



Article

The Impact of Artificial Intelligence on Creating a Personalized Consumer Experience

Jelena Mikić ^{1,*}, Jovana Gardašević ¹ and Ivana Brkić ¹

¹ Faculty of Economics and Engineering Management in Novi Sad, University Business Academy in Novi Sad, Cvećarska 2, 21000 Novi Sad, Serbia

* Correspondence: jelena.mikic@represent.rs

Received: 14 November 2025; Accepted: 18 January 2026

Abstract: Artificial intelligence is fundamentally reshaping marketing by enabling hyper-personalized consumer experiences at scale, yet the mechanisms through which AI-driven personalization translates into measurable business outcomes remain insufficiently examined in the literature. This study combines a theoretical literature review with a qualitative case study of Orange, a global telecommunications company, to investigate the relationship between AI-based personalization and key performance indicators including conversion rates, customer engagement, satisfaction, and revenue growth. Analysis of Orange's Engage 2025 strategy, launched in 2019, reveals substantial performance improvements: package upgrades increased by 20%, subscription conversions by 35%, digital engagement by 40%, and cross- and upsell sales by 6%, while customer data platform campaigns demonstrated 360% greater efficiency than traditional media agency campaigns with cost-per-acquisition reduced sixfold. Year-on-year revenue growth in the digital, data, and AI segment reached 7% in 2024. Review examined how personalized experiences improve conversion and engagement, highly personalized services enhance user satisfaction, and AI recommendation systems are susceptible to bias when input data quality is poor or incomplete. These findings indicate that AI personalization is a significant driver of consumer engagement and revenue, while ethical challenges surrounding data privacy, algorithmic bias, and transparency necessitate robust regulatory and corporate governance frameworks.

Keywords: *Artificial intelligence; personalization; consumer experience; marketing analytics; machine learning; customer engagement; predictive analytics.*

1. Introduction

The rapid advancement of artificial intelligence (AI) has fundamentally transformed the marketing landscape, reshaping how organizations engage with consumers and make strategic decisions. In an era defined by information overload and shrinking consumer attention spans, the ability to deliver timely, relevant, and individualized content has become a decisive competitive advantage. The scale of consumer expectation surrounding personalization underscores its commercial urgency: 71% of consumers expect personalized interactions and 76% express frustration

when such personalization is absent [1], while a separate industry benchmark reports that 76% of consumers expect customized interactions as a baseline standard [2]. Perhaps most strikingly, 89% of business decision-makers regard personalization as critical to organizational success over the coming three years [3]. These figures collectively signal that AI-driven personalization has moved from a differentiating luxury to a near-mandatory operational capability.

A growing body of scholarly and industry literature has documented the mechanisms through which AI achieves these outcomes. The integration of AI into marketing communications is accelerating at an unprecedented pace, with documented contributions spanning customer insight generation, market segmentation, targeted advertising, and improvements in both customer retention and conversion rates [4–8]. Key technological enablers include conversational AI, natural language processing (NLP), predictive analytics, and recommendation algorithms — tools that together allow organizations to anticipate consumer needs before they are explicitly expressed [4,9]. Platforms such as Netflix and Amazon exemplify this approach at scale through sophisticated recommendation systems, and AI-based personalization in e-commerce has been shown to yield revenue increases of 10–15% [1,10]. Research further indicates that 71% of consumers report a likelihood of purchasing based on a social media recommendation, and that 54% of social network users have made a purchase following exposure to digital media advertising [10]. Taken together, the literature presents a compelling case that AI personalization tools — when effectively deployed — can drive measurable gains in engagement, loyalty, and revenue.

Despite this consensus on the commercial promise of AI personalization, the field is marked by significant controversy regarding its broader societal implications. Critics highlight a range of ethical and operational risks, including diminished human interaction, data security vulnerabilities, demographic discrimination, and concerns about data accuracy and quality bias. Algorithmic bias is of particular concern: AI systems trained on historically skewed datasets may unintentionally disadvantage certain demographic groups, replicating or amplifying structural inequalities at scale [11]. Additional concerns focus on the erosion of authenticity, creativity, and critical thinking as AI-generated content proliferates. The tension between personalization and privacy — particularly in light of regulatory frameworks such as the EU General Data Protection Regulation (GDPR) — has further complicated adoption strategies for global organizations. While many corporate leaders champion the transformative value-creating potential of AI [12], others caution that insufficient governance may produce net negative outcomes for consumers and society alike [13]. This divergence underpins the three specific research questions explored in the present study: the first concerns whether personalized experiences directly affect conversion rates and consumer engagement [14]; the second examines whether highly personalized services positively affect user satisfaction [15]; and the third addresses whether AI tools can exhibit bias as a function of input data quality [11,16] — grounded in prior work addressing both the value-creation potential and the ethical risks of AI in marketing contexts [12,13].

Against this backdrop, the present study pursues three interrelated aims: to identify which segments of marketing activity have seen the deepest penetration of AI-based personalization; to empirically test the stated research questions through a case study of Orange, a global telecommunications company; and to open a structured discussion on the ethical challenges of AI personalization and directions toward responsible governance, including alignment with the EU AI

Act and Serbia's 2023 AI Ethics Guidelines. The paper proceeds with a review of theoretical foundations (Section 2), methodology (Section 3), empirical findings (Section 4), and a discussion of implications and conclusions (Sections 5–6). The principal finding is that all three research questions are affirmatively answered: AI-based personalization demonstrably enhances consumer engagement, satisfaction, and revenue, while concurrently introducing ethical challenges that necessitate robust regulatory and corporate governance frameworks.

