريدو تستخدمها بشكل أكثر تكراراً؟ *

- ○التطبيق المحمول
- ○الموقع الإلكتروني(ooredoo.dz)
- ○صفحة فيسبوك
- ○إنستغرام
- ○واتساب
- ○الدردشة الآلية الذكية
- ○الوكالة المادية
- ○مركز الاتصال(333)

2. الجنس *

- ○ذكر
- ○أنثى

3. الفئة العمرية *

- ○أقل من25
- ○ 25–34
- ○ 35–44
- ○ 45–54
- ○ 55 فما فوق

4. المستوى التعليمي*

- ○ثانوي
- ○ليسانس
- ○ماستر
- ○دكتوراه
- ○أخرى

5. مدة اشتراكك مع أوريدو*

- ○أقل من 30 يوماً
- ○ 30 إلى 90 يوماً
- ○ 6 أشهر إلى سنة
- ○ 1 إلى 3 سنوات
- ○أكثر من 3 سنوات

6. تكرار استخدام القنوات الرقمية لأوريدو*

- ○مرة واحدة يومياً أو أكثر
- ○عدة مرات في الأسبوع
- ○مرة واحدة في الأسبوع
- ○من 1 إلى 3 مرات في الشهر
- ○نادراً
- ○أبدا

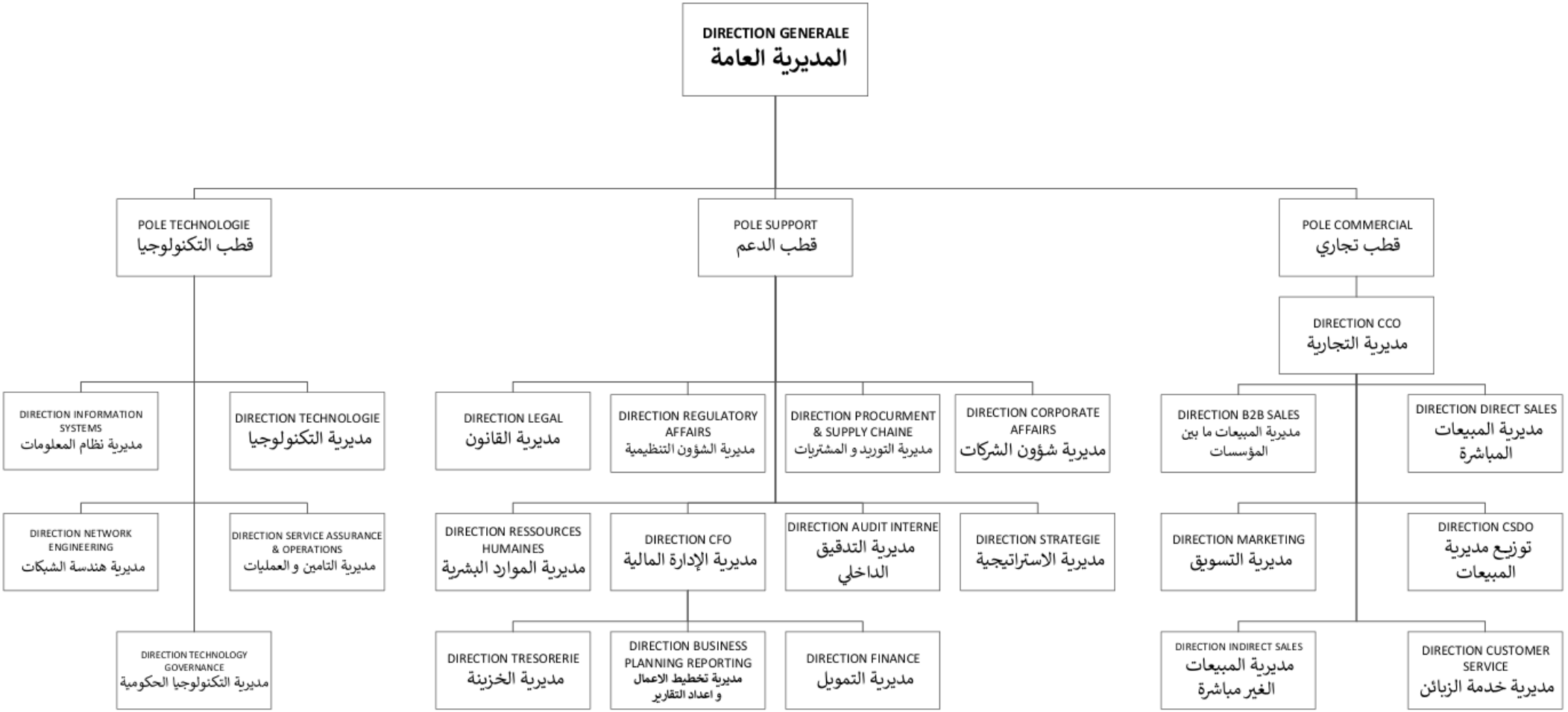
شكرا على مشاركتكم | Merci pour votre participation | Thank you for your participation

