**Artificial intelligence-enabled personalization in interactive marketing: A customer journey perspective**

**Abstract**

**Purpose** - Artificial intelligence (AI) technology has revolutionized customers’ interactive marketing experience. Although there have been a substantial number of studies exploring the application of AI in interactive marketing, personalization as an important concept remains underexplored in AI marketing research and practices. This study aims to introduce the concept of AI-enable personalization (AIP), understand the applications of AIP throughout the customer journey and draw up a future research agenda for AIP.

**Design/Methodology/Approach** - Drawing upon Lemon and Verhoef’s customer journey, the authors explore relevant literature and industry observations on AIP applications in interactive marketing. The authors identify the dilemmas of AIP practices in different stages of customer journeys and make important managerial recommendations in response to such dilemmas.

**Findings** - AIP manifests itself as personalized profiling, navigation, nudges and retention, in the five stages of the customer journey. In response to the dilemmas throughout the customer journey, the authors developed a series of managerial recommendations. The paper is concluded by highlighting the future research directions of AIP, from the perspectives of conceptualization, contextualization, application, implication, and consumer interactions.

**Research Implications** - New conceptual ideas are presented in respect of how to harness AIP in the interactive marketing field. This study highlights the tensions in personalization research in the digital age and sets future research agenda.

**Practical Implications** - This paper reveals the dilemmas in the practices of personalization marketing and proposes managerial implications to address such dilemmas from both the managerial and technological perspectives.

**Originality** - This is one of the first research papers dedicated to the application of AI in interactive marketing through the lenses of personalization. This paper pushes the boundaries of AI research in the marketing field. Drawing upon AIP research and managerial issues, we specify the AI-customer interactions along the touchpoints in the customer journey in order to inform and inspire future AIP research and practices.

**Keywords** Artificial intelligence, Artificial intelligence-enabled personalization, Interactive marketing, Customer journey

**Paper type** Conceptual paper

**1. Introduction**

Artificial intelligence (AI) is a revolutionary concept that is changing people’s everyday lives. Haenlein and Kaplan (2019, P5) define AI as “a system’s ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptations.” The key applications of AI systems include natural language processing, image recognition, speech recognition, problem solving and reasoning, machine learning, natural language generation, image generation, and robotics (Paschen et al., 2020). The ultimate AI application AI is expected to operate like a human, with the capabilities of knowing, learning, perceiving, sensing, acting, planning, communicating, and reasoning (Huang and Rust, 2018; Payne et al., 2021a). According to a recent report by IDC, the market value of AI application and research reached $327.5 billion in 2021, and was expected to break the $500 billion mark by 2024 (IDC, 2021). In addition to the changes that AI has brought to individuals’ daily lives, AI is also reshaping the way in which organizations operate by facilitating task automation (Davenport et al., 2020). Against the ever-growing application of AI in practice, AI research in the social sciences is also witnessing a major step in its scope and focus on AI and decision making, application domains, data information, and challenges in practice (Dwivedi et al., 2020).

Among its application domains, the value of AI has been recognized in the field of marketing and the landscape of the consumer market and marketing practices is rapidly changing. In marketing, compared to the application of AI in marketing management and operation, a greater proportion of AI research in the marketing field focuses on customer-facing AI (Guha et al., 2021). In this case, AI directly interacts with consumers and reshapes their interactive marketing experiences throughout the customer journey (Kannan and Kulkarni, 2022). Wang (2021, p. 1) defines interactive marketing as a “bi-directional value creation and mutual-influence marketing process through active customer connection, engagement, participation, and interaction.” The application of AI in interactive marketing replaces human-to-human interactions and has changed the nature of interactive marketing by the widespread use of human-to-machine interactions at the touchpoints along the customer journey (Huang and Rust, 2018). Lemon and Verhoef (2016) highlight three key touchpoints of the customer experience (i.e., pre-purchase, purchase, and post-purchase stages) that are affected by a previous experience and could be used to forecast a future experience. The application of AI in interactive marketing emphasizes utilizing data generated from previous interactions with customers to improve the customer experience at those key touchpoints (Payne et al., 2021a and 2021b).

Among the transformations brought by the application of AI along the customer journey, personalization is an essential aspect that has been highlighted by marketing research and practice (Payne et al., 2021a). Personalization plays a crucial role in co-creating, connecting, and engaging with customers in interactive marketing practices (Payne et al., 2021a). The personalization of interactive marketing is an iterative process of understanding consumers and generating responses (Thomaz et al., 2020). By interlinking customers and marketers, personalization enhances the relationship between them, leading to positive attitudes and behaviors among consumers (Simonson, 2005). However, research also points out that psychological reactance and subsequent opposition action may occur when personalization limits a consumer’s freedom of choice and raises privacy concerns (Pizzi et al., 2020; Simonson, 2005). Such facts revealed the dilemma of employing AI to create a personalized marketing experience.