2. Materials and Methods

2.1. Research Design

This study adopts a qualitative research design combining a narrative literature review with a single instrumental case study. The case study component follows the methodological framework established by Yin [17], which defines the case study as an empirical inquiry suited to investigating a contemporary phenomenon within its real-world context, particularly when the boundary between the phenomenon and its context is not clearly defined. This design is appropriate for the research objective of the present study, as it permits a systematic examination of how AI-driven personalization strategies are operationalized and evaluated within a specific corporate context, while grounding the analysis in a theoretically informed framework derived from the academic literature. The unit of analysis is Orange, a global telecommunications company, whose Engage 2025 strategic programme constitutes the primary empirical focus. Orange was selected as a case because it represents a documented, data-rich, and publicly disclosed instance of large-scale AI personalization implementation in a competitive consumer market, making it well suited to the instrumental purpose of illuminating broader theoretical propositions [17].

2.2. Literature Review Procedure

The theoretical framework underpinning the study was constructed through a narrative review of peer-reviewed academic literature and authoritative industry sources. Searches were conducted across three major scientific databases: Google Scholar, Web of Science, and Scopus. The following search terms were applied, individually and in combination: "AI personalization," "artificial intelligence marketing," "machine learning consumer behaviour," "recommendation systems," "predictive analytics," "customer engagement," "AI in telecommunications," and "algorithmic bias marketing." Inclusion criteria required sources to be peer-reviewed, published in English, and — where applicable — issued between 2018 and 2025, in order to reflect the current state of the field. Foundational theoretical works published prior to this window were retained where they made an essential conceptual contribution. Sources were assessed by title and abstract relevance, followed by full-text review. Selected sources were synthesized thematically to establish the theoretical propositions that structure the three research questions.

2.3. Case Study Data Sources

Data for the Orange case study were gathered exclusively from publicly available secondary sources. These comprised Orange's official corporate publications, including the Engage 2025 strategic plan [18], related blog communications from Orange Business [19], and the company's published annual and financial reports. An independent third-party assessment by the Information

Services Group (ISG) [20] was incorporated to provide an external analyst perspective on Orange's AI and digital transformation strategy. Additionally, publicly accessible company disclosures regarding Orange's Data and AI Ethics Council, its Ethics Charter, and its use of AI for personalization in customer experience management were reviewed. Technical and commercial outcomes of Orange's Customer Data Platform deployment – implemented in partnership with Tealium – were drawn from a published case study [27]. Where applicable, peer-reviewed academic literature on AI implementation in the telecommunications and marketing sectors was used to contextualize the empirical findings within the broader theoretical framework [21,23].

No primary data were collected at any stage of this research. No interviews, surveys, questionnaires, focus groups, or experiments were conducted. All data sources used in this study are either published in the public domain or accessible through institutional database subscriptions, and are cited in full in the reference list.

2.4. Case Study Profile: Orange and the Engage 2025 Strategy

Orange is a global telecommunications operator serving over 280 million customers across Europe, Africa, and the Middle East. In December 2019, Orange launched Engage 2025 as its overarching strategic programme for the period to 2025, structured around four ambitions: reinventing its operator model, accelerating growth in high-value segments, placing data and AI at the heart of its innovation model, and building the company of tomorrow through new capabilities and responsible transformation [18]. Among these, the integration of AI and data across all business processes was the most consequential from a customer experience perspective, positioning AI not as a single-use tool but as a foundational operating principle applied across network optimization, customer service, marketing personalization, and commercial efficiency.

As shown in Table 1, Orange's AI integration followed a phased trajectory – from operational efficiency gains in 2020, through measurable commercial outcomes in 2023–2024, to confirmed value generation in 2025.

Table 1. Orange's Engage 2025 AI Strategy – Implementation Timeline and Outcomes [18,19,20].

Year	Area of Application	Key Outcomes
2020	Initial AI integration focused on network planning and operational processes	Capital efficiency improved by 10–20%; identification of high-margin investment locations
2023	AI applied to marketing personalization; improvement of business efficiency through personalized recommendations for phones, plans, and digital services	20% increase in service upgrades; 35% growth in subscription conversion rates; 40% increase in digital content engagement
2024	Revenue growth driven by AI; introduction of generative AI (GenAI) services creating new revenue streams	7% year-on-year revenue growth in digital technologies, data, and AI services segment
2025	Expansion of AI initiatives with focus on operational savings and further revenue growth through improved personalization	€300 million in value generated from AI-driven processes confirmed; new five-year strategy "Trust the Future" launched with target of €600 million in AI value by 2028

The 2025 row of Table 1 warrants specific commentary. The projected generation of €300 million in value from AI-driven processes — disclosed as a forward target under the Engage 2025 programme [18] — was confirmed as achieved in Orange's full-year 2025 results, published in February 2026. The subsequent "Trust the Future" strategic plan (2026–2030) set a new target of €600 million in AI-generated value by 2028, explicitly referencing the €300 million figure as the 2025 baseline [28,29]. Orange's 2025 annual revenue reached €40,396 million (+0.9% year-on-year), with EBITDAaL growing 3.8% to €12,470 million and Organic Cash Flow rising 8.3% to €3.65 billion — all in line with or above the targets set under Lead the Future [29].

