INTERNATIONAL REVIEW OF ARTIFICIAL INTELLIGENCE IN MARKETING

NAWALA

Volume 1, Number 2, 2022

Evaluating AI-Driven Personalization Strategies and Their Effects on Digital User Engagement

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Abstract

Article history:
Received: September 30, 2022
Revised: October 19, 2022
Accepted: November 26, 2022
Published: December 30, 2022

Keywords:
Artificial Intelligence, Digital Platforms, Personalization, Systematic Review, User Engagement.

Identifier:
Nawala
Page: 131-144
https://nawala.io/index.php/iraim

This article examines how AI-driven personalization strategies shape digital user engagement across platforms such as social media, mobile apps, and omnichannel retail. It asks which types of AI-based personalization are most commonly used, how engagement is defined and measured, and under what conditions personalization enhances or undermines user responses. The study adopts a systematic review of peer-reviewed research published between 2017 and 2021, synthesizing evidence from marketing, information systems, and digital communication. The results indicate that personalized recommendations, curated content feeds, and adaptive interfaces can increase clicks, time spent, and repeat use when they deliver relevant, contextually appropriate experiences that users perceive as helpful and legitimate. However, privacy concerns, perceived surveillance, and lack of control can dampen or reverse these effects, particularly in highly data-intensive settings. The article discusses these patterns by organizing studies by personalization strategy and engagement dimension, and concludes that effective AI-driven personalization must balance optimization goals with transparency, user agency, and long-term relationship outcomes.

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1. Introduction

Artificial intelligence driven personalization has become a central mechanism for shaping how people experience digital services and platforms. As firms collect vast streams of behavioral, transactional, and contextual data, they increasingly rely on machine learning models to tailor content, products, and interactions at the individual level in real time. In parallel, digital user engagement has emerged as a key performance objective that spans short term metrics such as clicks and dwell time and longer term outcomes such as loyalty, advocacy, and lifetime value. Recent work on customer experience management in the age of big data suggests that analytics enabled personalization is redefining how firms design, monitor, and optimize touchpoints across the customer journey (Holmlund et al., 2020; Hoyer et al., 2020). Earlier conceptual work on data privacy and online relationships highlights that such personalization strategies are embedded in broader relationship marketing logics and ethical expectations around the use of customer data (Martin & Murphy, 2017; Steinhoff et al., 2019).

Marketing and information systems research increasingly portray AI as a general-purpose technology for sensing, predicting, and influencing customer behavior (Verma et al., 2021). Empirical studies document that algorithmic personalization can increase relevance perceptions, satisfaction, and interaction intensity when recommendations or messages are perceived as useful and aligned with user goals, as shown in contexts such as mobile news applications and digitally mediated service journeys (Cheng et al., 2020; Holmlund et al., 2020). Research on social media and digital content shows that platform design, content format, and

algorithmic curation jointly shape both passive and active forms of user participation, including likes, comments, and sharing (Shahbaznezhad et al., 2021). At the same time, work on the personalization–privacy paradox argues that customers often value tailored experiences yet remain wary of the data practices that enable them, creating tensions that can undermine engagement if perceived control or fairness is lacking (Martin & Murphy, 2017; Cloarec, 2020).

Despite rapid growth in the literature between 2017 and 2021, several gaps are evident. Many studies focus on a single tactic such as product recommendations, personalized messages, or adaptive interfaces, rather than comparing configurations of AI based personalization strategies and their relative impact on different engagement dimensions. Engagement itself is measured heterogeneously, ranging from simple click through rates to multidimensional constructs that encompass cognitive, emotional, and behavioral components, which complicates efforts to synthesize findings across platforms and industries (Steinhoff et al., 2019; Holmlund et al., 2020; Shahbaznezhad et al., 2021). In addition, empirical work frequently treats AI personalization as a purely technical intervention and pays less attention to boundary conditions such as privacy concerns, trust, perceived control, or attention constraints, even though these factors have been shown to shape both customer experience and the sustainability of personalized strategies (Martin & Murphy, 2017; Cloarec, 2020; Verma et al., 2021).

