



USE OF CONSUMER BEHAVIOUR DATA FOR PERSONALISED ADVERTISING IN DIGITAL MARKETING

M. Abid Fared, Didit Darmawan

Institute of Commerce and Business Administration Layyah, Pakistan, Universitas
Sunan Giri Surabaya

correspondence: dr.diditdarmawan@gmail.com

Abstract

This article develops a conceptual discussion of how large scale consumer data are used to create personalised advertising experiences in digital marketing and the privacy issues that accompany these practices. The paper outlines the main technical features of behavioural tracking, profiling, and targeted message delivery across platforms, and explores how these mechanisms reshape the relationship between advertisers and individuals. Personalised advertising is presented as a promise of greater relevance and efficiency, yet it relies on continuous monitoring of online actions and on extensive inferences about preferences, vulnerabilities, and purchasing power. The discussion highlights concerns about informed consent, opacity of data flows, potential psychological manipulation, and unequal power relations between data rich corporations and ordinary users. Special attention is given to tensions between commercial objectives and ethical principles such as autonomy, fairness, and respect for human dignity. By clarifying these issues, the article offers a conceptual frame that may guide further empirical work and support regulators and practitioners in designing more privacy aware digital marketing practices.

Keywords: big data, personalised advertising, digital marketing, consumer behaviour, privacy, consent, profiling.

Introduction

The development of digital marketing over the past two decades has transformed how organizations communicate with potential customers. Advertising that was once distributed massively through print media, radio, and television has now shifted to the screens of personal devices that accompany almost every daily activity. Search engine platforms, social networks, and video-sharing applications provide extensive space for advertisers to appear between users' online activities. In this highly connected environment, traces of consumer behavior are recorded through clicks, searches, dwell time, and various other interactions that occur repeatedly. The accumulation of these interaction traces is compiled into large datasets that promise greater precision in marketing targeting. Advertisers no longer speak to anonymous audiences, but instead craft messages that seem to recognize the habits, interests, and even the vulnerabilities of each individual (Sutherland, 2020). This transformation offers new efficiencies for marketers while also raising ethical questions regarding the limits of using personal data within advertising architectures that surround people's digital lives. The ability to access technology and understand how it works also becomes an important factor influencing how individuals interact with online information and services (Arifin & Darmawan, 2021).

This change in marketing practices is driven by the technical ability to collect, store, and process user behavioral data on a massive scale (Camilleri, 2020). Every visit to a website, application download, and interaction on social media leaves traces that can be linked to one another. These traces include access location, device type, activity time, and click patterns that illustrate interest in certain product categories. Through modeling and segmentation techniques, marketers can build detailed representations of the preferences and habits of individuals or groups. This information is then translated into product recommendations, discount offers, and promotional messages designed to feel relevant to recipients. The primary promise of this approach is the reduction of advertising waste, since messages are directed to those who are considered most likely to respond positively. This phenomenon indicates that human behavior in digital environments is also influenced by various psychological and social factors that shape how individuals respond to the information they receive (Darmawan, 2013).

Advertising personalization has become a key term in digital marketing practices that rely on big data. The browsing experience presented to users is designed to follow their interests from one platform to another (Yu & Kong, 2016). Someone who visits a travel website may later encounter airline ticket promotions on news pages, social media accounts, and email services. This personalization is achieved by linking different fragments of behavioral data to construct predictable profiles. From the marketer's perspective, this approach is considered to increase relevance and reduce disturbance, because the displayed advertisements are assumed to better match individual needs. However, from the user's perspective, a sense of being monitored may arise when commercial messages seem to know what has just been searched for or discussed. At this point, the line between helpful service and monitoring practice begins to blur. Business visibility in online spaces is often built through various optimization techniques and increasingly complex use of user data (Eddine & Darmawan, 2021).

The use of big data in advertising personalization creates new dynamics in the relationship between consumers and advertisers (Couldry & Turow, 2014). In the past, consumers could relatively control the information they shared with merchants, for example through direct conversation or simple forms. Today, behavioral information can accumulate without explicit interaction, as it is automatically recorded through online tracking. Many users accept digital service terms without reading carefully how their data will be collected and used. In such circumstances, the consent provided is often merely formal, while substantial understanding regarding data usage remains limited. The information gap between marketers and users enlarges the power of those who control data processing technologies, creating an imbalance in determining how advertising experiences are shaped. In digital consumer behavior, various studies also show that purchasing decisions are often influenced by repeated exposure to information appearing on online platforms (Darmawan & Gatheru, 2021).

