

NOVA

IMS

Information
Management
School

MDDDM

Master's Degree Program in
Data-Driven Marketing

Navigating the Personalization-Privacy Paradox

Understanding the Impact of Online Ad Personalization on User
Perceptions Throughout the Customer Journey

Alice Marques da Costa Góis Rodrigues

Master Thesis

presented as partial requirement for obtaining a Master's Degree in Data-Driven Marketing

NOVA Information Management School
Instituto Superior de Estatística e Gestão de Informação

Universidade Nova de Lisboa

NOVA Information Management School
Instituto Superior de Estatística e Gestão de Informação
Universidade Nova de Lisboa

Navigating the Personalization-Privacy Paradox

Understanding the Impact of Online Ad Personalization on User Perceptions Throughout the
Customer Journey

by

Alice Marques da Costa Góis Rodrigues

Master Thesis presented as partial requirement for obtaining the Master's degree in Data-
Driven Marketing, with a specialization in Data Science for Marketing

Supervised by

Marlon Dalmoro, PhD, Nova Information Management School

July, 2024

STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism, any form of undue use of information or falsification of results along the process leading to its elaboration. I further declare that I have fully acknowledged the Rules of Conduct and Code of Honor from the NOVA Information Management School.

Lisbon, July 2024

ABSTRACT

Online personalized advertising has been changing traditional marketing strategies, by offering tailored and relevant content to specific audiences, based on many factors, such as their past online behavior, demographic details, interests, and location. However, people may feel privacy concerns regarding how their data is being managed. This paradox between personalization and privacy has been studied, although a gap remains in understanding how personalized online advertising changes throughout the customer journey. With that, this study pretends to address this gap by accessing the factors that influence user's perceptions of privacy invasion, evaluating how user's perceptions of privacy invasion and perceived benefits change through the phases of the customer journey, and analyzing the relationship between online ad personalization perceived benefits and perceived privacy invasion. Through an online survey, findings indicated that while users perceived privacy invasion, the phase of the customer journey does not significantly influence this perception. However, privacy concerns can be mitigated by perceived benefits and transparency in data collection practices. Additionally, the study revealed the sustained benefits of online ad personalization beyond the pre-purchase phase, extending into the post-purchase phase. This study contributes to analyzing the relationship connecting online ad personalization and perceived privacy invasion, with a focus on how this relationship changes through the customer journey.

KEYWORDS

Online Personalized Ads; Privacy Concerns; Customer Journey; Transparency; Trust

Sustainable Development Goals (SDG):



TABLE OF CONTENTS

Statement of Integrity.....	i
Abstract	ii
List of Figures.....	iv
List of Tables.....	v
List of Abbreviations and Acronyms.....	vi
1. Introduction.....	1
2. Literature review	3
2.1. Online Ad Personalization and Perceived Benefits	3
2.2. Perception of Privacy Invasion	5
2.3. Customer Journey.....	6
2.4. Conceptual Model	7
3. Methodology	10
3.1. Quantitative Research	10
3.2. Survey and Scale.....	10
3.3. Analytical Approach and Statistical Methods	12
4. Empirical Study.....	13
4.1. Sample and Data Collection	13
4.2. Measurement and Structural Model.....	14
5. Results and Discussion.....	20
5.1. Theoretical Implications	21
5.2. Practical Implications.....	22
6. Conclusions and Future Research	24
Bibliographical References	25
Appendix A	28
Appendix B	40

LIST OF FIGURES

Figure 1 - Conceptual Model	9
Figure 2 - Conceptual Model with path coefficients and p-values	18

LIST OF TABLES

Table 1 - Measurement of Variables	11
Table 2 - Sample Characteristics	13
Table 3 - Cronbach's alpha	14
Table 4 - Descriptive Statistics.....	14
Table 5 - Model Fit	15
Table 6 - Collinearity statistics - VIF	16
Table 7 - Factor loadings, Cronbach's Alpha, Composite Reliabilities, and Average Variance Extracted	16
Table 8 - Descriptive Statistics, Square Root of AVE, and Correlations between constructs ..	17
Table 9 - Path Coefficients, Mean, STDV, t-values and p-values	18
Table 10 - Hypothesis verification.....	20

LIST OF ABBREVIATIONS AND ACRONYMS

PB	Perceived Benefits
PP	Perception of privacy invasion
TRANS	Transparency in data collection
TRU	Trust in the advertiser
PREP	Pre-purchase phase
POST	Post-purchase phase

1. INTRODUCTION

Nowadays, with the proliferation of online platforms and the escalating time users spend online, marketers have significantly increased their ability to collect user data and track their online behavior (Kim et al., 2019). Online ad platforms, in contrast with traditional advertising methods, enable advertisers to deliver personalized ads to specific audiences, based on their past or current behavior, demographic details, interests, and location (Liu-Thompkins, 2019). Researchers commonly refer to this phenomenon as online behavioral advertising. While various definitions of this phenomenon exist in the literature, they consistently highlight two key aspects: observing and tracking consumer's online activities and utilizing the gathered data to tailor personalized advertisements (Aiolfi et al., 2021). These data-driven strategies cannot only have the potential to improve user experience by introducing products and services that match individual preferences but also increase the effectiveness of advertising, increasing engagement, click-through rates, and conversions, resulting in higher sales and more sustained revenues (Rosário & Dias, 2023).

Nevertheless, this degree of personalization is not without its controversies. As advertisers delve further into the nuances of user data, an increasing concern over privacy invasion increases. Users may feel concerned about how their online activities are monitored and analyzed, creating a hesitancy to divulge personal data (Aiello et al., 2020). This leads to a paradox between personalization and privacy, where personalization depends on the accessibility of the user's data, but on the other hand, users are apprehensive about disclosing their personal information (Chandra et al., 2022). Previous research noted that the willingness of users to share their data is intricately related to their level of trust in advertisers and the transparency that companies display in collecting user data (Aguirre et al., 2015). Additionally, several authors advocate that during the decision-making process regarding data sharing, users conduct a risk-benefit analysis to determine whether or not they wish to provide their information (Xu et al., 2011).

Although many researchers have studied the personalization-privacy paradox, gaps still need to be explained. As users move along the purchase journey, their needs might change, so it's important to understand how their perceptions of privacy invasion and perceived benefits change throughout the different stages of the customer journey. This journey goes from the initial consideration of a purchase – the pre-purchase phase – through the actual purchase and concludes with the period after the purchase has been made - the post-purchase phase (Aiello et al., 2020). It goes from the awareness phase and consideration of a product/service to the post-purchase evaluation and potential future engagement with the brand or product. Understanding this can allow companies to reformulate their strategies, tailoring personalized experiences that align with users' needs, and creating a more dynamic and responsive approach to this problem of perception of privacy invasion provoked by online ad personalization.

Hence, the principal objective of this research is to measure the influence of online ad personalization on user's perception of privacy invasion and how it changes throughout the pre-purchase and post-purchase phases. Therefore, the guiding research question for this study is: How does online ad personalization affect user's perception of privacy invasion, and how does it change throughout the different phases of the consumer journey? To answer this question, this study will assess the factors that influence users' perceptions of privacy invasion in the online ads context, evaluate how users' perceptions of privacy invasion and how online ad personalization perceived usefulness change throughout the different phases of the consumer journey, and analyze the connection between online ad personalization perceived benefits and perceived privacy invasion. The following sections include the literature review, the methodology, the conceptual model and formulated hypotheses, the outcomes of the study, and subsequent discussions. Finally, the implications, limitations, and guidance for future research will be presented.

2. LITERATURE REVIEW

2.1. ONLINE AD PERSONALIZATION AND PERCEIVED BENEFITS

Online ad personalization, alternatively known as "personalized advertising" (Zhu & Kanjanamekanant, 2021) involves presenting ads on online placements namely social media, search engines, websites, apps, email, and other digital channels through paid media (Aiolfi et al., 2021). These advertisements are customized based on individual details, including online purchase history, demographics, interests, and location, among others (Febria Lina & Setiyanto, 2021). According to Liu-Thompkins (2019), this subject has gained prominence due to advertisers' progressive adoption of 'microtargeting tactics'. The objective of personalization was defined by Tam & Ho (2006) as providing the proper content to the correct people at the appropriate time to maximize business opportunities. This perspective resonates throughout subsequent research by Tran et al. (2020), as well as Chandra et al. (2022) and Sunikka & Bragge (2012). All emphasize the overarching goal of tailoring content and experiences, ensuring they are relevant to individual users and strategically timed to optimize both current and future business prospects. The importance of this subject extends to both users and advertisers, shaping a mutually beneficial landscape. For users, personalized advertising can enhance their online experience by presenting substance that lines up with their preferences and interests (Aguirre et al., 2016). Advertisers, on the other hand, benefit from increased engagement and interaction with their target audience (Kim et al., 2019).