This article responds to these gaps through a systematic literature review of peer reviewed studies published between 2017 and 2021 that examine AI driven personalization strategies and digital user engagement outcomes. By synthesizing

evidence across marketing, information systems, and digital communication research, the review aims to map the main types of AI based personalization strategies in digital environments, describe the range of engagement outcomes that have been investigated, and identify key mechanisms and contingencies that explain when personalization strengthens or weakens engagement. The goal is to develop an integrative framework that clarifies the current state of knowledge, connects recent empirical findings with earlier conceptual work on privacy and relationship marketing, and outlines avenues for future research on AI mediated personalization and user engagement.

2. Literature Review

AI driven personalization has become a central mechanism through which firms seek to shape digital user engagement, using machine learning models to tailor content, recommendations, and interfaces at scale. Rather than treating personalization as a simple matching of offers to segment level profiles, recent work conceptualizes it as a dynamic, ongoing process of co creating customer experience and value across touchpoints (Holmlund et al., 2020; Hoyer et al., 2020). Studies in omnichannel and platform contexts show that AI enabled personalization can enhance experiential value, emotional responses, and loyalty by aligning stimuli with individual preferences and usage contexts (Tyrväinen et al., 2020; Ameen et al., 2021). At the same time, digital user engagement is increasingly understood as a multidimensional construct encompassing cognitive, emotional, and behavioral manifestations such as attention, participation, and advocacy, which are sensitive to

how personalization is designed and governed (Steinhoff et al., 2019; Verma et al., 2021).

Empirical research offers growing evidence that personalized recommendations, content curation, and adaptive interfaces can strengthen engagement outcomes such as click through, time spent, repeat use, and customer lifetime value. Social media and platform studies report that relevance, timeliness, and contextual fit of AI driven personalization are key drivers of engagement intensity, including sharing, commenting, and cross channel interaction (Cheng et al., 2020; Shahbaznezhad et al., 2021). Work in omnichannel retailing shows that personalization combined with hedonic motivation improves customer experience quality and strengthens loyalty intentions, suggesting that affective responses are an important pathway from personalization to engagement (Tyrväinen et al., 2020). Algorithmic research on recommender systems further indicates that user level traits such as loyalty, involvement, and relationship length can moderate the effectiveness of personalized suggestions, with customer loyalty shown to improve recommendation accuracy and thus the perceived usefulness of personalized interactions (Bai et al., 2020). Together, these strands imply that AI driven personalization and digital engagement form a mutually reinforcing system shaped by both algorithmic design and relationship characteristics.

At the same time, a critical stream of work highlights that personalization strategies may produce ambivalent engagement by triggering concerns about surveillance, manipulation, and fairness. Conceptual and empirical studies describe a personalization privacy paradox in which users value tailored experiences yet

express discomfort and distrust when data practices are opaque or overly intrusive, especially in highly data intensive environments such as IoT and attention-based platforms (Cloarec, 2020; Lee, 2021). Research on consumer fairness perceptions shows that personalization can be perceived as discriminatory or exploitative when it leads to unequal prices, offerings, or information access, potentially undermining trust and long-term engagement (Martin & Murphy, 2017; Steinhoff et al., 2019). Despite these advances, the literature remains fragmented across marketing, information systems, and human computer interaction, with limited integrative understanding of how different AI driven personalization strategies influence digital user engagement under varying psychological, relational, and regulatory conditions. This gap underscores the need for a systematic review that synthesizes evidence on the mechanisms, boundary conditions, and trade-offs of AI driven personalization in shaping digital user engagement.