Against this background, in this paper, we explore how AIP shapes customer experiences along the customer journey. On the basis of the critical background of the application of AIP and research gaps revealed in academic research and marketing practice, the objective of this paper is threefold. First, drawing upon Lemon and Verhoef’s (2016) concept of a customer journey, we focus on utilizing previous experience in shaping customer experiences in the pre-purchase, purchase, and post-purchase stages, and develop an integrated framework of AIP application throughout key touchpoints along that journey. Second, considering the emerging stage of AIP development, we also highlight the dilemmas that marketers face at each stage of the customer journey and offer managerial recommendations for interactive marketing practices. Third, from an academic perspective, based on a review of the academic literature and industry observation, we identify gaps between academic research and industry practices, and thereby suggest important directions for future research.

In what follows, we first develop a comprehensive understanding of AIP and build an integrated framework focusing on AIP throughout the customer journey. We next illustrate the dilemma of applying AI at each stage of the customer journey and offer corresponding managerial recommendations. We conclude the paper by recommending future research directions.

**2. AI-enabled Personalization (AIP) throughout Customer Journey**

AIP is supported by fine-grained contextual insights at the individual customer level. Technically, AIP relies strongly on learning paradigms, including supervised learning, unsupervised learning, and reinforcement learning, to analyze consumer data (Ma and Sun, 2020). These algorithms provide marketers with a convenient way of analyzing customer hyper-contextual factors (Tong et al., 2020). AIP is often used in conjunction with the internet of things (IoT) for capturing data (Ameen et al., 2021), and virtual reality or augmented reality for creating enjoyable and satisfied interactions (Ma and Sun, 2020). As noted earlier, the ultimate objective of AIP is to initiate effective interactive marketing activity with the customer at the appropriate time and in an appropriate place (Kumar et al., 2020). When AIP achieves this objective, it would make itself an ideal form of interactive marketing implementation (Huang and Rust, 2021b). It is, however, difficult to achieve this success because AIP is constrained by the volume and quality of customer data, the ability of firms to generate insights from the data, and the effectiveness of implementation (Ma and Sun, 2020).

AIP delivers different types of personalization according to the various categories of AI (i.e., mechanical, thinking, and feeling AI) (Huang and Rust, 2021a). As such, AIP results in different ways of co-creating value and engaging with customers according to the various levels of consumers’ value-in-use perceptions (Payne et al., 2021a and 2021b). More precisely, there is a lower level of AIP when firms leverage mechanical AI in interactive marketing. Mechanical AI has the aim of automating repetitive and routine tasks in order to maximize scale and efficiency (Huang and Rust, 2021b), but there is still a degree of personalization, such as bill payments, fund transfers, and fast food ordering and delivery (Payne et al., 2021a). As such, AIP with mechanical AI can fulfill routine and standardized interactions with consumers. There is a higher level of AIP when firms leverage thinking and feeling AI in interactive marketing. Thinking AI has the aim of delivering personalization by uncovering meaningful patterns from personal and contextual data (Huang and Rust, 2021b). AIP with thinking AI could fulfill informative and pragmatic interactions with consumers. As such, AIP with thinking AI could respond to consumers with information or actions, such as greener product recommendations and real-time personalized insurance planning (Payne et al., 2021a; Dawar, 2018). Feeling AI has the aim of feel customers with empathy and understanding. AIP with feeling AI could thus fulfill emotional and relational interactions with consumers (Huang and Rust, 2021b). Examples of feeling AIP are Alexa, Cortana, and Siri, which can chat with customers like a human. True feeling AI has not yet come about because AI is still unable to recognize, emulate, and respond appropriately to human emotions (Huang and Rust, 2018). Hence, true feeling AIP could help fulfill real personalization with customers’ thoughts and emotions fully considered by the time general AI is created (Prentice et al., 2020).

Although AIP is developed by firms that leverage the AI technology of machine learning, it is widely applied to the customer experience along the customer journey because it is a customer-centric and customer-facing interactive marketing practice (Payne et al., 2021a; Tong et al., 2020). AIP has changed the landscape of the customer experience and value co-creation in interactive marketing. Focusing on the touchpoints of the customer journey and understanding the customer’s interaction with AIP along that journey helps to draw a rich picture of the role of AIP in shaping interactive marketing.

Given the important role of AIP in collecting, categorizing, analyzing, and utilizing the data generated from previous customer interactions and in shaping the customer experience at the pre-purchase, purchase, and post-purchase stages, it is important to understand AIP applications and managerial implications throughout the customer journey. We develop an integrated framework to illustrate AIP tactics that includes personalized profiling, navigation, nudging, and retention (Figure 1). Under each tactical approach, we detail touchpoints in which AIP applications shape the customer experience. We next review the academic literature and industrial observations that focus on each stage of the customer journey and identify dilemmas and countermeasures.