2.5. Research Questions and Analytical Framework

Three research questions were formulated deductively on the basis of the theoretical framework established through the literature review. The first examines whether personalized experiences directly affect consumer conversion rates and engagement; the second examines whether highly personalized services contribute positively to user satisfaction; and the third addresses whether AI tools are susceptible to bias as a function of the quality of input data. These questions were evaluated against empirical evidence drawn from Orange's publicly reported performance indicators, strategic disclosures, and documented outcomes of its Engage 2025 programme, following a pattern-matching logic consistent with Yin's case study approach [17].

3. Results

This section presents the empirical findings obtained from the Orange case study in relation to the three research questions formulated in Section 2.5. The evidence is drawn from Orange's publicly reported performance data, strategic disclosures under the Engage 2025 programme, and the Tealium CDP case study [18,19,27,29].

3.1. Effect of AI-Driven Personalization on Conversion Rates and Consumer Engagement (H1)

3.1.1. Behavioural Targeting and Conversion Rate Improvement

The first research question examined whether personalized experiences directly affect consumer conversion rates and engagement. The evidence gathered from Orange's Engage 2025 programme provides consistent and quantified support for a positive relationship.

Orange's AI-based user behaviour analysis system processes real-time data — including call history, internet usage patterns, application preferences, and content consumption behaviour — to generate predictive models of individual service demand. When this system identified users exhibiting intensive mobile data consumption patterns, Orange deployed tailored offers for unlimited data packages directly to those individuals, achieving a **20% increase in package upgrades** [19,20]. This result demonstrates that AI-driven behavioural profiling produces measurably superior conversion outcomes compared to untargeted or demographically segmented campaigns.

A more granular instantiation of the same mechanism involved prepaid users who had repeatedly purchased supplementary internet packages — a behavioural signal interpreted by the AI system as latent demand for a higher-tier subscription plan. Personalized subscription offers targeted at this micro-segment yielded a **35% increase in subscription conversions** [19,20]. This finding is

consistent with the broader literature, which identifies behavioural micro-segmentation as a primary driver of conversion improvement in AI-enabled marketing contexts [22,24].

Orange's Customer Data Platform (CDP), deployed in partnership with Tealium, provided an additional, independently documented conversion benchmark. CDP-driven campaigns — which unified first-party behavioural data across all digital and physical touchpoints and enabled real-time audience segmentation and campaign adjustment — achieved conversion rates **360% higher** than equivalent campaigns managed through conventional media agencies [27]. The cost per acquisition (CPA) for CDP-targeted customers was **six times lower** than for media-agency-managed campaigns, indicating not only superior conversion efficiency but also substantially improved marketing resource allocation [27].

These results are summarized in Table 3.

Table 3. Conversion and engagement outcomes attributable to AI-driven personalization at Orange [19,20,27].

AI Mechanism	Target Behaviour Signal	Measured Outcome
AI-based user behaviour analysis	Intensive mobile data usage	20% increase in package upgrades
Personalized service recommendations	Repeated supplementary data package purchases	35% increase in subscription conversions
CDP — Tealium AudienceStream™	Real-time cross-channel behavioural data	CPA 6× lower vs. media agency; conversion rate 360% higher
Content recommendation algorithms	Prior viewing habits and engagement duration	40% increase in digital content user engagement
Real-time upsell/cross-sell targeting	Cross-channel purchase and interaction history	6% increase in additional product revenue

3.1.2. Digital Content Engagement

Beyond transactional conversion, AI-driven personalization at Orange produced a substantial increase in non-transactional engagement. AI recommendation algorithms applied to Orange's digital television and streaming platforms — which dynamically adapted content display based on prior viewing habits, content preferences, and engagement duration — generated a 40% increase in user engagement with digital content, alongside measurable growth in premium content adoption [19,20]. These outcomes extend the evidence for H1 beyond product conversion to include sustained platform engagement, which constitutes a distinct and commercially relevant dimension of consumer behaviour.

3.2. Effect of Highly Personalized Services on User Satisfaction

3.2.1. Satisfaction Through Relevance and Perceived Value

The second research question examined whether highly personalized services contribute positively to user satisfaction. The evidence from the Orange case study addresses this question across multiple dimensions of the customer experience.

The foundation of AI-driven satisfaction enhancement at Orange is the shift from static, demographic-based segmentation to dynamic, behaviour-based micro-segmentation. By constructing personalized recommendations grounded in each user's actual interaction history — purchase patterns, content preferences, service usage intensity, and cross-channel behaviour — Orange ensured that customers consistently received offers and recommendations that were contextually relevant to their individual situation at the time of delivery [21,24]. This relevance premium is the primary mechanism through which personalization translates into satisfaction: customers experience a reduction in irrelevant communication, a sense of being understood by the brand, and a corresponding increase in the perceived value of their interactions [15].

Customers who engaged with personalized recommendations reported higher satisfaction scores, with responses indicating that they "felt seen" by the brand and that the personalized experience was "easier and more enjoyable" relative to undifferentiated service interactions. These qualitative signals align with the operational outcomes documented under the Engage 2025 programme and are corroborated by the broader scholarly literature, which consistently finds a positive and statistically significant relationship between AI-based personalization and customer satisfaction across service sectors [30,31].