Your contribution is valuable to the completion of this research. The information collected will be used exclusively for academic purposes.

Votre contribution est précieuse pour la réalisation de cette recherche. Les informations recueillies seront utilisées exclusivement à des fins académiques.

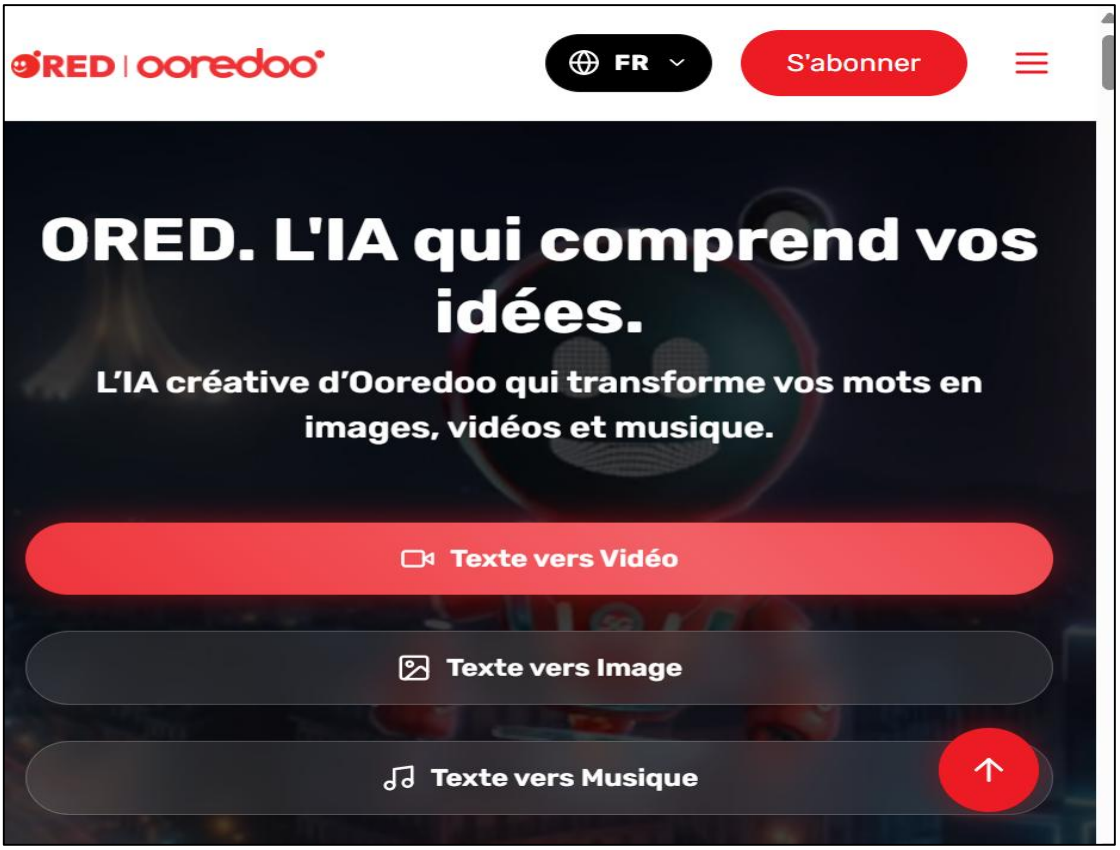
مساهمتكم قيمة في استكمال هذا البحث .نُقدّر وقتكم ونتمنى لكم كل التوفيق.