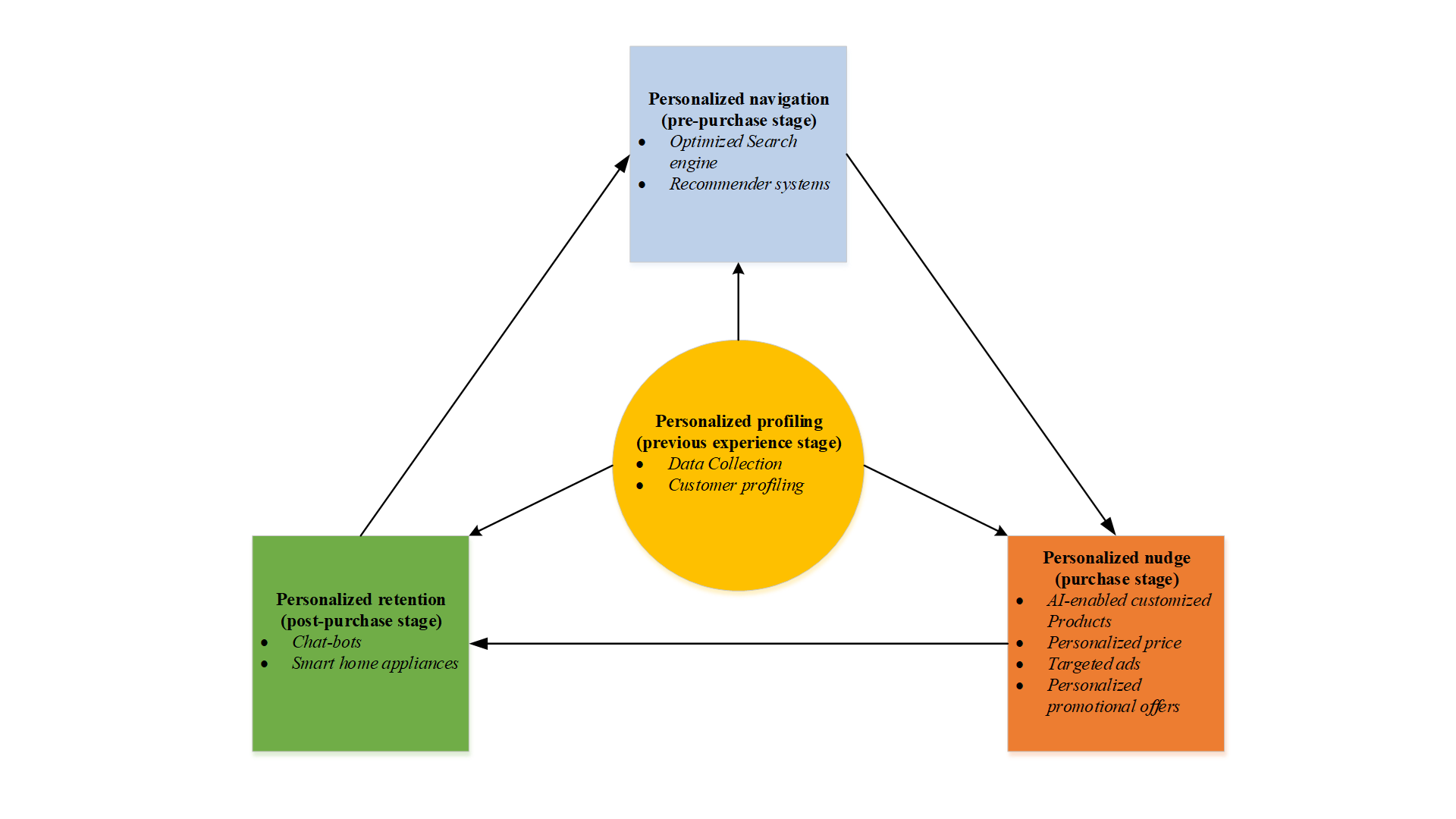


Figure 1. AIP applications throughout the customer journey

**3. AIP in the previous experience stage: personalized profiling**

The AIP tactics employed are specific to each stage of the customer journey, along with the touchpoints that customers have with connected AI-enabled technologies. A consumer’s previous experience enables AIP to analyze the purchase history of that consumer and, by doing so, AIP can characterize that individual (Gupta et al., 2020). Given the role of previous experience (Lemon and Verhoef, 2016), AIP specializes in personalized profiling that aims to provide an accurate profile of each customer (King and Forder, 2016).