3.2.2. Satisfaction Through Reduced Friction and Proactive Engagement

Beyond relevance, AI-driven personalization at Orange improved customer satisfaction through two additional mechanisms: the reduction of decision friction and the shift to proactive rather than reactive customer engagement.

By surfacing the most appropriate service options for each user at the most commercially opportune moment — rather than requiring users to independently navigate a complex service portfolio — Orange's AI personalization system reduced the cognitive effort associated with service selection [14]. This reduction in decision friction contributes directly to satisfaction by aligning the service encounter with consumer expectations of ease and efficiency.

In parallel, Orange's automated customer engagement strategies — including AI-triggered push notifications and behavioural alerts — transformed the brand-consumer relationship from reactive (responding to customer inquiries) to proactive (anticipating user needs and engaging ahead of dissatisfaction or churn signals). This proactive orientation is documented in the literature as a significant predictor of satisfaction improvement and retention, particularly in telecommunications contexts characterized by high service commoditization [4,21].

3.3. *Susceptibility of AI Tools to Bias as a Function of Input Data Quality*

3.3.1. Evidence of Data-Dependent Bias in Orange's AI Systems

The third research question examined whether AI tools are susceptible to bias as a function of the quality of input data. The Orange case study provides direct, documented evidence confirming this susceptibility, with the company's own governance response constituting further implicit acknowledgement of the risk.

Orange's AI personalization systems are trained on large and continuously updated datasets drawn from customer behaviour across digital and physical channels. In cases where the underlying data was incomplete, outdated, or structurally skewed — for example, reflecting the behaviour of a subsection of the customer base disproportionately represented in historical records — the AI system generated incorrect or contextually irrelevant recommendations. The practical consequence was a measurable reduction in user engagement and, in some instances, user frustration, as customers received offers that did not correspond to their actual needs or current service usage profile [11,18].

This data-dependency of output quality is a structural characteristic of machine learning systems, not an incidental implementation flaw. As the academic literature confirms, AI models trained on historically biased or incomplete datasets inherit and may amplify the biases embedded in their training data, reproducing or intensifying structural inequalities at scale [11,32,33]. In the marketing context specifically, this can manifest as the systematic under-serving of certain demographic or behavioural segments — users whose data is sparse, atypical, or underrepresented in the training corpus — resulting in less relevant recommendations, lower engagement, and a degraded customer experience for precisely those users who are already marginalised in aggregate datasets [32].

3.3.2. Orange's Governance Response to Bias Risk

Orange's institutional response to the bias risk provides further empirical confirmation of its practical significance. The company established a Data and AI Ethics Council — an independent body of eleven external experts — in 2021, and published an Ethics Charter in 2022 incorporating six governing principles, including non-discrimination, social benefit, and the prohibition of practices that could disadvantage specific demographic groups [18]. The introduction of explainable AI (XAI) frameworks — enabling users to understand the basis on which recommendations are generated — represents an additional layer of bias mitigation, consistent with the emerging consensus in both the academic literature and regulatory frameworks that algorithmic transparency is a necessary condition for responsible AI deployment [25,34].

3.4. AI-Driven Personalization and Revenue Growth

3.4.1. Direct Revenue Impact

The personalization of consumer offerings based on AI tools is directly linked to sales and revenue growth. The cumulative financial evidence from the Orange case study confirms this relationship at both the micro (campaign) and macro (corporate) level.

At the campaign level, the individual personalization mechanisms documented in Sections 3.1 and 3.2 each produced direct commercial outcomes: a 20% increase in package upgrades, a 35% increase in subscription conversions, a 6% increase in additional product revenue through upsell and cross-sell strategies, and a 360% efficiency advantage for CDP-driven campaigns relative to conventional media-agency approaches [19,20,27]. Taken together, these outcomes reflect a systematic and replicable link between behavioural targeting precision and commercial result.

At the corporate level, Orange recorded a **7% year-on-year revenue growth** in its digital technologies, data, and AI services segment in 2024, driven directly by its generative AI offerings and improved personalization capabilities [18,20]. By the end of the Engage 2025 programme, **€300 million in value from AI-driven processes was confirmed as generated** for full-year 2025 [28,29] – meeting the strategic target set at the programme's inception and serving as the baseline for the successor "Trust the Future" plan's target of €600 million in AI-generated value by 2028 [28]. At the group level, Orange's full-year 2025 results showed total revenues of €40,396 million (+0.9% year-on-year), EBITDAaL of €12,470 million (+3.8%), and Organic Cash Flow of €3,653 million (+8.3%) – all meeting or exceeding the targets set under Lead the Future [29].

These results are presented in Table 4.

Table 4. Orange's key financial outcomes attributable to or associated with AI-driven personalization, 2023–2025.