Behind the convenience of personalization lies the growing issue of privacy and data sovereignty. Privacy is not merely about hiding secrets, but relates to individuals' control over information about themselves and how that information is assembled into certain evaluations (Nissenbaum, 2020). When behavioral data are continuously collected and linked across

sources, a digital representation of the self is formed that may be far more detailed than the data owner realizes. This representation is used to estimate interests, purchasing ability, and even emotional vulnerabilities. Personalized advertisements can be directed to test responses to certain messages and then continuously adjusted. Under certain circumstances, this practice has the potential to lead to subtle manipulation of consumer choices, particularly when advertisement recipients are unaware of how extensively their profiles are used as a basis for targeting. Furthermore, the quality of digital services experienced by users also plays a role in shaping satisfaction and the likelihood that they will return to use the service or make repeat purchases online (Fared et al., 2021).

The main issue that arises relates to transparency and accountability in the use of big data for advertising personalization (Vedder & Naudts, 2017). Users of digital services often do not have a clear picture of what types of data are collected, how long they are stored, to whom they are shared, and for what purposes they are processed. Long and complex privacy policies make the consent process resemble an administrative formality rather than a conscious decision made with adequate information. At the same time, the technical architecture of behavioral tracking continues to develop through the use of cross-site trackers, device identifiers, and behavioral pattern recognition techniques. When system design favors the efficiency of data collection, the bargaining position of users in protecting their personal space becomes increasingly weak. This problem is exacerbated by the limited public understanding of the long-term consequences of accumulating behavioral data in the hands of a small number of digital entities. In various sectors, the sustainability of business practices is also increasingly influenced by the ability of organizations to face regulatory changes and ethical demands from a continually evolving society (Mardikaningsih & Darmawan, 2021).

Another issue concerns the blurring boundary between beneficial personalization and discriminatory or manipulative segmentation (Zhou et al., 2020). When marketers are able to construct target groups based on highly detailed behavioral and demographic variables, the possibility arises of using categories related to social, psychological, or economic vulnerability. For example, certain advertising messages may be intensively directed toward groups considered vulnerable to offers of

consumer credit, speculative products, or content that triggers anxiety. Other users may be excluded from certain offers based on profiles constructed from past behavioral data. In such conditions, advertising personalization is not merely message adjustment but also the selection of access to information and economic opportunities. The absence of clear rules regarding the ethical boundaries of segmentation expands the space for practices that may disadvantage certain groups. Developments in global social and political dynamics also indicate that technological changes can carry broad implications for patterns of social interaction and governance in various countries (Fariz, 2021).

This study is intended to address the need to formulate a balanced framework of understanding between aspirations for marketing efficiency and the protection of individual privacy rights. Public debates and regulations often lag behind the speed of technical innovation, allowing personalization practices to develop without a solid normative foundation (Van Oudheusden, 2014). By examining theoretical ideas regarding big data, consumer behavior, and marketing ethics, this study aims to reveal hidden assumptions that have supported advertising targeting practices. This urgency becomes stronger considering that system design decisions made today will shape how future generations interact with the commercial world in digital spaces. Efforts to build a balance between economic interests, social responsibility, and individual protection are increasingly important in formulating sustainable policies and practices in the digital era (Mardikaningsih & Hariani, 2021).

The purpose of writing this literature study is to construct a systematic explanation regarding the use of big data in digital marketing advertising personalization and to explain the ethical implications accompanying such practices. This paper aims to describe how consumer behavioral data are collected and linked to construct profiles, trace the logic of personalization implemented across various digital channels, and normatively review issues of privacy, consent, and the potential for manipulation. From a theoretical perspective, this study is expected to enrich discourse on the intersection between big data technology and marketing ethics. From a practical perspective, this discussion is expected to provide a reference for policymakers and marketing practitioners who

wish to design personalization mechanisms that are more aligned with respect for consumer privacy rights and autonomy.