*3.1 Applications of personalized profiling*

Personalized profiling refers to the process whereby firms leveraging AI collect fine-grained data at the granular level to holistically characterize a consumer and precisely predict the behavior for even one consumer (Hoyer et al., 2020; Lemon and Verhoef, 2016). Personalized profiling works to generate insights into customers’ intentions, preferences, traits, decision-making processes, and immediate needs (Tong et al., 2020). Unlike traditional targeting, which usually captures a segment of one group, personalized profiling can reach a segment of one successfully, and thus micro-targeting can be put into practice (Huang and Rust, 2021). AIP can leverage the IoT, by involving sensors, wearables, heat maps, video surveillance, and beacons to collect individuals’ unstructured and structured data (Soleymanian et al., 2019). Theoretically, AIP builds profiles by collecting data from a wide range of digital platforms (Grewal et al., 2020). Consumers are exposed to various digital touchpoints (e.g., social media, e-commerce etc.). Therefore, profile-building is relatively easier in the digital age (Menard and Bott, 2020; Dwivedi et al., 2020). When building profiles, marketers are dependent on machine learning, deep learning, neural networks, natural language recognition, and image recognition (Paschen et al., 2020). In other words, personalized profiling mainly incorporates data collection and customer profiling.

*3.2 AIP dilemma in the previous experience stage*

*Misunderstanding.* Personalized profiling may lead to misunderstanding consumers. In the process of building consumers’ profiles, personalized profiling defines consumers by leveraging an AI database (Cui et al., 2021). Firms are increasingly dependent on the insights generated by an algorithm (Langenderfer and Miyazaki, 2009). Although personalized profiling could create a seemingly objective digital consumer identity through big data and AI, it may misunderstand consumers due to customers’ relative sophistication and inherent algorithm weaknesses (De Bruyn et al., 2020). For instance, a consumer is exposed to several psychological treatment ads because this consumer used to browse relevant webpages, although the consumer simply has an interest in how to start up this kind of business. Thus, consumers often experience daily interventions from irrelevant promotional practices without any apology from firms leveraging personalized profiling (Lucia-Palacios and Pérez-López, 2021). In such conditions, consumers are likely to become frustrated.

*3.3 Managerial recommendations for improving personalized profiling*

*Consumer confirmation.* A useful approach in addressing a failure to understand consumers is to encourage those consumers to provide confirmation. Firstly, firms should design an easy-to-use system to allow consumers to confirm whether their data can be collected (Ma and Sun, 2020). For instance, an easily readable permission button to help consumers determine self-disclosure of personal data can be designed before consumers open an app (Thaler and Benartzi, 2004). Firms should then strive to explain the data collection and data analysis processes to consumers (Grewal et al., 2021). Secondly, the key to addressing misunderstanding is to invite consumers to validate the results of personalized profiling (Puntoni et al., 2021). Firms should also disclose the relevant results of data analysis to consumers (Gupta et al., 2020). Thirdly, firms should attend to consumers’ reactance toward algorithm-based interactive marketing practices, such as unforeseen pop-up ads (Pizzi et al., 2020), and strive to impede ineffective interference, although data capture and data analysis are very unlikely to be avoided.

**4. AIP in the pre-purchase stage: personalized navigation**

In the pre-purchase stage, customers take actions such as need recognition, information searches, and considering alternatives (Lemon and Verhoef, 2016). These interactions with a company and the environment provide AIP with an opportunity to guide the potential customer around online and offline touchpoints (Puntoni et al., 2021). For instance, AIP leverages search engines to guide customers’ online attention. As such, the tactic of AIP in the pre-purchase stage is conceptualized as personalized navigation.

*4.1 Applications of personalized navigation*

Personalized navigation refers to the process whereby firms leveraging a designed AI system can guide customers onto a prepared online site (Hoyer et al., 2020; Lemon and Verhoef, 2016). It means that AIP designs a technological system to navigate potential customers toward future purchases. Personalized navigation is highly reliant on personalized profiling to design the navigation pattern (Ma and Sun, 2020), help identify consumers’ needs, and prepare potential customers for the purchase stage (Sihi, 2018). Optimized search engine and recommender systems are essential touchpoints of personalized navigation. Firms widely apply text, voice, and visual search engines to orient customers (Campbell et al., 2020). Text and voice search engines have become routine search methods (Haridasan and Fernando, 2018). Visual search engines now offer a new situation, in which consumers use their camera to search for items (using the Amazon App to search items by taking photos of objects)(Grewal et al., 2020). The new search engine technologies have broken the previous restrictions on searching, as search activities can now occur inside an elevator while using an AI camera to recognize photos on the wall. In addition to search engines that require consumers’ actions, recommender systems can automatically present the most relevant products at the appropriate time and in the appropriate place (Marchand and Marx, 2020).