Metric	Period	Outcome	Source
Service upgrade rate	2023	+20%	[19,20]
Subscription conversion rate	2023	+35%	[19,20]
Digital content user engagement	2023	+40%	[19,20]
Additional product revenue (upsell/cross-sell)	2023–2024	+6%	[18,20]
Revenue growth – digital technologies, data & AI segment	2024	+7% year-on-year	[18,20]
AI-generated value (Engage 2025 target)	2025	€300 million confirmed	[28,29]
Group EBITDAaL	2025	€12,470 million (+3.8%)	[29]
Group Organic Cash Flow	2025	€3,653 million (+8.3%)	[29]

3.4.2. Efficiency Gains and Cost Reduction

Revenue growth was complemented by documented gains in marketing efficiency. CDP-driven campaigns achieved a CPA six times lower than traditional media-agency alternatives, representing a substantial reduction in customer acquisition cost [27]. Automated personalized engagement strategies reduced the cost of customer relationship management while simultaneously increasing the frequency and depth of brand-consumer interactions. Orange's efficiency programme over the Lead the Future period delivered cumulative operational savings of €600 million [29] – savings that were made possible in part by AI-driven process optimization across network management, customer service, and marketing operations.

AI-driven personalization is directly linked to measurable sales and revenue growth. The Orange case demonstrates that this link operates through both demand-side mechanisms (higher conversion rates, greater engagement, stronger retention) and supply-side mechanisms (lower acquisition costs, reduced marketing waste, improved operational efficiency), and that its financial impact is observable at both the campaign and group-reporting level.

4. Discussion

4.1. Interpretation of Results

The use of artificial intelligence for personalization at Orange is an instructive example of how machine learning and data analytics can simultaneously improve the customer experience and contribute to measurable business growth. Through advanced AI technologies, Orange managed to offer hyper-personalized experiences, targeted promotions, and contextually relevant real-time recommendations — outcomes that increased customer satisfaction, improved retention rates, and generated quantifiable revenue growth. This transformation illustrates how AI-based personalization is becoming a new operational standard not only in the telecommunications industry but across consumer-facing sectors more broadly. With the further development of these technologies, it is expected that operators worldwide will increasingly implement comparable approaches to secure stronger user engagement and long-term brand loyalty [4,22].

The case study demonstrates that by deploying AI tools to analyze consumer behaviour and tailor recommendations, Orange achieved significant growth in both the number of purchases and total revenue. More precise user targeting resulted in higher conversion rates directly reflected in improved sales performance, while automated offer creation reduced marketing costs simultaneously with increasing revenue. These findings are consistent with the broader scholarly literature, which identifies AI-driven personalization as one of the most significant predictors of revenue growth among customer-facing organizations in the current decade [12,31].

The personalized experience affects user conversion and engagement. The evidence shows that users clicked more frequently on recommended products aligned with their prior interests and purchasing habits, and that time spent on platforms and the number of interactions per session increased measurably. These indicators confirm that AI-driven personalization contributes to greater user engagement and positively affects conversion [14,22]. This finding aligns with a growing body of empirical research demonstrating that personalization, when delivered through behavioural micro-segmentation and real-time data activation, consistently outperforms both demographic-only targeting and unpersonalized mass communication [24,30].

The highly personalized services directly affect user satisfaction. Customers reported that they "felt seen" and that the experience was "easier and more enjoyable," reflecting the satisfaction premium generated by relevance and reduced decision friction [15]. These qualitative signals are corroborated by the broader literature, which consistently finds a positive relationship between AI-based personalization and satisfaction, mediated by perceived relevance, trust, and the degree to which users feel in control of the personalization process [35,36].

The AI tools can be biased as a function of data quality — is likewise confirmed. The quality of output recommendations was found to be directly dependent on the quality of input data: in cases where data were incomplete, outdated, or structurally skewed, the AI system generated incorrect or irrelevant recommendations, reducing user engagement and, in some cases, producing customer frustration. This confirms that AI personalization is not a self-correcting process and that its outputs are bounded by the integrity of the data on which it operates [11,32,33].

The results of this study speak to a tension that runs throughout the contemporary AI personalization literature: the so-called personalization–privacy paradox. Consumers simultaneously demand relevance and express discomfort when they perceive that the depth of data collection required to deliver it has exceeded what they consider appropriate. Research confirms that while AI-enhanced personalization significantly improves user satisfaction and engagement, consumer trust in such systems is conditional upon transparency, perceived control, and ethical data usage [35,36]. When these conditions are not met — or not clearly communicated — personalization can cross what the literature describes as the "creepiness threshold," eliciting resistance, distrust, and disengagement rather than loyalty [36].

The collection of detailed behavioural data — including viewing habits, location signals, and usage patterns — raised compliance obligations under the EU General Data Protection Regulation (GDPR) for Orange, as it does for any operator deploying personalization at scale within the European market. Orange responded with a transparent communication approach: openly disclosing to users how their data is collected, stored, and used, and offering clear mechanisms for consent management [18,19].

A second challenge concerned algorithmic bias. AI systems trained on historically skewed or incomplete datasets risk unintentionally disadvantaging certain demographic or behavioural groups, replicating or amplifying structural inequalities at scale [11,32]. In marketing contexts, this manifests as the systematic under-serving of users whose data is sparse or unrepresentative — receiving less relevant recommendations, lower engagement value, and a degraded customer experience precisely because they are underrepresented in aggregate training data [33]. Orange addressed this risk through its Ethics Charter — published in 2022, grounded in six principles including social benefit, non-discrimination, and environmental sustainability — and through the Data and AI Ethics Council, an independent body of eleven experts established in 2021 to oversee responsible AI application across the company's operations [18].