Some researchers, such as Murthi & Sarkar (2003), have categorized personalization into three distinct stages: learning, matching, and evaluation. In the first stage, the focus is on collecting and comprehending user data. Subsequently, the matching phase entails delivering personalized advertisements to potential customers. The final stage, evaluation, pertains to assessing the effectiveness of the customized approach. During the learning phase, it's important that companies demonstrate transparency in their data collection processes. Otherwise, they may undermine the positive impact of personalization due to heightened privacy concerns (Febria Lina & Setiyanto, 2021).

Delving into the realm of online ad personalization involves a comprehensive exploration of diverse techniques and methods that advertisers employ to tailor content to individual users, which go from showcasing products aligned with a user's past search record to crafting user journeys that dynamically adjust based on real-time interactions (Shah, 2021). A prominent strategy that stands out is behavioral targeting, where advertisers leverage user actions, such as browsing history and online activities, to predict preferences and deliver ads aligned with users' interests (Aiolfi et al., 2021). Demographic profiling also plays a crucial role by categorizing users based on demographic details including age, gender, and location, allowing for more precise targeting (Febria Lina & Setiyanto, 2021). The advent of technologies such as machine learning algorithms and sophisticated analytics tools, have allowed companies to analyze user interactions and preferences, to generate even more personalized suggestions

(Shah & Nasnodkar, 2021). These methods collectively empower advertisers to create a nuanced understanding of their audience, enabling the delivery of highly personalized and relevant content that resonates with individual users. The integration of these techniques not only enhances the effectiveness of advertising campaigns but also contributes to a more tailored and engaging user experience.

Insights from various studies underscore the effectiveness of online ad personalization. In their work, Shah & Nasnodkar (2021) identified personalization as a key contributor to advertising effectiveness, emphasizing its fundamental role in improving user participation and click-through rates. Importantly, they argue that the success of an advertisement extends beyond conversion rates, it also depends on the general user experience. In addition, they advocate that data quality and accuracy play an important role in personalization effectiveness. Furthermore, Abdel Monem (2021) underscores a strategic evolution, contending that personalized advertising transcends the mere mention of user names. Instead, targeting consumers based on their needs and interests is more potent and effective. This sentiment was echoed by Aiolfi et al. (2021), who highlights the role of online behavioral advertising, facilitated by technological advancements, in augmenting ad relevance. The result is reduced consumer avoidance, as personalized and pertinent content captures their attention. Moreover, an important factor influencing advertising personalization effectiveness is ad transparency and privacy concerns which are intensely correlated. The degree to which ads are transparent about data usage practices and the level of privacy concerns individuals harbor significantly influence their attitudes toward personalized advertising (Kim et al., 2019). Finally, studies demonstrate that personalized ads, grounded in relevance, outperform generic campaigns in terms of click-through rates (Shah, 2021). However, Liu-Thompkins (2019) suggests that the efficacy of online personalization may decline as consumers near a final purchase decision.

Aiolfi et al. (2021) stated that people tend to be more open to accepting or rejecting information technology when they perceive ease of use and usefulness. Perceived usefulness also referred to as Perceived benefits, refers to how much consumers think that employing a certain technology will boost efficiency and effectiveness (Lim et al., 2021). Schumann et al. (2014) talked about the Social Exchange Theory, which refers that social exchanges are assessed by people based on the cost and benefit relationship. This means that people only engage in certain social exchanges if they expect benefits that outweigh the costs. Consequently, users are expected to embrace online advertising if they perceive benefits greater than the cost of sharing their data. These benefits can include tailored content that is more relevant and useful for users, facilitating the buying process, and providing more relevant information that is personally meaningful, and perceived financial saving, such as from special coupons (Ryu & Park, 2020). Building upon the concept of online ad personalization and the perceived benefits, it is pertinent to discuss the perception of privacy invasion.

2.2. PERCEPTION OF PRIVACY INVASION

Previous research indicates that the substantial collection of personal data for customization purposes raises consumer privacy concerns (Xu et al., 2011). This is attributed to the extensive amounts of individual data gathered to facilitate personalization, highlighting the paradox between tailored experiences and privacy considerations. Various methods and technologies are employed to facilitate this data collection, ranging from cookies, and pixel tags to more sophisticated tools like machine learning algorithms. However, cookies have been the predominant method used to track online behavior (Yang & Yue, 2020). They can be understood as unique identifiers - text files transmitted from a website that are kept on a user's browser. The goal is to assign a distinct identifier that will allow websites to follow user's journeys on websites, retrieving information about their online behavior (Ginevra Bianco, 2020).

When talking about users' perceptions of privacy the dichotomy of covert and overt data collection techniques plays a pivotal role. In covert data collection, information is collected without the user's explicit awareness and consent. In contrast, overt data collection occurs when users are aware of the information being collected. Advocates of covert data collection often highlight its ability to provide a seamless online experience for users, avoiding disruptions associated with seeking explicit consent for each data collection encounter. However, critics argue that such practices may lead to privacy concerns and discomfort among users when they realize that their information has been gathered without their clearly expressed knowledge (Aguirre et al., 2015).

Moreover, other studies defend that users value transparency in how their data is handled, and when they perceive that, it tends to alleviate privacy concerns and positively impact the effectiveness of the ads. On the contrary, a lack of transparency or heightened privacy apprehensions can drawback ad effectiveness, potentially leading to reduced user engagement and interaction (Kim et al., 2019). Privacy concerns mediate this relationship, as users who are more comfortable with the tradeoff between sharing personal information and receiving tailored content are likely to respond more positively to personalized ads. However, those with heightened privacy concerns may be reluctant to engage with personalized content, impacting the overall effectiveness of the advertising strategy.

Furthermore, the perception of privacy invasion is a nuanced construct regulated by different factors, including the credibility of advertisers and the resulting level of user trust in them. As also noted by Aguirre et al. (2015), individual characteristics and past privacy experiences play pivotal roles in shaping how users perceive the potential intrusion into their privacy. According to them, the decision-making process regarding the sharing of personal information with companies is a risk-benefit analysis undertaken by consumers. This evaluation involves weighing the perceived benefits of personalized services averse to the potential risks of data collection. Also, Zhu & Kanjanamekanant (2021), uncovered that when individuals believe that

personalized advertising is derived from internal data sources, their perceptions of privacy increase.

This dynamic interplay emphasizes the significance for advertisers to institute and prolong credibility, develop trust-building strategies, and consider individualized user characteristics. These considerations are crucial in addressing and mitigating concerns related to privacy invasion in the era of personalized ads. Having outlined the significance of online ad personalization and privacy invasion, it's relevant to discuss the customer journey, which plays a crucial role in this relationship.

2.3. CUSTOMER JOURNEY

The customer journey is commonly understood as the continuous interaction between a customer and a company throughout the purchasing process, encompassing various points of contact (Pizzutti et al., 2022). It refers to the series of points that a customer goes along when engaging with a product, service, or brand. It includes the lifecycle of the customer's interaction, from awareness to post-purchase evaluation. Since the late 1800s, the concept of customer journeys, also referred to as "funnels" has been recognized. A traditional framework called the AIDA model (Attention, Interest, Desire, and Action), is commonly used by marketers to gain insights into the changing behaviors of target audiences over time (Song et al., 2021). Over the years, these journeys have evolved from a narrow focus on the purchase stage to become more intricate and tailored, incorporating additional stages added to the pre- and post-purchase phases (Hamilton et al., 2021). Mangiaracina & Di Milano (2009) identified the customer journey as a means of analyzing the customer's experience across various touchpoints and channels.

The customer journey serves as a foundational concept in understanding consumer behavior and interactions with brands throughout their purchasing process. While the customer journey encompasses various stages from initial awareness to post-purchase evaluation, this literature review will specifically examine the pre-purchase and post-purchase phases. The pre-purchase phase encompasses all interactions between users and companies before a purchase transaction (Alexandra & Rodrigues, 2017). This phase is characterized by traditional researchers as involving activities including 'information search, consideration of alternatives, and need recognition' (Lemon & Verhoef, 2016), represents the initial stages of the customer journey where users explore various options and gather information to fulfill their needs or desires. Conversely, the post-purchase phase entails all interactions between users and companies following the completion of a purchase (Alexandra & Rodrigues, 2017). Lemon & Verhoef (2016) delineate this phase as comprising practices namely 'usage and consumption, post-purchase engagement, and service requests'. In this step, users engage with the purchased product or service, evaluate their experience, and may seek additional support or services from the company.