Method

The writing of this article is based on a qualitative literature study that focuses on the development of conceptual arguments. Bryman (2016) emphasizes that social research requires clarity in research design, whether it uses field data or relies on the review of existing scholarly works. Following this perspective, the author developed a sequence of procedures that includes the formulation of research questions, the determination of keywords, and the selection of reading sources relevant to the themes of big data, consumer behavior, advertising personalization, and privacy. Lancaster (2007) reminds that research in the field of management needs to connect theoretical foundations with professional practice in a structured manner. This recommendation guided the literature selection process toward sources that discuss not only the technical aspects of data processing but also ethical reflections and managerial implications within digital marketing.

Pickard (2013) positions research in the field of information as an effort to understand the data cycle from collection, storage, to utilization. This framework is particularly helpful in examining the journey of consumer behavioral data that forms the basis of advertising personalization. Dawson (2002) emphasizes the importance of accuracy and consistency throughout all stages of research, including when constructing a theoretical review. By referring to these four authors, this article adopts an approach in which literature is treated as material for building a conceptual map rather than merely a list of references. The reading sources are grouped according to themes, such as works on big data technology, theories of digital consumer behavior, studies on personalization, and discussions on privacy and ethics.

Through this thematic classification, the literature is analyzed comparatively in order to identify key arguments, similarities, and differences among previous studies. The synthesis process allows the author to construct a structured discussion that connects the technical mechanisms of advertising personalization with broader ethical and managerial considerations. As a result, the discussion flow not only explains how big data supports personalized advertising practices but also

highlights normative questions regarding the boundaries of marketers' authority over personal data and the implications for consumer privacy in the digital environment.

Result and Discussion

Advertising personalization in digital marketing is a marketing communication strategy that utilizes behavioral data, preferences, and individual consumer characteristics to deliver promotional messages that are relevant, contextual, and aligned with the specific needs of each user (Tong et al., 2020). This concept has developed along with advances in data analytics technology, artificial intelligence, and digital activity tracking systems that enable companies to understand search patterns, purchase histories, social media interactions, and consumer interests more deeply. Advertising personalization aims to increase the effectiveness of marketing communication by reducing generic messages and replacing them with more individualized marketing experiences, so that consumers feel acknowledged, obtain higher informational value, and demonstrate a more positive response tendency toward the brand or product offered. This development indicates that digital technology has changed the way companies understand consumer behavior and build more targeted communication through the use of increasingly sophisticated data and digital systems (Darmawan et al., 2015; Putra & Arifin, 2021).

The effectiveness of advertising personalization can be measured through indicators that reflect the level of relevance and the impact of digital communication on consumer behavior, such as the alignment of advertising content with user interests, the level of consumer engagement with digital advertisements, the frequency of interactions or clicks on promotional messages, perceptions of comfort and acceptance regarding the use of personal data, increases in purchase conversion rates, the quality of user experience while receiving advertisements, customer retention levels, as well as the emergence of loyalty and trust toward brands as a result of marketing communication experiences perceived as more personal, targeted, and valuable for consumers (Aguirre et al., 2015). In modern marketing practices, the ability to build communication that is relevant to consumers is viewed as one of the keys to creating long-term relationships between companies and users of digital services (Gardi et al., 2021).

The use of big data in digital marketing begins with the system's ability to collect traces of user behavior in extraordinarily vast and diverse quantities (Hu et al., 2014). Every time someone opens a web page, downloads an application, interacts on social media, or performs an online transaction, the system records a series of variables related to the activity. These variables may include access time, visit duration, click sequence, device type, and even approximate location. Data that initially appear separate are unified through certain identifiers so that they form a sequence of activities associated with a single user profile. From a technical perspective, these data serve as raw materials that can be analyzed to identify patterns of habits, interests, and consumption preferences. From an ethical perspective, this process marks a shift from a relatively anonymous relationship between advertisers and audiences to a highly personalized relationship. This phenomenon illustrates how big data has become an important component in various aspects of modern social and economic life (Wahyudi et al., 2021).

Advertising personalization relies on the creation of profiles that describe the characteristics and behavioral tendencies of an individual user or groups of users considered similar (Winter et al., 2021). Profiles are built through a series of rules and models that map past behavior into certain categories of interest. For example, someone who repeatedly searches for travel information, visits airline websites, and reads tourism destination articles will be grouped as an individual interested in travel-related products. Based on this category, the system will prioritize displaying advertisements for tickets, hotels, or travel equipment to that user. This process occurs automatically through algorithms that are continuously updated. Users may only realize that advertisements appear relevant to their current interests without knowing the mechanisms behind such selection. Practices like this are also related to business visibility optimization techniques in search engines that utilize user data and behavioral analysis to increase the reach of marketing messages in digital spaces (Arifin et al., 2021).