3. Methods

This study used a systematic literature review approach to identify and synthesize peer reviewed research on AI driven personalization and digital user engagement. The search focused on articles published in English between 2017 and 2021. Major academic databases covering marketing, information systems, communication, and management were queried, including Scopus, Web of Science, and Google Scholar. Search strings combined terms related to artificial intelligence and personalization with terms related to engagement and digital contexts, for example “AI”, “machine learning”, “algorithmic”, “personalization”, “customized

content", together with "user engagement", "customer engagement", "digital", and "platform". All retrieved records were exported to a reference manager and duplicates were removed before screening.

Inclusion criteria were limited to peer reviewed journal articles that examined AI based personalization in digital environments and reported at least one user or customer engagement outcome, such as behavioral activity, experiential evaluations, attitudinal responses, or loyalty related measures. Studies that focused solely on technical model development without user outcomes, purely conceptual pieces without empirical grounding, conference papers, book chapters, and non-scholarly reports were excluded. Screening proceeded through title and abstract checks followed by full text assessment for conceptual and methodological relevance. For each included article, a structured coding template captured information on context and platform type, personalization strategy and underlying AI technique, data sources, engagement measures, mediators and moderators, and study design. The resulting material was synthesized narratively and thematically, with studies grouped according to personalization strategy and engagement outcome, and compared to identify common mechanisms, boundary conditions, and gaps.

4. Results and Discussion

The synthesis of the reviewed studies shows that AI-driven personalization is consistently associated with higher levels of digital user engagement, although the magnitude and stability of these effects vary across contexts and design choices. Across social media, mobile apps, and retail platforms, recommendation systems,

personalized feeds, and adaptive interfaces tend to increase observable engagement behaviours such as click through, time spent, and return visits when they deliver content that feels relevant, timely, and useful (Bai et al., 2020; Ameen et al., 2021; Shahbaznezhad et al., 2021). For example, recommender systems that exploit user history and loyalty information can surface options that better match existing preferences, which in turn stimulates more browsing, higher acceptance of suggestions, and richer interaction with platform features (Bai et al., 2020). Studies on AI enhanced customer experience management similarly report that data driven personalization can deepen involvement along the customer journey by aligning offers and messages with evolving situational needs, thereby supporting more continuous engagement across touchpoints (Holmlund et al., 2020; Hoyer et al., 2020). In this sense, AI driven personalization operates as an engagement amplifier when it helps users navigate abundant content and choices in ways that reduce effort and increase perceived value.

At the same time, the review highlights that personalization effects are rarely uniform across all users and all forms of engagement. Several studies show that perceived personalization improves engagement primarily when it is consistent with relationship expectations and when customers feel that data use is appropriate and proportionate (Steinhoff et al., 2019; Ameen et al., 2021). Noor et al. (2019) find that personalized online advertising can enhance attention and click behaviour, but that privacy concerns moderate this effect, such that consumers with high concern are less likely to engage despite recognizing the relevance of the message. This aligns with work on the personalization privacy paradox, which argues that users

simultaneously value tailored experiences and fear the loss of privacy and control that often accompanies intensive data collection (Martin & Murphy, 2017; Cloarec, 2020). When algorithms infer highly sensitive traits or present highly specific messages, personalization can shift from being perceived as helpful to being experienced as intrusive or even manipulative, triggering defensive reactions that reduce engagement or redirect it toward privacy management behaviours. Thus, the same AI driven mechanisms that can increase engagement by improving relevance can also decrease it if they cross individual or contextual boundaries.