Businesses can leverage customer journey insights to optimize advertising campaigns, enhance customer experiences, and drive long-term engagement and loyalty. By analyzing customer interactions at each journey phase, companies can identify opportunities to personalize marketing messages, address pain points, and deliver value-added services that meet users' evolving needs (Lammervo, 2021). The transition between the pre-purchase and post-purchase phases is essential for understanding how consumer experiences and interactions with advertising content influence subsequent behaviors.

2.4. CONCEPTUAL MODEL

As previously highlighted, while online ad personalization holds the potential to enhance advertising effectiveness and yield favorable outcomes for businesses, it concurrently raises privacy apprehensions among users. Yet, a significant gap exists in comprehending how this phenomenon evolves across the customer journey. For instance, Liu-Thompkins (2019) suggests that the effectiveness of online personalization may fluctuate contingent on the phase of the customer journey, while Aguirre et al. (2016) findings indicate that consumers' preparedness to divulge personal information changes through the different phases, implying that privacy concerns may also vary throughout the customer journey.

Considering the established objectives of this research, here are the hypotheses that will help address them:

Objective: Analyze the relationship linking online ad personalization and perceived privacy invasion and how it changes throughout the different phases of the consumer journey.

Studies have found that online ad personalization can be negatively impacted by users' perceptions of privacy invasion (Chellappa & Sin, 2005), indicating that the premeditation to use personalized services and user's willingness to share information may decrease, because of privacy concerns. However, the relevance and accuracy of personalized ad targeting can affect users' perceptions of privacy invasion. When users perceive ads as highly targeted and relevant to their interests, they may be more accepting of data-collection practices (Abdel Monem, 2021). Also, the impact of online ad personalization on privacy invasion perceptions might fluctuate across different phases of the consumer journey. Users' perceptions of privacy invasion may decrease as they move through the consumer journey as the perceived warmth increases (Aiello et al., 2020). During the pre-purchase phase, users may be more sensitive to data collection practices as they weigh their options, leading to heightened concerns about privacy invasion compared to the post-purchase phase when users' focus may shift towards evaluating their purchase experience (Aiello et al., 2020). Also, Aguirre et al. (2015) found that consumers are more inclined to share personal information throughout the post-purchase phase.

H1: The pre-purchase phase positively influences the perception of privacy invasion in online personalized ads.

H2: The post-purchase phase negatively influences the perception of privacy invasion in online personalized ads.

H3: Perceived benefits of online ad personalization negatively impact users' perceptions of privacy invasion.

Objective: Access the factors influencing users' perceptions of privacy invasion in the online ad context.

Transparency is a key factor in framing users' discernment of privacy invasion (Kim et al., 2019). Research has shown that users are more likely to accept data collection practices when they are informed about how their data is being used and have control over it (Aguirre et al., 2015). Also, trust plays a crucial role in users' willingness to share personal information and accept personalized ads. Studies have exhibited that users are more probable to perceive privacy invasion when they distrust the entities collecting their data (Chellappa & Sin, 2005).

H4: The level of transparency provided by advertisers negatively impacts users' perceptions of privacy invasion.

H5: Trust in advertisers negatively impacts users' perceptions of privacy invasion.

Objective: Evaluate how online ad personalization perceived usefulness changes throughout the different phases of the consumer journey.

Users may become more focused on the benefits of personalization as they progress toward making a purchase, thereby reducing concerns about privacy invasion. During the pre-purchase phase, consumers are actively engaged in information search and evaluation of alternatives (Pizzutti et al., 2022). Personalized ads can play a crucial role during this phase by presenting relevant products or services tailored to the consumer's interests and predilections (Kim et al., 2019). Therefore, during the pre-purchase phase, personalized ads can be perceived as valuable tools for discovering new products, comparing options, and ultimately making informed purchase decisions. However, according to Liu-Thompkins (2019), the efficacy of online personalization appears to diminish as consumers approach a final purchase decision. Personalized ads may be perceived as less useful during the post-purchase phase because consumers have already completed their transactions and may be less interested in exploring additional products or services.

H6: The pre-purchase phase positively influences the perceived usefulness of online ad personalization.

H7: The post-purchase phase negatively influences the perceived usefulness of online ad personalization.

Through empirical investigation of these hypotheses, this study aims to be instrumental to a profound understanding of the dynamics between online ad personalization, privacy

concerns, and the customer journey in the digital advertising landscape. To study this relationship, six variables were considered. Perceived Benefits, as proposed by Aiolfi et al. (2021) as “Perceived Usefulness”; Perception of privacy Invasion as proposed by Zhu & Kanjanamekanant (2021); Transparency in data collection, adapted from (Kim et al., 2019) as “Ad Transparency”; Trust in the advertiser, adapted from Chellappa & Sin (2005) as “Trust Building Factors”; and finally, “Pre-purchase phase” and “Post-purchase phase” adapted from Aiello et al. (2020).

Given the hypotheses and variables outlined, the conceptual framework proposed for this research is the following (Figure 1):

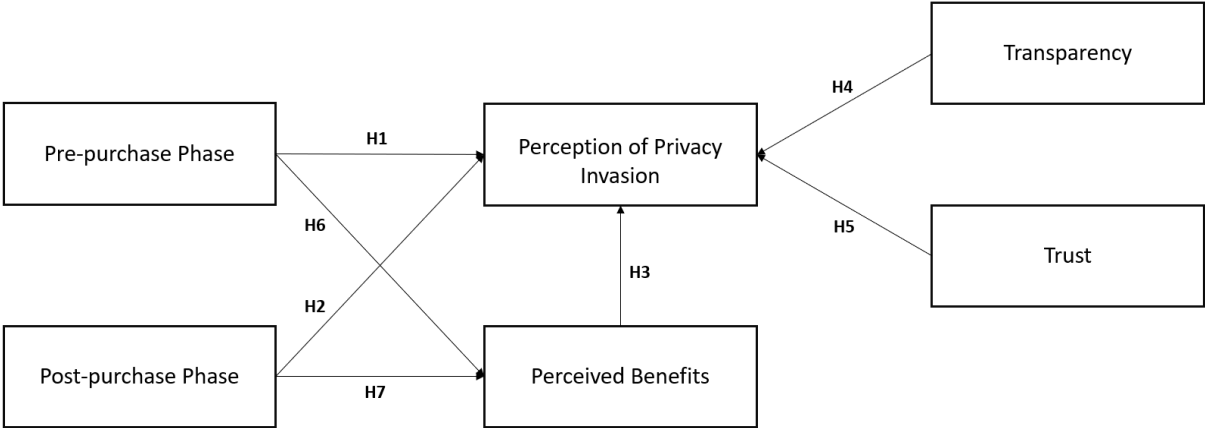


Figure 1 - Conceptual Model

3. METHODOLOGY

3.1. QUANTITATIVE RESEARCH

There are two approaches commonly used when collecting data for investigation: qualitative research and quantitative research. Also, Taherdoost (2022), referred to another approach that combines both qualitative and quantitative methods, called mixed-method study. This methodology blends the strengths of each method to provide a more complete understanding of the research topic. For this study, the chosen method for collecting data involves utilizing a quantitative approach. Quantitative research involves using numerical data obtained from observations to analyze and describe various phenomena (Taherdoost, 2022). Furthermore, quantitative procedures, normally utilizing deductive reasoning, are focused in recognizing patterns in human actions by breaking down the social environment into measurable pieces generally known as variables. These variables are then computed as 'frequencies or rates', allowing researchers to examine their connections through statistical analyses (Rahman, 2016). The choice of this method was mostly due to its suitability for efficiently gathering and analyzing large amounts of data within a limited timeframe (Falcão & Cabral Da Costa, 2017). Moreover, the collection of larger sample sizes makes it more likely to be generalized to a whole population or a sub-population.