*4.2 AIP dilemmas in the pre-purchase stage*

*Algorithm-led search results*. Text, voice, and visual search engine services greatly enhance the efficiency of searching but this is determined by an algorithm-driven AI (Perez-Vega et al., 2021). The algorithm works to determine what to display and how to display it (Mik, 2016). Firstly, the items that consumers are searching for are often among the bestsellers in the marketplace because this could increase the possibility of purchase (Guha et al., 2021). Secondly, the reason a certain product is searched out is that the producer or the retailer pays higher fees for its top ranking on an e-commerce platform (Vlacic et al., 2021). It is the case that firms strive to offer a personalized search service that considers both consumers’ characteristics and firms’ benefits. Finally, the results that search engines display might not be the ones that consumers initially imagine and desire, because the algorithm is created by computer scientists, mathematicians, and engineers (Ghose et al., 2012). Consumers lose the freedom to choose when they encounter a search engine.

*4.3 Managerial recommendations for improving personalized navigation*

*Consumer-oriented settings*. Search engines should focus on consumers’ traits and states, although firms will not need to give up their algorithms (Srinivasan and Sarial-Abi, 2021). Firms need to harness search engines to display the most relevant results for potential customers, to create benefits such as convenience for consumers (Rust, 2020). Insights gained into customers’ preferences and product features should determine the search results, but the algorithm could be used to improve the display quality of the search results (Edmondson et al., 2010). In this regard, search engines should not simply display products that have a high level of stock or have sold well (Hussain, 2019). Although recommender system is very useful for consumers who want to save time, energy, and costs in searching, comparing, and evaluating, this marketing tool should be dependent on who the consumers are and what they want to buy (De Bruyn et al., 2020).

**5. AIP in the purchase stage: personalized nudge**

In the purchase stage, customers are likely to act by making a choice, ordering, and paying (Lemon and Verhoef, 2016). To fulfill a customer purchase, marketers are highly reliant on interactive marketing ‘nudges’ (Anker, 2020). In this regard, AIP focuses on personalized nudges in the purchase stage. By carrying out personalized nudges, AIP combines traditional marketing thinking with AI to satisfy customers’ needs, such as by making personalized promotional offers (Seele et al., 2019).

*5.1 Application of personalized nudging*

Personalized nudging refers to the process whereby firms combine AI technology with a marketing mix to incentivize consumers to engage in a purchase (Hoyer et al., 2020; Lemon and Verhoef, 2016). It aims to encourage a purchase decision (Tong et al., 2020) and includes the touchpoints of AI-enabled customized products, personalized prices, targeted ads, and personalized promotional offers. AI-enabled customized products refer to the leveraging of AI in the automatic design and production of real-time products that satisfy individual needs (Campbell et al., 2020). Customizing a product is thus dependent on the predictive ability of an algorithm (Zhao et al., 2012). This could, for example, relate to a music-based automated recommender system (Chung et al., 2009), whereby a music player app can reorganize a music list according to similar styles if a consumer often listens to a certain type of music. Personalized pricing refers to automatically customized or targeted pricing, whereby firms charge different prices to different consumers based on the consumers’ characteristics and willingness to pay to ensure gains (Choudhary et al., 2005).

*5.2 AIP dilemmas in the purchase stage*

*Confusing and deceptive pricing*. Personalized AI-powered pricing could result in a feeling of having been deceived. To attract and satisfy consumers, AI may automatically set a suitable price for a consumer at the appropriate time and in the appropriate place (Choe et al., 2018), but this may not mean that the price is one of the cheapest (Kummer and Schulte, 2019). Personalized AI-powered pricing aims to implement a price policy by identifying a customer’s reservation price and that individual’s willingness to pay (Ezrachi and Stucke, 2016). In this case, a consumer is likely to find a cheaper item from among his/her peers’ purchases if personalized AI-powered pricing is still working (Haws and Bearden, 2006). In addition, the consumer may find the same product at a cheaper price afterward on the same webpage or mobile app (Wolkenfelt and Situmeang, 2020). When the consumer pays higher prices than others and finds cheaper prices for similar transactions, the one will be frustrated because of the sense of deception.

*Pre-established commercials*. AIP keeps track of consumers across a wide range of touchpoints. It is very unlikely that a consumer can avoid an AIP trace over time, so AIP could gain information about what consumers do, how consumers think, and how consumers feel 24/7 (Overgoor et al., 2019). In response to tracking, AIP can create a pre-established commercial for a consumer (Ma and Sun, 2020). For instance, real-time customized e-commerce website morphing (i.e., matching the look and feel of a website to each customer) emerges that is based upon consumers’ browsing records and characteristics (Hauser et al., 2009). Another way to keep consumers with a pre-established commercial is to implement optimized ad placement (Gupta et al., 2020). For instance, a consumer who reads an article about changing eating habits to protect the stomach may see medicine ads at the end of the piece, such as for a Chinese herb or omeprazole. Thus, targeted ads that firms actively create are prepared and waiting for consumers (Lucia-Palacios and Pérez-López, 2021). In other words, consumers’ movements are, to one extent or another, planned by AIP.