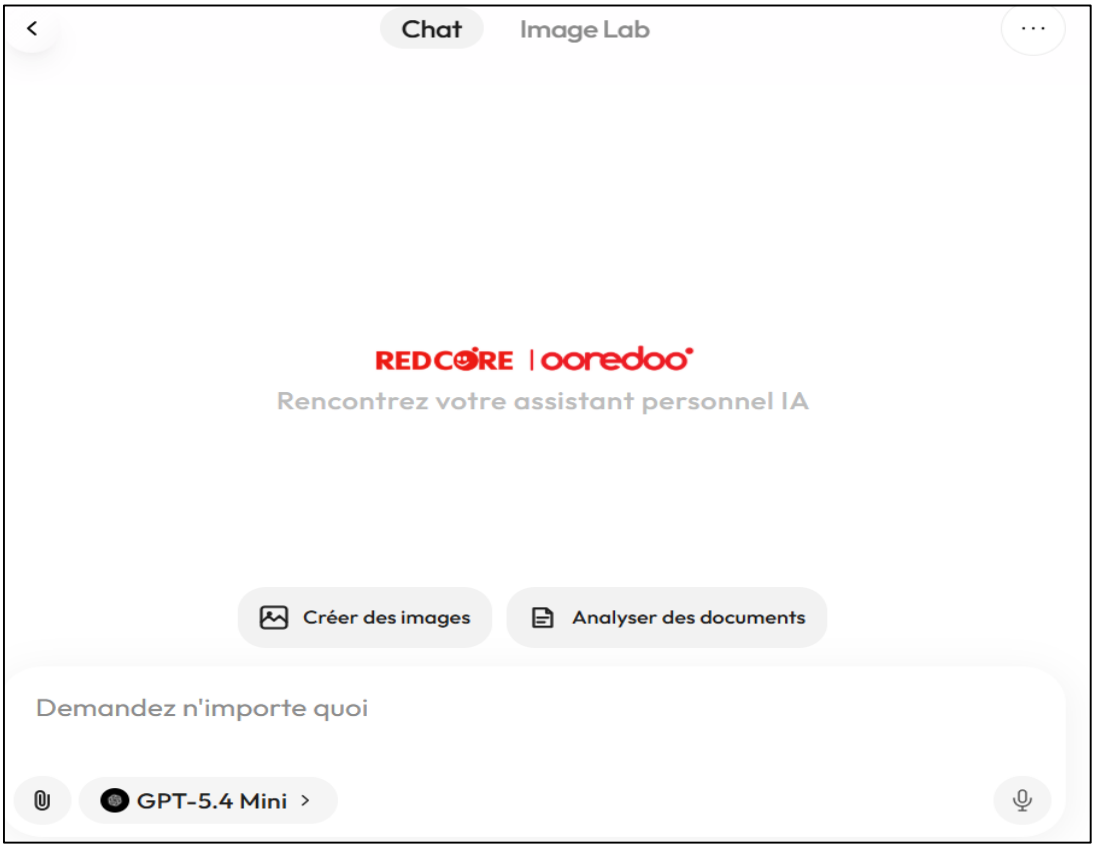
Appendix B – Ooredoo's Organigram



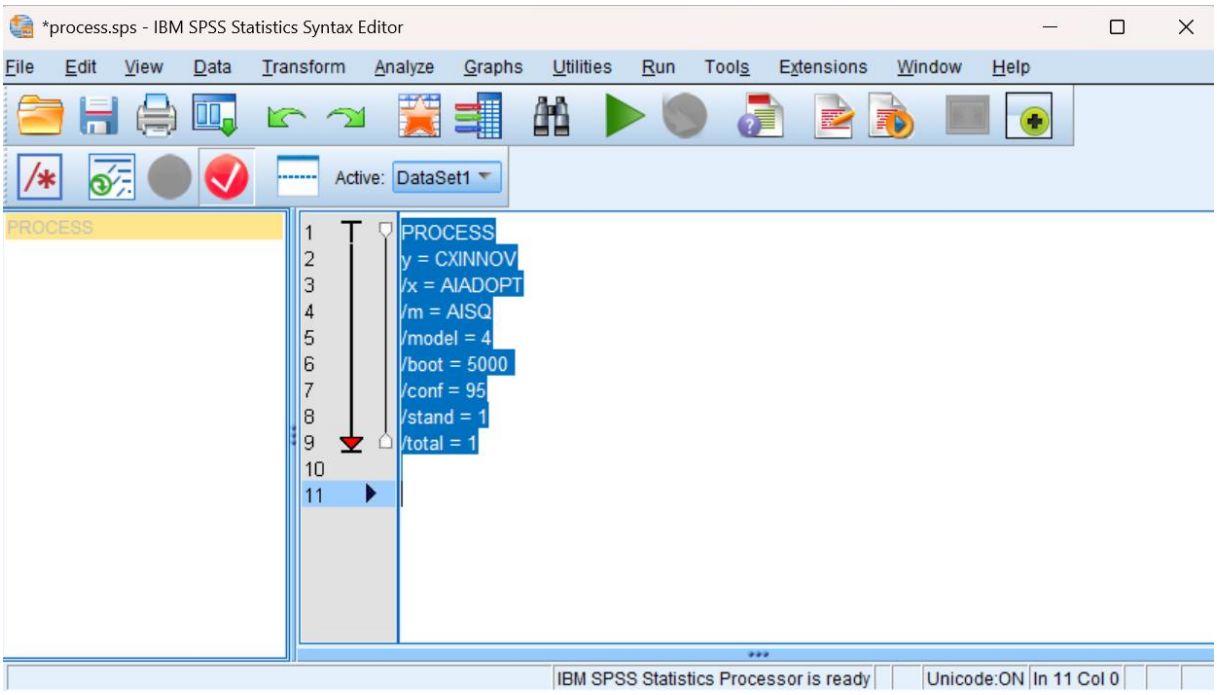
Appendix C – Ooredoo's internal AI assistant for comments treatment

Appendix D – REDCORE and ORED AI-based Platforms





Appendix E – PROCESS Macro Model 4 Syntax and SPSS Output



Matrix

Run MATRIX procedure:

**** PROCESS Procedure for SPSS Version 4.3.1 ****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2022). www.guilford.com/p/hayes3

****

PROCESS is now ready for use.

Workshop schedule available at http://haskayne.ucalgary.ca/CCRAM

------ END MATRIX -----

Matrix

Run MATRIX procedure:

**** PROCESS Procedure for SPSS Version 4.3.1 ****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2022). www.guilford.com/p/hayes3

****

Model : 4

Y : CXINNOV

X : AIADOPT

M : AISQ

Sample

Size: 235

****

OUTCOME VARIABLE:

AISQ

Model Summary

R	R-sq	MSE	F	df1	df2	p
.4120	.1697	.4123	47.6250	1.0000	233.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.6271	.3124	5.2080	.0000	1.0116	2.2427
AIADOPT	.5580	.0809	6.9011	.0000	.3987	.7174

Standardized coefficients

	coeff
AIADOPT	.4120

****

OUTCOME VARIABLE:

CXINNOV

Model Summary

R	R-sq	MSE	F	df1	df2	p
.7121	.5071	.2124	119.3309	2.0000	232.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	.4693	.2369	1.9808	.0488	.0025	.9362
AIADOPT	.3022	.0637	4.7446	.0000	.1767	.4277
AISQ	.5380	.0470	11.4420	.0000	.4454	.6307

Standardized coefficients

	coeff
AIADOPT	.2400
AISQ	.5788

********** TOTAL EFFECT MODEL **********

OUTCOME VARIABLE:

CXINNOV

Model Summary

R	R-sq	MSE	F	df1	df2	p
.4785	.2289	.3308	69.1732	1.0000	233.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.3448	.2799	4.8050	.0000	.7934	1.8962
AIADOPT	.6025	.0724	8.3170	.0000	.4597	.7452

Standardized coefficients

	coeff
AIADOPT	.4785

********** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **********

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI	c_cs
.6025	.0724	8.3170	.0000	.4597	.7452	.4785

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_cs
.3022	.0637	4.7446	.0000	.1767	.4277	.2400

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
AISQ	.3002	.0518	.2033	.4050

Completely standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
AISQ	.2384	.0372	.1676	.3119

********** ANALYSIS NOTES AND ERRORS **********

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

------ END MATRIX -----