A third dimension involved the transparency of algorithmic decision-making. Users sought to understand how and why specific recommendations or offers were generated. Orange's introduction of explainable AI (XAI) frameworks — enabling users to understand the basis of personalized recommendations — is consistent with the emerging regulatory and scholarly consensus that algorithmic transparency is a precondition for consumer trust in AI-mediated interactions [25,34]. The literature emphasizes that XAI is not merely a technical capability but an organizational and ethical commitment: the goal is not only that algorithms can be explained, but that they are explained in ways accessible and meaningful to users [34].

4.3. The Post-2025 Context: Orange's 2025 Results and the Trust the Future Strategy

Orange has published its full-year 2025 results (February 2026), which confirm that their targets were met. The company generated over €300 million in value from AI-driven processes in 2025, simultaneously recording group revenues of €40,396 million (+0.9% year-on-year), EBITDAaL of €12,470 million (+3.8%), and Organic Cash Flow of €3,653 million (+8.3%) — all in line with or above the targets set under Lead the Future [29].

These results materially strengthen the conclusions of this study. The original empirical basis for the claim – that AI personalization drives revenue and value growth – was grounded in campaign-level metrics (20% package upgrade rate, 35% subscription conversion improvement, 360% CDP efficiency advantage) and mid-term segment revenue trends. The confirmation of €300 million in group-level AI value, reported under independent auditing standards as part of Orange's full-year financial disclosure, elevates this evidence from campaign benchmarks to corporate financial performance. It demonstrates that the strategic bet placed on AI personalization in 2019 under the Engage 2025 programme produced a compounding, organization-wide return over a six-year implementation horizon.

Equally significant for the interpretation of this study's findings is the content of Orange's successor strategic plan, "Trust the Future" (2026–2030), announced simultaneously with the 2025 results on 19 February 2026. The plan sets a new target of €600 million in value generated from AI by 2028 – explicitly doubling the 2025 baseline [28]. In terms of customer experience, the plan articulates an ambition to move towards **100% of customer interactions augmented by AI**, encompassing highly personalized interactions, next-generation AI digital assistants, and advanced Customer Value Management (CVM) systems [28]. The naming of the plan itself – "Trust the Future" – is deliberately resonant: Orange's Chief Executive Officer, Christel Heydemann, described trust as "our competitive edge" in a world of rising digital complexity, and positioned responsible AI deployment as both an ethical imperative and a commercial differentiator [28].

This framing is notable from a scholarly perspective. The shift from Engage 2025, which positioned AI as a performance tool, to Trust the Future, which positions trust as the central strategic asset, reflects a broader maturation in how leading organizations conceptualize the relationship between AI personalization and consumer value. It is consistent with the academic literature documenting that consumer trust is the primary mediating variable between personalization and loyalty, and that organizations which embed transparency, consent, and fairness into their AI governance structures outperform those that do not in sustaining long-term customer relationships [35,36].

4.4. Limitations and Future Research Directions

This study faces five key limitations that shape its conclusions and suggest directions for future research.

First, the single company case study limits generalizability. While Orange provides rich document evidence, transferability to organisations with different scale, infrastructure or governance maturity is not established. Future research should compare AI personalization strategies across multiple sectors to determine whether Orange's performance patterns reflect a broader empirical regularity.

Second, all data resources are secondary and self disclosed. Orange's performance metrics have not been independently verified, and qualitative findings– such as customers reporting they "felt seen" – derive from corporate communications rather than primary research. Future studies should

combine corporate disclosures with customer surveys, behavioral analytics, or direct interviews with personalized teams.

Third, the study faces temporal limitations. The mechanism analyzed represent the field as of 2023-2025, and the emergence of LLMs, generative AI, and agentic systems is already reshaping the personalization landscape. The implications of these newer capabilities for conversion, satisfaction and bias outcomes remain underexplored and constitute a priority for future research.

Finally, the long term effects of AI personalization on consumer autonomy, cognitive diversity, and social equity remain open questions. Filter bubble effects, dependency dynamics and the potential erosion of consumer agency accompanying deep AI integration – questions requiring interdisciplinary research that goes well beyond a single case study.

5. Conclusions

The implementation of artificial intelligence in the personalization of the customer experience brings a range of concrete and documented benefits for organizations operating at scale. The findings of this study, grounded in the Orange case and corroborated by the broader academic literature, confirm that AI-driven personalization is directly linked to revenue growth; personalized experiences measurably improve user conversion and engagement ; highly personalized services contribute positively to user satisfaction; and AI tools are susceptible to bias as a function of input data quality.

Users demonstrate a greater degree of engagement when offers are tailored to their individual needs, which positively affects satisfaction and purchase behaviour. Personalized experiences not only improve user satisfaction but directly contribute to stronger loyalty and longer platform retention. Through targeted promotions and upgrade strategies, growth in average revenue per user is achieved, improving overall financial results. Marketing campaigns have become more efficient – AI enables more precise targeting and allows savings across human, time, material, and financial resources. The capacity of AI systems to learn continuously from everyday interactions and adapt recommendations in real time ensures ongoing improvement in the quality of the user experience. In Orange's case specifically, these dynamics produced a confirmed €300 million in AI-generated value in 2025, with the company's successor strategy – Trust the Future (2026–2030) – targeting €600 million by 2028 and aiming to augment 100% of customer interactions with AI.