*Manipulative promotion*. Pre-established commercials are the means and the transaction is the end. When prompting a personalized nudge, personalized promotional offers lead to a manipulative transaction. Personalized promotional offers require matching the promotional offer to the consumer who is just in need (Kumar et al., 2020). Given the preferences and needs are dynamic, and the temporary nature of the opportunities that arise, a window of only minutes will exist in which to deliver a personalized promotional offer when AIP detects an inbound consumer (Ma and Sun, 2020). By harnessing manipulative transactions, AIP considers all kinds of promotional tools and promptly delivers customer-tailored ones based upon the real-time predictions of consumers’ preferences, interests, and time-contextual factors (Cui et al., 2021). AIP delivers promotional offers that stem from a backstage process based upon the precise analysis of customers and contexts (Gupta et al., 2020). As such, personalized promotional offers are presented to consumers who have that exact demand at a certain time. It is also often done without consumers being aware of it (Martínez-López and Casillas, 2013).

*5.3 Managerial recommendations for improving personalized nudge*

*Transparent pricing*. Tackling confusing and deceptive pricing requires transparent pricing by adding critical messages. Firms should not hide relevant information about how AI shapes prices, although most consumers never require firms to disclose the exact price origin, such as why a particular item costs, for example, 5 dollars instead of 6 dollars (Allender et al., 2020). Firms should at least suggest that personalized prices are different among different consumers at different times and in different places (Haws and Bearden, 2006). Firms should also provide some explanation about why price changes automatically and why different people may get different offers. This improves the transparency of transactions and potentially increases consumers’ fairness perceptions (Maxwell and Garbarino, 2010; Zuiderveen and Poort, 2017).

*Explainable AI*. As a form of persuasion, it is not likely that targeted ads and personalized promotional offers will stop, but they should be designed to make them more acceptable to consumers (Donath, 2021). Explainable AI that offers explanations of the rationale behind AIP could be an effective approach to addressing this dilemma (Rai, 2020). Explaining why something happens to consumers is an effective way of preserving autonomous decisions (Shin, 2020). In other words, firms need to shift the force of their persuasion toward explainable procedures. For example, consumers could click on the *Why is this for me?* button and learn the reason of seeing the pop-ups or digital displayed advertisements when surfing online (Cramer et al., 2008). In this case, AIP system should offer a more detailed interpretation.

**6. AIP in the post-purchase stage: personalized retention**

In the post-purchase stage, customers show behaviors such as usage and consumption, post-purchase engagement, and service requests (Lemon and Verhoef, 2016). At the same time, marketers hold a key objective of developing customer loyalty through marketing efforts, including after-sales services (Court et al., 2009). In this case, AIP can not only consider customers’ requests in the post-purchase stage, but also strives to retain customers and even begins the customer journey process anew. As such, AIP develops itself as a form of personalized retention in this stage.

*6.1 Applications of personalized retention*

Personalized retention refers to the process whereby firms leveraging AI preserve the one-to-one relationship with the consumer and even create a trigger that drives the consumer to begin the customer journey again (Hoyer et al., 2020; Lemon and Verhoef, 2016). The aim of personalized retention is to cultivate customer loyalty and encourage re-entering the pre-purchase phase (Court et al., 2009; Lemon and Verhoef, 2016). Personalized retention works by collecting comments about product usage and consumption, enhancing consumers’ engagement, and offering customer services (Lemon and Verhoef, 2016; Sterne, 2017). Chatbots and smart home appliances are critical touchpoints in personalized retention. Firms can design and deploy chatbots that encourage a high level of engagement with customers (Thomaz et al., 2020). Chatbots can also now fulfill both incoming and outgoing calls by leveraging human-like conversational approaches (Youn and Jin, 2021). Famous examples of chatbots include Amazon Alexa, Apple’s Siri, and Facebook Messenger. Unlike Alexa and Siri, which are voice bots (Pitardi and Marriott, 2021), Facebook Messenger is a type of social-bot designed initially for answering complaints by text in a customer service department (Xu et al., 2017). It was predicted that the social-bot industry would be worth $1.25 billion by 2025 (Grand View Research, 2019).