3.2. SURVEY AND SCALE

Data was gathered through an online questionnaire developed on Qualtrics, which is provided in Appendix A. The questionnaire was developed in English and Portuguese and distributed to respondents via email and social media. Before participation, participants were briefed on the study's objectives and required to give written consent. Afterward, participants were introduced to the concept of personalized online advertising to enhance their understanding: "Online ad personalization involves showcasing tailored advertisements, crafted specifically based on individual data points like purchase history, interests, and location. For example, consider a scenario where you engage with posts or stories showcasing a particular product, or where you search for information and products on various apps and search engines. Subsequently, you notice advertisements for similar or related products appearing on the platform that you are using.". This was followed by two images, one with an example of a personalized ad, and another with a non-personalized ad. Following that, a control question was asked to analyze whether the participant understood the concept or not. To ascertain the suitability of the respondent for completing this questionnaire, the following screening questions adapted from Febria Lina & Setiyanto (2021) were included to assess their eligibility: "Have you ever received advertisements labeled as "sponsored" or "ad"? How often do you buy products/services online? On average, how many hours per day do you spend navigating the internet?". Furthermore, participants were prompted to respond to questions about each construct, and finally, demographic questions concerning gender, age, and educational level were posed to gain insight into the participants' characteristics. Through a series of questions,

the survey aims to capture respondents' perceptions and behaviors regarding personalized advertising perceived benefits, privacy concerns, trust in advertisers, transparency in data collection, and the effect of the customer journey phase. All items were assessed using a five-point Likert scale ranging from 'strongly disagree' (1) to 'strongly agree' (5).

Table 1 - Measurement of Variables

Constructs	Number of items	Scale	Questions
Perceived Benefits (Aiolfi et al., 2021)	5	Likert scale	<ol style="list-style-type: none"> 1. Personalized ads help me discover products or services that are relevant to me. 2. I find personalized ads helpful in making informed purchasing decisions. 3. Personalized ads save me time by showing me products or services I might be interested in. 4. Personalized ads provide valuable recommendations based on my preferences. 5. Personalized ads can save me money.
Perception of privacy Invasion (Zhu & Kanjanamekanant, 2021)	4	Likert scale	<ol style="list-style-type: none"> 1. I am concerned about the amount of personal information collected for online ad personalization. 2. I worry that personalized ads may infringe on my privacy. 3. I feel uncomfortable knowing that my online activities are tracked for advertising purposes. 4. I am hesitant to click on personalized ads due to privacy concerns.
Transparency in data collection (Kim et al., 2019)	3	Likert scale	<ol style="list-style-type: none"> 1. Advertisers clearly communicate how they collect my personal information. 2. I feel well-informed about the types of data that advertisers collect from me. 3. Advertisers are transparent about how they use my personal information for advertising purposes.
Trust in the advertiser (Chellappa & Sin, 2005)	3	Likert scale	<ol style="list-style-type: none"> 1. I trust advertisers to handle my personal information responsibly. 2. I believe that advertisers prioritize consumer privacy when collecting personal data. 3. I feel confident that advertisers respect my privacy preferences.
Prepurchase Phase (Aiello et al., 2020)	3	Likert scale	<ol style="list-style-type: none"> 1. I pay more attention to personalized ads when actively searching for products or services.

				2. Personalized ads influence my consideration of different brands or products.
				3. I am more likely to click on personalized ads when I am in the process of researching a purchase.
Post Purchase Phase (Aiello et al., 2020)	Purchase	3	Likert scale	1. I pay more attention to personalized ads after making a purchase. 2. I find personalized ads helpful in discovering complementary products or services to ones I have already purchased. 3. I appreciate personalized recommendations for products or services related to ones I have already bought.

3.3. ANALYTICAL APPROACH AND STATISTICAL METHODS

A preliminary test, administered to a sample group comprising ten participants, was carried out to assess the questions, checking for errors and potential enhancements. The study results were carefully analyzed through a rigorous and methodical approach, utilizing suitable statistical methods and software to extract valuable insights. Firstly, the Statistical Package for the Social Sciences (SPSS) was utilized to determine some descriptive statistics like means and frequencies to understand the sample profile and the central tendencies and variability present in the data. The Cronbach's alpha coefficient was calculated to estimate the reliability of the questionnaire. This study encompassed a multifaceted examination of the relationship between the constructs within the conceptual model. A structural equation modeling (SEM) was put into practice using SmartPLS 4 (Partial Least Squares Structural Equation model based software) to ensure a robust analysis and reliable predictions. PLS-SEM has gained significant adoption across various social science fields, particularly in marketing management. This method enables researchers to analyze intricate relationships and drive meaningful insights from their data with greater flexibility and efficiency (Hair et al., 2019).

A rigorous statistical framework was employed to analyze the complex interplay between online ad personalization, privacy concerns, and the customer journey. The Fornell-Larcker was applied to check out discriminant validity, ensuring that all constructs were distinct from each other. Furthermore, factor loadings, Cronbach's alpha, Composite Reliabilities, and Average variance extracted (AVE) were utilized to validate the measurement model. Additionally, path analysis was performed to evaluate the effects of predictor variables on the outcome constructs. Finally, p-values were derived from t-tests, providing an understanding of the strength and direction of the associations, indicating whether the observed associations were statistically meaningful.

4. EMPIRICAL STUDY

4.1. SAMPLE AND DATA COLLECTION

The survey was executed from March to April 2024. Given the pre-test positive feedback, the 10 answers obtained were included in the analysis. In total, 240 answers were collected, yet only 174 were considered. Among the 240 participants, 58 did not complete the survey and 8 reported never having seen an online ad. The majority of respondents were female, comprising 63.8% of the sample, while males accounted for 36.2%. In terms of age, individuals aged between 18 and 24 years represented 36.8%, closely followed by ages between 25 and 34 years with 35.1%. This diverse representation helps ensure more comprehensive insights. The distribution of level of education is also diverse, the majority holds a master's degree (39.1%), followed by a bachelor's degree (33.9%) and postgraduate (19%).

Table 2 - Sample Characteristics

Variable	Option	%	N
Gender	Female	63.8	111
	Male	36.2	63
	Prefer not to say	0	0
Age	Under 18	0	0
	18 – 24	36.8	64
	25 – 34	35.1	61
	35 – 44	7.5	13
	45 – 54	7.5	13
	55 – 64	10.3	18
	65 – 74	2.9	5
	75 – 84	0	0
	85 or older	0	0
Level of Education	Less than high school	0.6	1
	High school graduate	2.9	5
	Bachelor' degree	33.9	59
	Postgraduate	19.0	33
	Master's degree	39.1	68
	Professional degree	1.7	3
	Doctorate	2.9	5

4.2. MEASUREMENT AND STRUCTURAL MODEL

Firstly, to ensure the questionnaire's reliability, Cronbach's alpha was calculated. This coefficient was developed to measure the inner consistency of a scale, so it's important to reckon the validity and accuracy of the data (Tavakol & Dennick, 2011).

Table 3 - Cronbach's alpha

	Cronbach's alpha
Perceived Benefits	0.822
Perception of privacy invasion	0.878
Transparency in data collection	0.788
Trust in the advertiser	0.857
Prepurchase Phase	0.799
Post-purchase Phase	0.752

Opinions about Cronbach's alpha acceptance values, vary in different studies, typically ranging between 0.7 to 0.95 (Tavakol & Dennick, 2011). For this study, a value above 0.7 was considered acceptable. Initially the variable "Post-purchase phase" had a coefficient of 0.587, so to enhance reliability, the first question of this construct was eliminated. As shown in Table 2, after removing that question, Cronbach's alpha is above 0.7, as all the remaining variables presented.