In digital marketing, advertising personalization is viewed as a way to reduce the gap between promotional messages and the actual needs of consumers (Tran, 2017). Mass advertising is often considered disruptive because it targets many people without distinguishing their interests.

Through personalization, marketers hope consumers will experience benefits in the form of promotions aligned with their desires. However, these benefits are built upon intensive data collection and processing practices. Users' daily activities become a field of continuous observation, where every digital movement is considered a signal worth processing. The reinterpretation of such behavior then influences the advertising experiences received by users. In this context, personalization becomes a bridge between the technical world of big data processing and the psychological world of consumer decision-making. This also shows that consumer behavior in digital environments can be influenced by various marketing communication stimuli that are systematically designed through information technology (Mardikaningsih et al., 2018).

One key aspect of personalization is the distinction between traditional segmentation and digital behavioral segmentation (Rahaman et al., 2021). Traditional segmentation groups consumers based on demographic variables such as age, gender, or place of residence (Sehring, 2019). Behavioral segmentation focuses on actual actions recorded in digital systems, such as the types of pages visited, products viewed, or time spent on certain categories. Marketers consider behavioral information closer to actual interests compared to static demographic data. Therefore, the use of big data allows advertisers to create highly detailed and dynamic target groups that change along with behavioral shifts. Consequently, the advertising experience may feel highly specific, as if the system understands needs that have only recently emerged in the user's mind. This development is also related to the growing importance of utilizing consumer reviews and other digital information in improving product competitiveness in modern markets (Negara et al., 2021).

Although advertising personalization offers efficiency, there are concerns that this practice deepens the information asymmetry between marketers and consumers (Aguirre et al., 2015). Marketers and platform providers possess a comprehensive picture of user behavior over long periods (Jin et al., 2013), while users only observe small fragments of how their data are used (Chung et al., 2019). In many cases, users do not realize that every click and small delay is recorded as a signal that will influence future advertisements. They also rarely understand that data from various services can be linked to construct a more complete profile. When one

party holds full power over how data are interpreted and utilized while the other remains unaware, questions arise regarding fairness within this relationship. Conditions of information asymmetry such as this often appear in many modern social systems that involve the use of technology and data on a large scale (Fauzi, 2021).

Privacy issues lie at the heart of the debate concerning big data-based personalization. Privacy is often associated with the right to control personal information and regulate self-disclosure to others (Taddei & Contena, 2013). In the digital landscape, the boundary between information that is reasonably shared and information that should remain under the control of its owner becomes blurred (Zeilinger, 2018). Behavioral data that appear trivial, such as the time of opening an application or the pattern of scrolling a screen, can be combined with other data to generate fairly sharp conclusions about a person's character. When these conclusions are used as a basis for presenting certain advertisements, users may feel that something has crossed their comfort boundaries, even though formally they have agreed to the terms of service. This situation indicates a gap between formal consent and the actual sense of security experienced by users. In the context of professional ethics, transparency and integrity become important principles to ensure that data usage does not harm others (Saktiawan et al., 2021).

Consent becomes a crucial point in the practice of data collection (Tolich, 2016). Consent forms presented to users are often lengthy and filled with technical terminology, making them difficult to understand in a short time. Many people agree to these terms because they want to use the service immediately, not because they fully understand the details. In such situations, consent tends to be passive and compelled. From an ethical perspective, it can be questioned whether such consent is sufficient to legitimize the extensive collection and use of data. Moreover, children and other vulnerable groups may not yet have the capacity to assess the long-term consequences of the decisions they make when clicking the agree button. This raises the need to reassess the substance of consent in highly complex environments. This situation also shows the importance of public digital literacy so that individuals are able to understand the implications of technology use in everyday life (Halizah & Nuraini, 2021).