*6.2 AIP dilemma in the post-purchase stage*

*Anthropomorphic threats*. Chatbots play an important role in facilitating customer services (Thomaz et al., 2020), but anthropomorphized features may also negatively affect consumer well-being. Chatbots are able to function like human service staff members because they can understand consumers’ voices and tones and respond with anthropomorphized conversations (Luo et al., 2019). Anthropomorphism enables voice-based bots to speak using human-like tones, voices, and emotions (Klaus and Zaichkowsky, 2020). Consumers may, however, feel threatened, unnerved, or uncomfortable when they discover that they are interacting with a bot that not only speaks like a human, but also seems to know them (Davenport et al., 2020). Chatbots can understand consumers through data analysis, but the reverse is not the case. Consumers find it extremely difficult to understand fully how chatbots think, despite the fact that these bots are created by humans (Kaplan and Haenlein, 2019). This limited knowledge of chatbots that seem to have a rich understanding of consumers leads to consumer dissatisfaction (Chen et al., 2021).

*6.3 Managerial recommendations for improving personalized retention*

*Decreasing anthropomorphic features*. To preserve consumer autonomy, firms need to consider decreasing the anthropomorphic features of chatbots. The less anthropomorphized the product, the stronger the sense of autonomy consumers are expected to have (Kim et al., 2016). One useful way of achieving this is to create machine-like and gender-neutral voices that are completely different from a female or male voice (Sydell, 2018), which would enable consumers to be clear that a machine is delivering customer service (Glushko and Nomorosa, 2013). Decreasing anthropomorphic features requires redesigning chatbots according to the individual needs of customers (Thomaz et al., 2020). It is necessary to set clear buttons for opt-in and opt-out options for customers who have different levels of resistance to chatbots before and during conversations. Therefore, customer autonomy can be preserved and customers can easily choose to receive robotic customer service or human service at any time.

**7. Future research agenda**

The reviews and observations above showcase the practices, dilemmas, and implications of AIP in interactive marketing throughout the customer journey through both technological and marketing lenses. However, as noted earlier, academic research lags behind the pace of technological development and marketing innovation in practice. Based on the discussion of AIP applications during the customer journey, a series of important inquiries emerged that urgently need to be addressed by academic researchers. We categorize these inquiries into four themes: AIP conceptualization, contextualization, application and implication, and consumer interaction. We summarize future research directions in Table 1 and elaborate them below.

First, considering the conceptualization of AIP, we echo Huang and Rust (2021b) and call for more fundamental work that defines and conceptualizes AIP through different theoretical lenses. Meanwhile, though AIP marketing is enabled by AI technologies, how AIP practice contributes to the continuous technological development of AI in interactive marketing is also important (Desai et al., 2022). Theoretical work is needed to understand the paradigms of AIP in interactive marketing. Additionally, technological advancement affects the development of consumer cultures in the digital age (Hollebeek and Belk, 2021). Therefore, future work could explore the impact of AIP on consumer behaviors, particularly group behaviors, through the lenses of consumer culture theory.

Second, from the perspective of contextualization, little has been known about the impact of contextual factors on the effectiveness of AIP in interactive marketing. More precisely, at a macro level, how AIP is perceived and practiced differently across different countries and cultures remains underexplored. Furthermore, AIP heavily relies on the collection and utilization of consumer data (Tong et al., 2020), while the data protection and privacy legislation vary across the globe (e.g., EU’s General Data Protection Regulation (GDPR) and US’s California Consumer Privacy Act (CCPA)) (King and Forder, 2016). Future research should also investigate how such policies shape the AIP practices around the world. At a micro level, aforementioned, the touchpoints between customers and marketing information along the customer journey are mediated by different media, platforms, and technologies. Meanwhile, the utilization of AIP may also vary among different industries (Payne et al., 2018). Therefore, future research should identify nuanced differences between different technological media across different sectors and product categories.

Third, there are several urgent inquiries about the application and implication of AIP from a strategic perspective (Huang and Rust, 2021a). In the first place, the motives and barriers of adopting AIP in marketing practices need to be examined. Once a business decides to incorporate AIP in its marketing strategy, AIP requires a large number of resource inputs (Kumar, 2019). While how to efficiently acquire, mobilize and utilize resources for AIP remains unclear (Wang et al., 2021). Meanwhile, researchers should also explore how AIP integrates with other marketing strategies and tactics. After all, AIP as an important strategy should serve the overall marketing objective and contribute to marketing performance (Campbell et al., 2020). Furthermore, given the increased use of integrated marketing strategies, it is critical to explore how the effectiveness of AIP is measured and evaluated at each stage of the customer journey (De Carlo et al., 2021). Moreover, AI technology plays an irreplaceable role in the service sector and has revolutionized the landscape of digital servitization (Payne et al., 2021a). Future research could explore how the introduction of AIP facilitates the development of new service models for service organizations and accelerates the progress of digital servitization today. Additionally, based on the AIP dilemmas that are highlighted in various stages in this paper, future research could empirically investigate the implications of such dilemmas and examine the effectiveness of the managerial guidance recommended in this paper.