Table 4 - Descriptive Statistics

Construct	Items	Mean	Std. Deviation	Skewness		Kurtosis	
				Statistic	Std. Error	Statistic	Std. Error
Perceived Benefits	PB1	3.57	.993	-.838	.184	.223	.366
	PB2	3.03	1.104	-.188	.184	-.882	.366
	PB3	3.28	1.006	-.522	.184	-.585	.366
	PB4	3.30	1.055	-.504	.184	-.575	.366
Perception of privacy Invasion	PP1	4.14	.936	-1.148	.184	.983	.366
	PP2	4.08	.988	-1.218	.184	1.319	.366
	PP3	3.96	1.082	-.943	.184	.138	.366
	PP4	3.60	1.211	-.660	.184	-.560	.366
Transparency in data collection	TRAN1	2.09	.969	.700	.184	-.235	.366
	TRAN2	2.06	.911	.862	.184	.566	.366
	TRAN3	2.00	.906	.755	.184	.127	.366
Trust in the advertiser	TRU1	1.99	.947	.591	.184	-.451	.366
	TRU2	2.04	.970	.650	.184	-.366	.366

	TRU3	2.39	1.013	.099	.184	-1.085	.366
Prepurchase Phase	PREP1	3.61	1.073	-.913	.184	.192	.366
	PREP2	3.32	1.042	-.616	.184	-.372	.366
	PREP3	3.60	1.069	-.733	.184	-.102	.366
Post-purchase Phase	POST2	3.22	1.009	-.770	.184	-.280	.366
	POST3	3.07	1.029	-.397	.184	-.708	.366

The table above provides the descriptive statistics of the study constructs. This data is essential to grasp the typical responses and their variation. As previously mentioned, a Likert scale from “strongly disagree” (1) to “strongly agree” (5) was implemented. Therefore, higher mean values, reflect greater agreement with the statements, while lower values indicate less agreement. The standard deviation evaluates the dispersion of the answers. A larger standard deviation designates that the values are more spread out, while a standard deviation closer to 1 suggests that the answers are closer to the mean. Regarding Perceived Benefits, respondents demonstrate varying levels of agreement (with a mean ranging from 3.03 to 3.57). This suggests diverse perceptions regarding the benefits of online ad personalization, while there is some variability in responses. The skewness also indicates that more answers are condensed on the right side of the distribution. Regarding Perception of privacy invasion, respondents generally demonstrate moderate to high agreement with the statements (with a mean ranging from 3.6 to 4.14). This indicates a significant concern regarding privacy concerns in personalized advertising. Similarly, there is some variability in responses and skewness indicates a stronger agreement with privacy invasion statements. For transparency (with a mean ranging from 2.0 to 2.9) and trust (with a mean ranging from 1.99 to 2.39), respondents reveal lower levels of agreement with the statements, which is also shown by the skewness. As for the other variables, there is some variability in responses. Finally, regarding the prepurchase (with a mean ranging from 3.32 to 3.61) and post-purchase (with a mean ranging from 3.07 to 3.22) phases, respondents express moderate to high (especially on prepurchase) agreement with the statements. The results suggest some variability in the answers and skewness indicates a stronger agreement with the statements. The kurtosis values for all variables are generally within acceptable limits, indicating a relatively normal distribution.

Table 5 - Model Fit

	Saturated model	Estimated model
SRMR	0.072	0.075
d_USL	0.99	1.064
d_G	0.387	0.386
Chi-square	418.045	413.182
NFI	0.754	0.757

The SRMR (standardized root mean square residual), is utilized to estimate the breach between the model implicit correlation matrix and the correlation observed. The model is presumed to have a good fit, as Hooper et al. (2018) refer that a value lower than 0.8 is considered acceptable.

Table 6 - Collinearity statistics - VIF

	VIF
PB -> PP	2.018
POST -> PB	1.165
POST -> PP	1.729
PREP -> PB	1.165
PREP -> PP	1.427
TRAN -> PP	1.523
TRU -> PP	1.519

The variance inflation factor, or VIF, is commonly employed to identify multicollinearity. It assesses multicollinearity by measuring how much the variation in the dependent variable is inflated by predictor variables, indicating the impact of collinearity on the regression coefficient estimated variance (Lavery et al., 2019). A VIF value between 1 and 5, suggests that there are no collinearity problems (Shrestha, 2020). Table 5 shows that all values are between 1 and 3, indicating an acceptable level of multicollinearity.

Table 7 - Factor loadings, Cronbach's Alpha, Composite Reliabilities, and Average Variance Extracted

Construct	Loadings	Cronbach's alpha	Composite Reliabilities	AVE
Perceived Benefits		0.822	0.882	0.652
PB1	0.795			
PB2	0.827			
PB3	0.774			
PB4	0.833			
Perception of privacy Invasion		0.878	0.916	0.732
PP1	0.855			
PP2	0.841			
PP3	0.905			
PP4	0.818			
Transparency in data collection		0.788	0.869	0.69
TRAN1	0.781			

TRAN2	0.832			
TRAN3	0.875			
Trust in the advertiser		0.857	0.912	0.776
TRU1	0.908			
TRU2	0.892			
TRU3	0.841			
Prepurchase Phase		0.799	0.876	0.702
PREP1	0.803			
PREP2	0.876			
PREP3	0.833			
Post-purchase Phase		0.752	0.887	0.797
POST2	0.856			
POST3	0.929			

The table above offers a comprehensive assessment of the measurement model. All Factor loadings in Table 6 exceed 0.7 indicating reliability, with the exception of PB5 which was removed due to a low loading (0.589). As indicated before, all Cronbach's alpha results are exceeding 0.7, demonstrating good internal consistency reliability. The composite reliabilities are also high, ranging from 0.882 to 0.916, further confirming the trustworthiness of the constructs. The AVE values also meet the recommended threshold for convergent validity, with all values above 0.5. Overall, the reliability and validity of the measurement model are solid, creating confidence in exploring relationships between the variables.

Table 8 - Descriptive Statistics, Square Root of AVE, and Correlations between constructs

	Mean	SD	PB	PP	TRAN	TRU	PREP	POST
PB	3.295	0.840	0.807					
PP	3.947	0.901	-0.393	0.855				
TRAN	2.050	0.779	0.338	-0.362	0.831			
TRU	2.142	0.861	0.342	-0.311	0.541	0.881		
PREP	3.513	0.896	0.523	-0.177	0.204	0.313	0.838	
POST	3.147	0.912	0.629	-0.227	0.357	0.282	0.376	0.893

Table 8 provides a comprehensive overview of the key constructs, offering insights into descriptive statistics and interrelationships. The mean values represent the average responses for each construct, ranging from 2.050 to 3.947. Variables such as Perception of Privacy Invasion and the Pre-purchase phase show higher levels of agreement with the statements, while Transparency and Trust, represent lower levels. The diagonal values representing the square root of AVE, serve as indicators of convergent validity. To ensure discriminant validity,

these values should exceed the off-diagonal values, denoting the construct’s correlations. All values are greater than 0.7 and greater than the off-diagonal values, suggesting that each construct is adequately distinct from the others, enhancing the validity and robustness of the model.

Looking at the correlations, they reveal significant relationships between the constructs, such as strong positive correlations between Transparency (TRAN) and Trust (TRU), and negative correlations between Transparency (TRAN) and Perception of Privacy Invasion (PP). Notably, the Perception of Privacy Invasion negatively correlates with all other constructs.

Table 9 - Path Coefficients, Mean, STDV, t-values and p-values

	Original	Mean	STDV	t-value	p-value
PB -> PP	-0.371	-0.367	0.095	3.892	0
POST -> PB	0.503	0.5	0.066	7.656	0
POST -> PP	0.094	0.096	0.088	1.063	0.288
PREP -> PB	0.334	0.341	0.06	5.558	0
PREP -> PP	0.061	0.062	0.084	0.723	0.47
TRAN -> PP	-0.224	-0.235	0.079	2.835	0.005
TRU -> PP	-0.107	-0.113	0.09	1.197	0.231

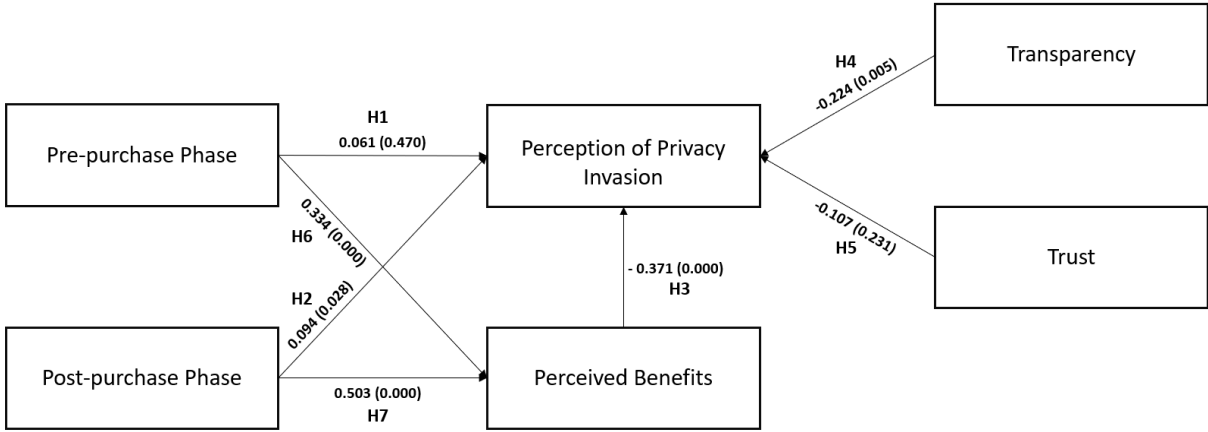


Figure 2 - Conceptual Model with path coefficients and p-values

The path coefficients shown in Table 8 and Figure 2, represent the robustness and direction of the relationships linking the constructs, a positive value designates a positive association, while a negative coefficient points to a negative association. The negative coefficient between PB -> PP suggests that Perceived Benefits (PB) has a negative relationship with Perception of Privacy Invasion (PP). This relationship is statistically relevant with a p-value of 0. A positive coefficient between the Post-purchase phase (POST) and Perceived Benefits (PB), suggests that one influences another positively and a p-value of 0 indicates a significant statistical