Another key finding concerns the multidimensional nature of engagement and the partial coverage of these dimensions in existing empirical work. Many studies focus on behavioural indicators such as clicks, likes, shares, and time on site, which capture visible traces of interaction but do not fully represent cognitive and emotional engagement (Shahbaznezhad et al., 2021). Research on customer engagement more broadly suggests that attention, absorption, enthusiasm, and a sense of connection to the brand or platform are important components that may or may not correlate with simple behavioural counts (Steinhoff et al., 2019; Ng et al., 2020). The review reveals only a limited number of studies that integrate experiential or relational outcomes such as trust, satisfaction, or relationship quality alongside behavioural metrics. Those that do tend to find that AI driven personalization enhances engagement most sustainably when it fosters positive emotions, perceived fairness, and reciprocity rather than simply maximizing short term clicks or views (Holmlund et al., 2020; Ameen et al., 2021). This suggests that there is a risk of overestimating the benefits of personalization if evaluations rely only on high

frequency but low depth behaviours, which may be inflated by novelty or habit without indicating genuine attachment or loyalty.

A final theme that emerges from the reviewed work is the importance of viewing AI driven personalization as part of a socio technical engagement system that includes governance, communication, and design choices. Conceptual contributions emphasize that sustainable engagement in data intensive environments requires explicit attention to how personalization is explained, how consent is obtained, and how options for control and correction are presented (Martin & Murphy, 2017; Hoyer et al., 2020). Empirical studies also point to the role of content format, emotional tone, and platform norms in shaping whether personalized elements are perceived as enjoyable and empowering or as clutter and noise (Shahbaznezhad et al., 2021). For example, on some social platforms, highly personalized feeds that over optimize for predicted interest can narrow exposure and reduce serendipity, which may eventually diminish overall engagement despite high short term interaction rates. The cumulative evidence therefore supports a view in which AI based personalization is neither inherently beneficial nor inherently harmful for engagement. Its net effect depends on the balance between improved relevance and reduced effort on one side, and concerns about privacy, fairness, and autonomy on the other (Cloarec, 2020; Ng et al., 2020; Ameen et al., 2021). This underscores the need for future research and managerial practice to treat AI driven personalization and digital engagement as intertwined, to evaluate engagement in richer and more longitudinal ways, and to embed personalization strategies within

clear ethical and experiential guidelines rather than purely algorithmic optimisation logic.

5. Conclusion

This review shows that AI-driven personalization can meaningfully enhance digital user engagement, but its effects are far from automatic or uniformly positive. Personalized recommendations, curated feeds, and adaptive interfaces tend to increase observable engagement behaviours such as clicks, time spent, and repeat visits when they deliver relevant, contextually appropriate content that aligns with user goals and preferences. At the same time, studies emphasise that engagement is multidimensional: cognitive focus, emotional responses, and longer-term loyalty do not always move in lockstep with short-term interaction metrics. In other words, AI-driven personalization is best understood as a powerful lever within a broader experience system, rather than a guarantee of deeper or more valuable engagement on its own.

The evidence also highlights several limitations in both the existing literature and this review. Many empirical studies are platform- or tactic-specific, focusing on single forms of personalization (such as product recommendations or social media feeds) and narrow engagement metrics, which makes cross-context comparison difficult. Privacy, fairness, and perceived control are often measured only indirectly, even though they clearly influence whether personalization is welcomed or resisted. Methodologically, most work relies on cross-sectional or short-term data and on proxy measures of engagement, leaving open questions about how AI-driven

personalization shapes relationships, trust, and value co-creation over time. This review is further bounded by its focus on peer-reviewed journal articles in English from 2017 to 2021, so cutting-edge techniques and field evidence reported in other outlets may not be fully captured.

Taken together, the findings suggest that future research and practice should treat AI-driven personalization and user engagement as a coupled socio-technical system. For researchers, promising directions include longitudinal and experimental designs that link specific personalization features to multiple engagement dimensions, and models that integrate experiential, ethical, and relational variables alongside behavioural outcomes. For practitioners, the main implication is that personalization strategies should be designed and governed with explicit attention to transparency, privacy, user agency, and platform norms, not just click-through or conversion. AI-driven personalization is most effective when it supports users in meaningful ways, respects their boundaries, and is embedded in a coherent, trust-based engagement strategy that looks beyond short-term metrics to long-term relationships.

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