At the same time, the balance between personalization and privacy protection, as well as transparency and accuracy in the use of AI, remain challenges of essential importance that require continuous monitoring and further research. Algorithmic bias – arising when systems are trained on incomplete, outdated, or structurally skewed data – poses a persistent governance risk that is not resolved by scale or technical sophistication alone. Organizations must invest in data quality, representativeness auditing, explainable AI frameworks, and independent ethics oversight to ensure that the benefits of personalization are distributed fairly across all user segments.

The regulatory frameworks now in place provide the normative foundation for this governance work. At the European level, the EU Artificial Intelligence Act entered into force in August 2024, introducing risk-based obligations covering transparency, human oversight, and data governance for AI systems deployed in consumer contexts. Together, these frameworks signal that the era of self-regulated AI personalization is giving way to a more structured governance environment — one in which organizations that have already embedded ethical AI practices, as Orange has done through its Ethics Charter and Data and AI Ethics Council, will be better positioned to comply, compete, and retain consumer trust.

Future research should address the long-term effects of AI personalization on consumer autonomy and cognitive diversity, the transferability of the Orange findings to other sectors and organizational scales, and the evolving implications of generative and agentic AI for the personalization–privacy balance. These remain open questions of both scholarly and societal significance as AI personalization transitions from a competitive differentiator to a near-universal feature of consumer-facing digital services.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Arora, N.; Ensslen, D.; Fiedler, L.; Liu, W.W.; Robinson, K.; Stein, E.; Schüler, G. The Value of Getting Personalization Right—or Wrong—Is Multiplying. McKinsey & Company. Available online: <https://www.mckinsey.com/capabilities/growth-marketing-and-sales/our-insights/the-value-of-getting-personalization-right-or-wrong-is-multiplying> (accessed on 5 April 2026).
2. Zendesk. Customer Experience Trends Report 2024. Available online: <https://www.zendesk.com/blog/cx-trends-2024/> (accessed on 5 April 2026).
3. Twilio Segment. State of Personalization Report 2024. Available online: <https://segment.com/state-of-personalization-report/> (accessed on 5 April 2026).
4. Huang, M.H.; Rust, R.T. Engaged to a robot? The role of AI in service. *J. Serv. Res.* 2021, 24, 30–41. <https://doi.org/10.1177/1094670520902266>
5. Campbell, C.; Sands, S.; Ferraro, C.; Tsao, H.-Y.; Mavrommatis, A. From data to action: How marketers can leverage AI. *Bus. Horiz.* 2020, 63, 227–243. <https://doi.org/10.1016/j.bushor.2019.12.002>
6. Haleem, A.; Javaid, M.; Singh, R.P. An era of ChatGPT as a significant futuristic support tool: A study on features, abilities, and challenges. *BenchCouncil Trans. Benchmarks Stand. Eval.* 2022, 2, 100089. <https://doi.org/10.1016/j.btbse.2022.100089>
7. Hermann, E. Leveraging artificial intelligence in marketing for social good — An ethical perspective. *J. Bus. Ethics* 2021, 179, 43–61. <https://doi.org/10.1007/s10551-021-04990-x>
8. Nesterenko, V.; Olefirenko, O. The impact of AI development on the development of marketing communications. *Mark. Manag. Innov.* 2023, 14, 169–181. <https://doi.org/10.21272/mmi.2023.1-015>
9. Hannig, U.; Seebacher, U. *Marketing and Sales Automation: Basics, Implementation, and Applications*; Springer Nature: Cham, Switzerland, 2023.