relationship. The same applies to the Pre-purchase phase (PREP) and Perceived Benefits (PB) with a p-value of 0. Post-purchase phase (POST) and Perception of Privacy Invasion (PP) also influence one another positively, however the statistical relationship is not significant (p-value of 0.288). Identically, the Pre-purchase phase (PREP) positively impacts the Perception of Privacy Invasion (PP), but the statistical relationship is also not significant (p-value of 0.47). Finally, Transparency (TRAN) and Trust (TRU) have a negative influence on the Perception of Privacy Invasion (PP), but only the relationship linking Transparency and Privacy Concerns is statistically relevant (p-value of 0.005).

5. RESULTS AND DISCUSSION

This discussion delves into the intricate relationships between online ad personalization benefits, user perceptions of privacy invasion, and the customer journey. The following analysis integrates a summary of the main results, the evaluation of hypotheses highlighting both supported and unsupported relationships, and the theoretical and practical implications.

Table 10 - Hypothesis verification

H	Relationship	Decision
H1: The pre-purchase phase positively influences the perception of privacy invasion in online ads.	PREP -> PP	Not Supported
H2: The post-purchase phase negatively influences the perception of privacy invasion in online ads.	POST -> PP	Not Supported
H3: Perceived benefits of online ad personalization negatively impact users' perceptions of privacy invasion.	PB -> PP	Supported
H4: The level of transparency provided by advertisers negatively impacts users' perceptions of privacy invasion.	TRANS -> PP	Supported
H5: Trust in advertisers negatively impacts users' perceptions of privacy invasion.	TRU -> PP	Not Supported
H6: The pre-purchase phase positively influences the perceived usefulness of online ad personalization.	PREP -> PB	Supported
H7: The post-purchase phase negatively influences the perceived usefulness of online ad personalization.	POST -> PB	Not Supported

The results indicated positive opinions regarding Perceived Benefits and Perception of Privacy Invasion, showing that respondents can identify benefits in online ads personalization but also feel concerns about their privacy. On the contrary, Trust and Transparency revealed mainly negative opinions, reflecting that respondents believe that companies are not very transparent in their data collection practices and that users don't entirely trust them in the online advertising context. In correlation analysis, the Perception of Privacy Invasion revealed a negative correlation with all the other variables, with the strongest negative relationship being with Perceived Benefits. This showed how privacy concerns can decrease when the perceived benefits are higher. The same applies to transparency, when respondents believe that companies are being transparent, the privacy concerns can decrease.

The previously defined hypotheses were examined to better acknowledge the relationship between the variables. Firstly, H1 assessed if the pre-purchase phase positively impacts the perception of privacy invasion in online ads. Although the relationship is positive, findings do not support that the pre-purchase phase significantly influences user's perceptions of privacy invasion in online ads. Similarly, H2 findings do not support that the post-purchase phase negatively influences the perception of privacy invasion in online ads.

Moreover, H3 suggested that the perceived benefits of online ad personalization negatively impact users' perceptions of privacy invasion. A negative relationship between the two constructs was demonstrated, being statistically relevant and supported. H4 was also supported, demonstrating that higher transparency provided by advertisers leads to lower perceived privacy invasion. On the contrary, although H5 shows that trust and perception of privacy invasion have a negative relationship, this relationship is not statistically significant.

Consistent with the literature, the positive relationship linking the prepurchase phase and the perceived benefits (H6) was validated. Contrary to expectations, findings of H7 do not support that personalized ads may be perceived as less useful in the post-purchase phase. On the contrary, it was supported that the post-purchase phase does have a positive impact on the perceived usefulness.

5.1. THEORETICAL IMPLICATIONS

The findings concluded that the pre-purchase does not positively influence the perception of privacy invasion, nor does the post-purchase phase negatively influence it, revealing important insights to Aiello et al. (2020) study. They suggested that users may be more sensitive to data collection during the pre-purchase phase, leading to heightened concerns regarding privacy compared to the post-purchase. Also, Aguirre et al. (2015) stated that consumers may be more disposed to share information at the final stage of the purchase journey, a consequence of the decrease in privacy concerns. This significantly contributes to the existing literature by elucidating the intricate relationship between the distinct phases of the customer journey and perceptions of privacy invasion in the context of online ads personalization, indicating that users may feel concerns regarding privacy invasion in all the steps of their journey. While previous research has revealed potential variations in privacy invasion perceptions across the customer journey, this study shows that the relationship between the constructs was not statistically significant in the specific context of online personalized advertising.

The validation of H3 supports the idea of Chellappa & Sin (2005) who defend that the perceived benefits of personalization can outweigh privacy concerns. As Schumann et al. (2014) also referred, people tend to be more likely to accept something, when the benefits are greater than the costs, meaning in this case that people may feel less concerned and more willing to accept the usage of their data if they can identify the benefits associated with that.

The findings regarding the effect of transparency in perceived privacy invasion contribute to Aguirre et al. (2015) study, indicating that higher transparency leads to lower perceived privacy invasion. As Kim et al. (2019) defended as well, users value transparency regarding how their data is collected. This emphasizes the importance of transparent data practices in mitigating privacy concerns. Moreover, these findings validate the established theoretical propositions concerning the influence of perceived benefits and transparency on privacy concerns, specifically in personalized advertising.

The relationship between trust and perceived privacy invasion was not statistically relevant, showing that contrary to Chellappa & Sin (2005) higher levels of trust do not have a relevant outcome on privacy concerns. This reveals that trust is not pivotal in mitigating privacy concerns in online personalized advertising. However, it can't be neglected that they are negatively correlated.

The positive relationship between the prepurchase phase and the perceived benefits suggests that personalized advertising is perceived as valuable during the pre-purchase phase (Kim et al., 2019). Also, the post-purchase phase does not have a negative impact on the perceived usefulness, showing that consumers do not necessarily view personalized ads as less useful after making a purchase. Instead, it suggests that personalized ads may continue to be perceived as valuable even after a purchase, indicating ongoing interest in tailored advertising content beyond the point of sale. As Lemon & Verhoef (2016) indicated, in the post-purchase phase users may look for additional products/services that complement their initial purchase. This can lead them to perceive continued benefits from seeing ads from the same brand, as these ads may offer useful recommendations that enhance their experience. The uncovering of this insight represents a notable contribution, underscoring the enduring value of personalized advertising beyond the initial interactions and highlighting the potential for sustained engagement and effectiveness throughout the customer journey.

5.2. PRACTICAL IMPLICATIONS

These contributions demonstrate practical implications for advertisers who seek to succeed in online personalized advertising. Firstly, it underscores the importance of expressing transparency in data collection and usage practices, as higher transparency reduces perceived privacy invasion. Advertisers should clearly communicate how they collect data to help mitigate privacy concerns. For instance, companies should implement accessible privacy policies with straightforward language, allowing users to manage their preferences easily.

Although trust did not reveal a significant impact on privacy concerns, their relationship was negative, so companies must keep working on developing trust-building strategies, such as implementing robust security measures, and providing good customer service. This is indirectly related to transparency, as companies can build customer trust by having transparent practices.

Furthermore, advertisers should emphasize the benefits of personalization, such as relevant product or service recommendations, exclusive offers, and relevant content. This can help to mitigate the perception of privacy invasion felt by users, which is one of the biggest problems when it comes to online personalized ads.

Finally, understanding that personalized advertising is perceived as beneficial beyond the pre-purchase phase, suggests that ads can positively impact users, even after a purchase. This suggests the need to continually deliver personalized ads with content such as complementary products, different usages for the product bought, and exclusive discounts for further purchases, creating a sense of added value and promoting future engagement with the company.