In addition to the issue of consent, there is also a dimension of surveillance inherent in the use of big data (Matzner, 2016). Systems designed to continuously record user behavior create a digital monitoring space that is almost uninterrupted (Kashef et al., 2021). Through tracking technologies such as cookies, device identifiers, and algorithmic profiling, digital platforms are able to collect extensive behavioral data about users' browsing habits, purchasing activities, and interactions with online content. Although the primary motive for such monitoring is often framed as an effort to improve service quality and support advertising personalization, the underlying technological infrastructure allows data to be stored and analyzed over long periods of time. As a result, the boundaries between service optimization, behavioral prediction, and surveillance can become increasingly blurred.

The implications of this condition extend beyond marketing practices. The same data structure used for advertising personalization can also be applied to other forms of decision-making, such as credit risk assessment, job selection, or broader systems of social monitoring. Behavioral traces collected today may therefore be used for purposes that go far beyond what users initially understand when they interact with digital platforms. Without clear limitations and strong accountability mechanisms, these concerns cannot be ignored. Conceptual studies need to explore how the architecture of digital surveillance intersects with marketing practices and what implications it has for individual autonomy. In some cases, patterns of digital consumption are also associated with the emergence of consumptive behavior influenced by exposure to information and promotions in online media (Mardikaningsih et al., 2020), indicating that the continuous flow of personalized content may subtly shape consumer preferences and purchasing decisions over time.

At the economic level, the use of big data strengthens the position of large technology companies that have the capacity to collect and process data on a massive scale (Kshetri, 2014). Companies that control major platforms can integrate data from various services to construct highly detailed profiles (Liu et al., 2016). They then offer advertising targeting services to both small and large businesses. As a result, many business actors depend on advertising infrastructure managed by a handful of giant players. This dependency strengthens the concentration

of power within the data ecosystem. This condition indicates that the development of the digital economy also requires institutional support and financing models capable of strengthening business actors in facing market changes (Wiyandarini et al., 2021).

The dimension of trust becomes a key factor in long-term relationships between consumers and brands in the era of big data (Willis et al., 2021). Consumers who feel that their privacy is respected tend to be more willing to engage and share information consciously. Conversely, data breaches, misuse of information, or overly revealing personalization can damage trust and trigger rejection toward both brands and platforms. Trust is not merely the result of policy statements but is built through consistent actions over time. In modern organizations, trust and collaboration are also viewed as important social capital for maintaining the quality of relationships and the sustainability of cooperation among different parties (Putra et al., 2021). Therefore, maintaining transparency and responsible data practices is essential for organizations seeking to sustain consumer trust in the digital ecosystem.

Conclusion

The discussion of this study highlights that the use of big data for advertising personalization in digital marketing offers significant opportunities for improving marketing efficiency and relevance. Through the analysis of large volumes of consumer data, advertisers are able to tailor promotional messages that closely match users' preferences, behaviors, and interests. This capability enables companies to deliver content that feels more personalized and engaging, potentially improving consumer experience and marketing effectiveness. Personalized advertising can also help reduce irrelevant information for users while allowing businesses to allocate their marketing resources more strategically in increasingly competitive digital environments.

However, the effectiveness of personalization is closely tied to extensive data collection and processing practices that raise complex ethical concerns. Much of the behavioral data used to build personalized advertising profiles is gathered through tracking technologies that operate in ways not fully understood by most users. This situation creates a significant information asymmetry between digital platforms and

consumers, where individuals may provide consent without fully realizing the scope of data extraction and analysis involved. Furthermore, the ability of algorithms to predict and influence consumer behavior raises concerns about manipulation, the exploitation of psychological vulnerabilities, and the erosion of individual autonomy. These issues become even more critical in a digital ecosystem where market power is concentrated within a small number of dominant platforms.

Therefore, the growing reliance on big data-driven advertising personalization requires a shift in perspective from viewing it solely as a commercial tool toward understanding it as a socio-technical practice that must be guided by ethical principles. The findings of this study suggest the importance of developing stronger ethical and regulatory frameworks that balance business innovation with the protection of consumer rights, particularly in relation to privacy, transparency, and fairness. Policymakers, industry practitioners, and academic communities should collaborate in establishing clear and enforceable standards for responsible data use. In addition, digital marketers are encouraged to design personalization systems that provide meaningful transparency and user control while safeguarding vulnerable groups. Future research should focus on empirical investigations of user experiences and corporate data practices across various platforms, while broader public education on data literacy and privacy awareness is necessary to empower consumers in navigating the digital environment that increasingly shapes everyday life.

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