10. Patil, R.; Shivashankar, K.; Porapur, S.M.; Kagawade, S. The role of AI-driven social media marketing in shaping consumer purchasing behaviour: An empirical analysis of personalization, predictive analytics, and engagement. *ITM Web Conf.* 2024, 68, 01032. <https://doi.org/10.1051/itmconf/20246801032>
11. Davenport, T.; Guha, A.; Grewal, D.; Bressgott, T. How artificial intelligence will change the future of marketing. *J. Acad. Mark. Sci.* 2020, 48, 24–42. <https://doi.org/10.1007/s11747-019-00696-0>
12. Wu, C.-W.; Monfort, A. Role of artificial intelligence in marketing strategies and performance. *Psychol. Mark.* 2023, 40, 484–496. <https://doi.org/10.1002/mar.21737>
13. Cardon, P.; Fleischmann, C.; Aritz, J.; Logemann, M.; Heidewald, J. The challenges and opportunities of AI-assisted writing: Developing AI literacy for the AI age. *Bus. Prof. Commun. Q.* 2023, 86, 257–295. <https://doi.org/10.1177/23294906231176517>
14. Gao, Y.; Liu, H. Artificial intelligence-enabled personalization in interactive marketing: A customer journey perspective. *J. Res. Interact. Mark.* 2023, 17, 663–680. <https://doi.org/10.1108/jrim-01-2022-0023>
15. Bhuiyan, M. The role of AI-enhanced personalization in customer experiences. *J. Comput. Sci. Technol. Stud.* 2024, 6, 17–27. <https://doi.org/10.32996/jcsts.2024.6.1.17>
16. Babatunde, S.; Odejide, O.; Edunjobi, T.; Ogundipe, D. The role of AI in marketing personalization: A theoretical exploration of consumer engagement strategies. *Int. J. Manag. Entrep. Res.* 2024, 6, 936–949. <https://doi.org/10.51594/ijmer.v6i3.964>
17. Yin, R.K. *Case Study Research and Applications: Design and Methods*, 6th ed.; SAGE Publications: Thousand Oaks, CA, USA, 2018.
18. Orange. Orange Presents Its New Strategic Plan Engage2025. Available online: <https://www.orange-business.com/en/press/orange-presents-its-new-strategic-plan-engage2025> (accessed on 5 April 2026).
19. Orange Business. Engage 2025: A Strategy Fit for the Future. Available online: <https://www.orange-business.com/en/blogs/engage-2025-strategy-fit-future> (accessed on 5 April 2026).
20. ISG. With 'Engage 2025,' Orange Business Services Evangelizes Digital Transformation. Available online: <https://isg-one.com/articles/with-engage-2025-orange-business-services-evangelizes-digital-transformation> (accessed on 5 April 2026).
21. Kamaruddin, A.; Addin, E.H.S.; Admodisastro, N.; Ashri, S.N.S.M.; Chong, Y.C. Customer mobile behavioral segmentation and analysis in telecom using machine learning. *Appl. Artif. Intell.* 2022, 36, 2009223. <https://doi.org/10.1080/08839514.2021.2009223>
22. Gupta, V.; Raj, S.; Vats, R. The effect of personalization techniques on digital marketing conversion rates and customer engagement. *Int. J. Multidiscip. Res.* 2025, 7, e47457. <https://doi.org/10.36948/ijfmr.2025.v07i03.47457>
23. Alkurd, R.; Abualhaol, I.; Yanikomeroğlu, H. Big-data-driven and AI-based framework to enable personalization in wireless networks. *arXiv* 2023. <https://doi.org/10.48550/arXiv.2306.04887>
24. Rai, M.; Gupta, P. Machine learning-driven personalization for enhancing customer behavior, experience, and satisfaction in e-commerce. *J. Innov. Entrep. Res.* 2025, 5, 2344. <https://doi.org/10.52783/jier.v5i1.2344>
25. Berezin, S. Explainable AI in customer experience management: Personalization algorithms in CRM systems. *Am. J. Technol. Eng.* 2025, 7, 57–64. <https://doi.org/10.37547/tajet/volume07issue04-08>
26. Ravindran, G.S. Big data and distributed computing: Transforming marketing through real-time customer data platforms. *World J. Adv. Eng. Technol. Sci.* 2025, 15, 1144–1150. <https://doi.org/10.30574/wjaets.2025.15.3.0962>
27. Tealium. Orange: Being There for Customers at the Right Time. Available online: <https://tealium.com/resource/case-study/orange-being-there-for-customers-at-the-right-time/> (accessed on 5 April 2026).

28. TelcoTitans. 'We Want to Be Number One': Orange Plots Growth Over Next Three Years. Available online: <https://www.telcotitans.com/orangewatch/we-want-to-be-number-one-orange-plots-growth-over-next-three-years/10229.article> (accessed on 5 April 2026).
29. Orange. Success of Lead the Future 2023–2025 Strategic Plan — 2025 Objectives Fully Achieved. Available online: <https://www.orange.com/en/press-release/success-of-lead-the-future-2023-2025-strategic-plan-2025-objectives-fully-achieved-440051> (accessed on 5 April 2026).
30. Yeriko, F.; Caesar, L.A.Y. The impact of AI-based personalization services on customer experience, customer satisfaction, and customer loyalty in e-commerce. In Proceedings of the 2025 International Conference on ICT for Smart Society (CITSM), 2025. <https://doi.org/10.1109/CITSM67730.2025.11291543>
31. Iqbal, F.; Afiat, A.; Shoily, M.M.; Turzo, S.S.; Arafat, M.S. AI-driven personalization in e-commerce: Evaluating the transformative effects on consumer behavior. *Int. J. Sci. Res. Arch.* 2025, 16, 2035. <https://doi.org/10.30574/ijrsra.2025.16.1.2035>
32. Ferrara, E. Fairness and bias in artificial intelligence: A brief survey of sources, impacts, and mitigation strategies. *Sci* 2024, 6, 3. <https://doi.org/10.3390/sci6010003>
33. Khoso, R.H.; Cervantes Monter, A.; Faheem, M.; Alam, S.H. Ethical intelligence in digital marketing: The interplay of algorithmic bias, transparency, and data privacy on consumer trust. *J. Soc. Sci. Arch.* 2025, 3, 433. <https://doi.org/10.59075/jssa.v3i2.433>
34. Pavlidis, G. Unlocking the black box: Analysing the EU Artificial Intelligence Act's framework for explainability in AI. *Inf. Commun. Technol. Law* 2025, 33, 2313795. <https://doi.org/10.1080/17579961.2024.2313795>
35. Duralia, O.; Ogorean, C.; Țichindelean, M. Decoding the personalization-privacy paradox: From thematic scholarly clusters to practical insights. *Stud. Bus. Econ.* 2025, 20, 25. <https://doi.org/10.2478/sbe-2025-0025>
36. Singh, V.K.; Munda, P.; Chandan, A. Hyper-personalization at scale versus consumer privacy in AI-powered marketing. *Int. Sci. J. Eng. Manag.* 2025, 4, 5144. <https://doi.org/10.55041/isjem05144>



© 2026 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).