In summary, by focusing on transparency, trust-building, the benefits of personalization, and delivering content beyond the purchase stage, advertisers can be more effective in their online personalized advertising, enhancing user satisfaction and engagement.

6. CONCLUSIONS AND FUTURE RESEARCH

The intention of the study was to answer the research question “How does online ad personalization affect user’s perception of privacy invasion, and how does it change throughout the different phases of the consumer journey?”. With that, the study aimed to analyze the relationship linking online ad personalization and perceived privacy invasion, with focus on how this relationship changes through the customer journey. Additionally, the study sought to pinpoint factors that impact user’s perceptions of privacy invasion and explore whether these factors could potentially mitigate privacy concerns.

Although the perception of privacy invasion is present in users, it was not statically relevant that the customer journey phase influences it. On the other hand, privacy concerns can be attenuated by the perceived benefits and transparency in data collection practices. This suggests that advertisers should continue to develop personalized content and targeted messages that align with user's needs and interests, for them to feel that it benefits them and with that mitigate privacy concerns. The study also revealed the continuous benefits of online ads personalization, not just in the pre-purchase but also in the post-purchase phase of the customer journey, highlighting the importance of leveraging personalized advertising and maintaining customer engagement throughout their journey. Also, the findings reveal that transparency in data collection plays a crucial role in mitigating privacy concerns, indicating that advertisers should prioritize it to help mitigate privacy concerns, striking the right balance between personalization and data collection practices, and respecting user preferences while optimizing advertising effectiveness.

Regardless of the valuable insights taken, some limitations and suggestions for further studies were identified. The sample size and characteristics, regarding demographics, online behavior, and location, could potentially limit the generalizations of the study, suggesting that future research could diversify the sample to a broader representation. Also, the reliance on survey-based data collection may have introduced response biases in capturing user's behaviors. The upcoming investigation could employ an experimental design where different variables are manipulated to offer complimentary insights. Finally, since the digital landscape is constantly changing, future research could employ a longitudinal design to identify fluctuations in perceptions of privacy invasion and the benefits of online ad personalization over time.

Ultimately, this study offers relevant findings associated with the relationship linking personalized advertising and privacy concerns, preparing further investigations to help understand and address these topics in the context of online personalization.

BIBLIOGRAPHICAL REFERENCES

- Abdel Monem, H. (2021). The Effectiveness of Advertising Personalization. *Journal of Design Sciences and Applied Arts*, 2(1), 335–344.
- Aguirre, E., Mahr, D., Grewal, D., de Ruyter, K., & Wetzels, M. (2015). Unraveling the personalization paradox: The effect of information collection and trust-building strategies on online advertisement effectiveness. *Journal of Retailing*, 91(1), 34–49.
- Aguirre, E., Roggeveen, A. L., Grewal, D., & Wetzels, M. (2016). The personalization-privacy paradox: implications for new media. In *Journal of Consumer Marketing* (Vol. 33, Issue 2, pp. 98–110). Emerald Group Publishing Ltd.
- Aiello, G., Donvito, R., Acuti, D., Grazzini, L., Mazzoli, V., Vannucci, V., & Viglia, G. (2020). Customers' Willingness to Disclose Personal Information throughout the Customer Purchase Journey in Retailing: The Role of Perceived Warmth. *Journal of Retailing*, 96(4), 490–506.
- Aiolfi, S., Bellini, S., & Pellegrini, D. (2021). Data-driven digital advertising: benefits and risks of online behavioral advertising. *International Journal of Retail and Distribution Management*, 49(7), 1089–1110.
- Alexandra, S., & Rodrigues, G. (2017). *I Customer Journey: A new approach for retailers CUSTOMER JOURNEY: A NEW APPROACH FOR RETAILERS*.
- Chandra, S., Verma, S., Lim, W. M., Kumar, S., & Donthu, N. (2022). Personalization in personalized marketing: Trends and ways forward. In *Psychology and Marketing* (Vol. 39, Issue 8, pp. 1529–1562). John Wiley and Sons Inc.
- Chellappa, R. K., & Sin, R. G. (2005). Personalization versus Privacy: An Empirical Examination of the Online Consumer's Dilemma. In *Information Technology and Management* (Vol. 6).
- Falcão, M., & Cabral Da Costa, C. (2017). *The factors influencing electronic trust and purchase intentions in online booking websites: a study of the portuguese consumer*.
- Febria Lina, L., & Setiyanto, A. (2021). Sriwijaya international journal of dynamic economics and business <http://ejournal.unsri.ac.id/index.php/sijdeb> Privacy Concerns in Personalized Advertising Effectiveness on Social Media. *SIJDEB*, 5(2), 147–156.
- Ginevra Bianco. (2020). *An empirical analysis of consumer response to Google's decision of phasing out third party cookies*.
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. In *European Business Review* (Vol. 31, Issue 1, pp. 2–24). Emerald Group Publishing Ltd.

- Hamilton, R., Ferraro, R., Haws, K. L., & Mukhopadhyay, A. (2021). Traveling with Companions: The Social Customer Journey. *Journal of Marketing*, 85(1), 68–92.
- Hooper, D., Coughlan, J., & Mullen, M. (2018). *Structural Equation Modelling: Guidelines for Determining Model Fit*.
- Kim, T., Barasz, K., & John, L. K. (2019). Why am i seeing this ad? The effect of ad transparency on ad effectiveness. *Journal of Consumer Research*, 45(5), 906–932.
- Lammervo, S. (n.d.). *Towards personalization of content marketing through data-driven customer experience*.
- Lavery, M. R., Acharya, P., Sivo, S. A., & Xu, L. (2019). Number of predictors and multicollinearity: What are their effects on error and bias in regression? *Communications in Statistics: Simulation and Computation*, 48(1), 27–38.
- Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing*, 80(6), 69–96.
- Lim, W. M., Gupta, S., Aggarwal, A., Paul, J., & Sadhna, P. (2021). How do digital natives perceive and react toward online advertising? Implications for SMEs. *Journal of Strategic Marketing*.
- Liu-Thompkins, Y. (2019). A Decade of Online Advertising Research: What We Learned and What We Need to Know. *Journal of Advertising*, 48(1), 1–13.
- Mangiaracina, R., & Di Milano, P. (n.d.). *The eCommerce Customer Journey: A Model to Assess and Compare the User Experience of the eCommerce Websites*.
- Murthi, B. P. S., & Sarkar, S. N. (2003). The Role of the Management Sciences in Research on Personalization. *SSRN Electronic Journal*.
- Pizzutti, C., Gonçalves, R., & Ferreira, M. (2022). Information search behavior at the post-purchase stage of the customer journey. *Journal of the Academy of Marketing Science*.
- Rahman, M. S. (2016). The Advantages and Disadvantages of Using Qualitative and Quantitative Approaches and Methods in Language “Testing and Assessment” Research: A Literature Review. *Journal of Education and Learning*, 6(1), 102.
- Rosário, A. T., & Dias, J. C. (2023). How has data-driven marketing evolved: Challenges and opportunities with emerging technologies. *International Journal of Information Management Data Insights*, 3(2).
- Ryu, S., & Park, Y. (2020). How consumers cope with location-based advertising (LBA) and personal information disclosure: The mediating role of persuasion knowledge, perceived benefits and harms, and attitudes toward LBA. *Computers in Human Behavior*, 112, 106450.