Last but not least, AIP plays an irreplaceable role in the consumer-business interactions in the digital age, researchers should further examine how AIP shapes consumer behaviors. More specifically, research should investigate how consumer experiences benefit from AIP to build trust, facilitate the purchase and develop loyalty and advocacy. In contrast, it is equally, if not more, important to understand the dark side of AIP (Hermann et al., 2022; Thomaz, et al., 2020). For example, future research needs to clarify the potential hard feelings caused by AIP and investigate the impact of AIP on consumers’ autonomy, control, and self-regulation (Andre et al., 2018). This is particularly important in developing a healthy digital marketing environment and an ethical and sustainable approach (Pedrero-Esteban and Gas-Gozalbo, 2021). Furthermore, interactive marketing highlights the significance of value co-creation (Izogo et al., 2021; Wang, 2021), and our observations reveal the importance of AIP in interactive marketing practices. We therefore encourage future research to examine how AIP contributes to value co-creation in consumer-business interactions. In addition, in the service sector, service robots have been observed to have an important role in enriching the customer experience, revolutionizing service exchanges, and facilitating digital servitization in modern society (e.g., enabling the food-serving process in restaurants, assisting customer check-ins in hotels, and providing assistance in mobile banking services) (Baabdullah et al., 2019; McCartney and McCartney, 2020). However, in most cases, the services provided by service robots remain standardized, which may negatively affect the customer experience (Hu et al., 2021). How to incorporate AIP into customer-robot interactions in order to improve the customer experience in the service setting is a crucial inquiry that requires further research in the future (Hu et al., 2020; Wu et al., 2020). Moreover, recent research identifies that individual differences (e.g. personality traits, gender, age etc.) affect the consumers’ acceptance of AI technologies and the way to interact with such technologies (Frank 2021; McLeay et al., 2022). Future research could investigate the impact of individual differences on the AIP-triggered customer experience, thereby improving the effectiveness of segmenting, targeting and positioning the brand in the digital age.

**8. Conclusion**

In this paper, we introduced the concept of AI-enabled personalization that could serve as an important strategy that shapes the customer journey. We identified the incorporation of AIP in each stage of the customer journey (personalized profiling, navigation, nudges, and retention), identified dilemmas in marketing practices, and offered managerial recommendations based on an extensive academic review and industry observation. We also highlighted several important directions that inspire future research into AIP. As AIP research and practice are in the embryonic stage, by defining AIP, understanding the application of AIP in the customer journey alongside the academic literature and practical observations, and drawing up a future research agenda, we are in the hope of witnessing further development of AIP in interactive marketing.

**Table 1. Future research directions for AIP**

|  |  |
| --- | --- |
| **Future Research Directions** | **Potential Research Questions** |
| ***Conceptualization of AIP*** | What is AIP, from both marketing and technological perspectives? |
|  | How does AIP advance the incorporation of AI technology in marketing practices? |
|  | What are the mechanisms and paradigms of AIP technologies? |
|  | How does AIP affect the development of consumer cultures and communities in the digital age? |
|  | Which theoretical perspectives can be used to refine the definition of AIP? |
|  |  |
| ***Contextualization of AIP*** | How do AIP tactics vary across countries or industrial sectors? |
|  | How do data protection and privacy legislation affect AIP’s practices and perceptions across countries? |
|  | How do different digital media, platforms, and technologies affect the effectiveness of AIP? |
|  |  |
| ***Application and Implication of AIP*** | What are the motives of barriers for businesses to adopt AIP in their marketing strategies? |
|  | What resources do AIP-oriented strategies require? |
|  | How do businesses mobilize their resources to support the AIP strategies? |
|  | What are the possible negative outcomes of implementing AIP in marketing strategies? |
|  | How is the effectiveness of AIP strategies measured? |
|  | How do AIP strategies affect business performance?  How does AIP facilitate the digital servitization? |
|  |  |
| ***Consumer Interactions*** | How does AIP affect consumer behaviors and experiences throughout the decision-making process? |
|  | How does AIP contribute to consumers’ loyalty-building with a business, a brand, or a platform? |
|  | What is the consumer resistance mechanism of AIP? |
|  | How does AIP affect consumers’ autonomy and well-being? |
|  | How does AIP integrate with other digital marketing strategies of a brand to enrich the consumers’ digital experience with the brand?  How does AIP contribute to the value co-creation in the consumer-business interactions?  How does AIP could be implemented in the service robots to improve the customer experience?  How individual differences affect the AIP-triggered customer experience? |

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