- Schumann, J. H., Von Wangenheim, F., & Groene, N. (2014). Targeted online advertising: Using reciprocity appeals to increase acceptance among users of free web services. *Journal of Marketing*, 78(1), 59–75.
- Shah, A., & Technology Solutions, iWeb. (2021). *The Impacts of User Experience Metrics on Click-Through Rate (CTR) in Digital Advertising: A Machine Learning Approach Siddhesh Nasnodkar Article history* (Vol. 4, Issue 1).
- Shrestha, N. (2020). Detecting Multicollinearity in Regression Analysis. *American Journal of Applied Mathematics and Statistics*, 8(2), 39–42.
- Song, H. J., Ruan, W. J., & Jeon, Y. J. J. (2021). An integrated approach to the purchase decision making process of food-delivery apps: Focusing on the TAM and AIDA models. *International Journal of Hospitality Management*, 95, 102943.
- Sunikka, A., & Bragge, J. (2012). Applying text-mining to personalization and customization research literature - Who, what and where? *Expert Systems with Applications*, 39(11), 10049–10058.
- Taherdoost, H. (2022). What are Different Research Approaches? Comprehensive Review of Qualitative, Quantitative, and Mixed Method Research, Their Applications, Types, and Limitations. *Journal of Management Science & Engineering Research*, 5(1), 53–63.
- Tam, & Ho. (2006). Understanding the Impact of Web Personalization on User Information Processing and Decision Outcomes. *MIS Quarterly*, 30(4), 865.
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. In *International journal of medical education* (Vol. 2, pp. 53–55).
- Tran, T. P., Lin, C. W., Baalbaki, S., & Guzmán, F. (2020). How personalized advertising affects equity of brands advertised on Facebook? A mediation mechanism. *Journal of Business Research*, 120, 1–15.
- Xu, H., Luo, X., Carroll, J. M., & Rosson, M. B. (2011). The personalization privacy paradox: An exploratory study of decision making process for location-aware marketing. *Decision Support Systems*, 51(1), 42–52.
- Yang, Z., & Yue, C. (2020). A Comparative Measurement Study of Web Tracking on Mobile and Desktop Environments. *Proceedings on Privacy Enhancing Technologies*, 2020(2), 24–44.
- Zhu, Y. Q., & Kanjanamekanant, K. (2021). No trespassing: exploring privacy boundaries in personalized advertisement and its effects on ad attitude and purchase intentions on social media. *Information and Management*, 58(2).

APPENDIX A

Thesis Survey

Dear participant,

This study is being conducted as part of my Master's thesis in Data-Driven Marketing at Nova IMS. The purpose of this survey is **to measure the impact of online ad personalization on user's perception of privacy invasion and how it changes throughout the customer journey.**

There are no correct or incorrect answers, and there are no risks associated with answering the questions. Your participation is voluntary, meaning you can choose whether or not to take part, and you are free to stop at any time. Rest assured, your responses are crucial for academic purposes, completely anonymous, and will remain confidential. This survey should take approximately 5 minutes to finish. Thank you in advance for your time and willingness to contribute to this research.

Informed Consent Form

- My participation is voluntary
- I am aged 18 or over
- I can leave this survey at any time without penalty, and all data is confidential
- I understand that I will evaluate responses and that this study does not offer serious risks
- I confirm that I have been informed and understand the main purpose and that my answers will be used for academic purposes only

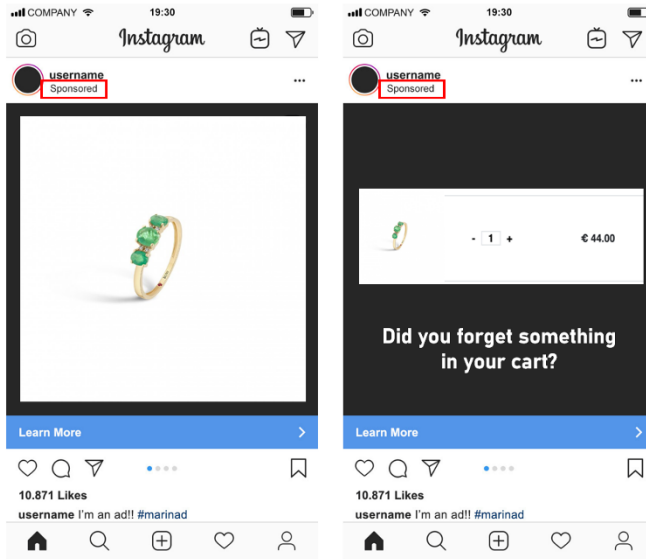
Yes, I agree to participate (1)

No, I disagree to participate (2)

Online ad personalization involves showcasing tailored advertisements, crafted specifically based on individual data points like purchase history, interests, and location. For example, consider a scenario where you engage with posts or stories showcasing a particular product, or where you search for information and products on various apps and search engines. Subsequently, you notice advertisements for similar or related products appearing on the platform that you are using.

Example:

Non-Personalized Ad vs Personalized Ad



Have you ever received advertisements labeled as “sponsored” or “ad”?

- No (21)
- Yes (22)

How often do you buy products/services online?

- Rarely (1)
- Occasionally (2)
- Sometimes (3)
- Often (4)
- Very Often (5)

On average, how many hours per day do you spend navigating the internet?

- < 1 hour (1)
- 1 - 2 hours (2)
- 3 - 4 hours (3)
- 4 - 6 hours (4)
- > 6 hours (5)

When I see an advertisement on the internet or social media, I can identify whether the ad is personalized or not.

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

On a scale from strongly disagree to strongly agree please indicate your level of agreement regarding the following affirmations:

	Strongly disagree (16)	Somewhat disagree (17)	Neither agree nor disagree (18)	Somewhat agree (19)	Strongly agree (20)
Personalized ads help me discover products or services that are relevant to me. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find personalized ads helpful in making informed purchasing decisions. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personalized ads save me time by showing me products or services I might be interested in. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personalized ads provide valuable recommendations based on my preferences. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personalized ads can save me money. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

On a scale from strongly disagree to strongly agree please indicate your level of agreement regarding the following affirmations:

	Strongly disagree (16)	Somewhat disagree (17)	Neither agree nor disagree (18)	Somewhat agree (19)	Strongly agree (20)
I am concerned about the amount of personal information collected for online ad personalization. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I worry that personalized ads may infringe on my privacy. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel uncomfortable knowing that my online activities are tracked for advertising purposes. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am hesitant to click on personalized ads due to privacy concerns. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

On a scale from strongly disagree to strongly agree please indicate your level of agreement regarding the following affirmations:

	Strongly disagree (16)	Somewhat disagree (17)	Neither agree nor disagree (18)	Somewhat agree (19)	Strongly agree (20)
Advertisers clearly communicate how they collect my personal information. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel well-informed about the types of data that advertisers collect from me. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advertisers are transparent about how they use my personal information for advertising purposes. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I trust
advertisers to
handle my
personal
information
responsibly.
(4)

I believe that
advertisers
prioritize
consumer
privacy when
collecting
personal
data. (6)

I feel
confident
that
advertisers
respect my
privacy
preferences.
(7)

On a scale from strongly disagree to strongly agree please indicate your level of agreement regarding the following affirmations:

	Strongly disagree (16)	Somewhat disagree (17)	Neither agree nor disagree (18)	Somewhat agree (19)	Strongly agree (20)
I pay more attention to personalized ads when actively searching for products or services. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personalized ads influence my consideration of different brands or products. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am more likely to click on personalized ads when I am in the process of researching a purchase. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I pay more attention to personalized ads after making a purchase. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I find personalized ads helpful in discovering complementary products or services to ones I have already purchased. (7)

I appreciate personalized recommendations for products or services related to ones I have already bought. (8)

Gender

- Female (1)
- Male (2)
- Prefer not to say (3)

Age

- Under 18 (1)
 - 18 - 24 (2)
 - 25 - 34 (3)
 - 35 - 44 (4)
 - 45 - 54 (5)
 - 55 - 64 (6)
 - 65 - 74 (7)
 - 75 - 84 (8)
 - 85 or older (9)
-

Level of education

- Less than high school (1)
- High school graduate (2)
- Bachelor's degree (3)
- Postgraduate (4)
- Master's degree (5)
- Professional degree (6)
- Doctorate (7)

APPENDIX B

NOVA IMS | Ethics Committee - APPROVED



This is to certify that

Project No.: **DDMKT2024-3-113390**

Project Title: **Navigating the Personalization-Privacy Paradox: Understanding the Impact of Online Ad Personalization on User Perceptions Throughout the Customer Journey**

Principal Researcher: **Alice Marques da Costa Góis Rodrigues**

according to the regulations of the Ethics Committee of NOVA IMS and MagIC Research Center this project was considered to meet the requirements of the NOVA IMS Internal Review Board, being considered **APPROVED** on 3/11/2024.

It is the Principal Researcher's responsibility to ensure that all researchers and stakeholders associated with this project are aware of the conditions of approval and which documents have been approved.

The Principal Researcher is required to notify the Ethics Committee, via amendment or progress report, of

- Any significant change to the project and the reason for that change;
- Any unforeseen events or unexpected developments that merit notification;
- The inability of the Principal Researcher to continue in that role or any other change in research personnel involved in the project.

Lisbon, 3/11/2024

NOVA IMS Ethics Committee
ethicscommittee@novaims.unl.pt



NOVA Information Management School
Instituto Superior de Estatística e Gestão de Informação

Universidade Nova de Lisboa