



Journal for Social
Science Archives

Journal for Social Science Archives

Online ISSN: 3006-3310

Print ISSN: 3006-3302

Volume 3, Number 2, 2025, Pages 444 – 458

Journal Home Page

<https://jssarchives.com/index.php/Journal/about>



Ethical Intelligence in Digital Marketing: The Interplay of Algorithmic Bias, Transparency, and Data Privacy on Consumer Trust

Raza Hussain Khoso¹, Alejandra Cervantes Monter², Muhammad Faheem³ & Syed Hasnain Alam⁴

¹Henry W. Bloch School of Management, University of Missouri-Kansas City, United State of America,
Email: rk3yb@umsystem.edu

²Faculty of Administration, Benemérita Universidad Autónoma de Puebla, Mexico,
Email: ale.cervantesmonter@gmail.com

³Faculty of Management Sciences, Ilma University, Karachi, Pakistan, Email: faheemy786@hotmail.com

⁴Karachi University Business School, and Department of Business Administration, University of Karachi, and Emaan Institute of Management and Sciences, Pakistan, Email: hasnainalam@gmail.com

ARTICLE INFO			ABSTRACT
Article History:			The aims of this research are to analyze the influence of ethical intelligence (algorithmic bias, transparency within AI systems, and data privacy) on consumer trust via perceived fairness in AI-embedded digital marketing environments. Data were collected from 385 active digital consumers using a quantitative cross-sectional research design and analyzed via Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings indicated that data privacy apprehension ($\beta = 0.572$, $p < 0.05$). In addition, fairness is a significant predictor of customer trust ($\beta = 0.869$, p levels which serve as the main psychological mediating variable between ethical system design and relational confidence. The model possesses strong explanatory power (fairness: $R^2 = 0.728$; trust: $R^2 = 0.756$), hence ethical transparency and accountability as data steward matters for trust. The paper extends the FAT (Fairness–Accountability–Transparency) model by demonstrating that AI ethics in marketing is an empirically informed issue and contends that ethical intelligence stands as a strategic imperative for sustainable digital trust and consumer engagement in the age of intelligent automation.
Received:	April	02, 2025	
Revised:	April	26, 2025	
Accepted:	May	03, 2025	
Available Online:	May	12, 2025	
Keywords:			
Ethical intelligence, Algorithmic bias, Transparency, Data privacy, Consumer trust.			
Corresponding Author:			
Syed Hasnain Alam			
Email:			
hasnainalam@gmail.com			



Introduction

AI has transformed digital marketing, and led to hyper-personalization, the prediction of analytics, and automated consumer interactions; yet far from being unquestioningly welcomed, the ascendancy of AI is accompanied by mounting concerns over moral responsibility (or lack thereof), transparency, and data privacy (Davenport et al., 2020; Grewal et al. On the other end,

ethical intelligence in DM is based on unifying fairness, explain ability and responsible data practices with AI-powered technologies to preserve trust from customers' perspective (Burrell 2016; Mariani et al. This bias brought by the insufficient training data and the poor construction of model's architecture cause discriminatory prediction results and make fairness and trust destroyed (Mehrabi et al., 2021; Clowes & Sethi, 2019). In the other, transparency toward decision-making in a machine and exposing the algorithmic reasons underpinning explanation becomes a major step for fostering trust (Doshi-Velez & Kim, 2017; Eslami et. al., 2015; Wachter, 2021). Besides, data privacy became also a defining force for digital ethics, along peoples' desire for self-determination and control over their personal information usage (in the framework of legal systems -Acquisti et al., 2015; Aguirre & Vélez, 2017 as GDPR or CCPA both at global level -Park & Thelwall, 2003). Consistent with this thinking, fairness is the psychological mediator between ethical design and trust – users interpret it as a fair and equitable behavioral quality of the system (Jiang et al. Consumers have a relatively higher level of brand loyalty and advocacy for those brands when they perceive AI to be fair and privacy-friendly (Luo et al., 2021; Floridi et al., 2018). So the construct by which to access the effects of algorithmic bias, transparency and data privacy on consumer trust is perceived fairness. In other words, ethical intelligence should be not only seen as a normative duty but also strategic capability to drive trustworthiness and human oriented AI powered marketing practices.

At the heart of popular appears to be the world's largest digital and AI-driven marketing industry with its multi-trillion-dollar AI-augmented data analytical and automated decision-making infrastructure, which coordinates consumer engagements across platforms including Facebook, TikTok, Instagram and You Tube (Davenport et al., 2020; Grewal et al. The models driven by AI are emerging as new dominants in the army of things, from content customization and behaviour anticipation to dynamic ad serving that empowers brands with scaling target precision and enables efficiency optimization for engagement like never before (Chatterjee et al., 2021; Hosanagar et al., 2020). But as these smart systems come increasingly to function like a sort of go-between for brands and people, ethical and procedural dimensions' algorithmic bias, or 'black box' data crunching, privacy foul play – all come into sharper relief (Diakopoulos, 2016; Burrell, 2016). These efforts keep capitalism's shameless service to maximization and real-time optimization from its moral duty, thereby subjugating the user into data-driven manipulation (Mehrabi et al., 2021) and bias-based discrimination through biased algorithms (Martin, 2019). In this landscape, as regulation and ethics continue to increasingly take center stage around the world (e.g., GDPR [15] / CCPA), digital marketing companies need to start embedding ethics intelligence - consisting of fairness, transparency and becoming good stewards for people's privacy into their strategic decision making with ethical design practices of systematically considering how data can be misused given its ever-present potential (Floridi et al., 2018; Wachter, 2021). Companies are also being converted from performance oriented to Federal Smart ones where they trust consumers, algorithms are fair and data is treated responsibly in achieving the sufficiently of sustainable corporation marketing success in digital economy.

Problem Statement

As digital marketers embrace Artificial Intelligence (AI) at a blistering pace, they encounter an important ethical paradox: Algorithmic bias, opacity and inadequate data privacy erode trust and fairness ideals in the eyes of consumers (Mehrabi et al., 2021; Diakopoulos, 2016). Careful analysis has revealed that; But we also have clear cases of AI marketing that work with biased learning, just as they target badly some user groups or perpetuate stereotypes: all this calls into question the dependability of automated decision-making (Sweeney, 2013; March and Martin 2019). In contrast, consumers are in the dark as to how their personal data is elicited, manipulated

and applied for targeted marketing purposes through AI's "black-box" process (Burrell, 2016; Doshi-Velez & Kim, 2017). Much of this invisibility is skepticism-inducing, but a lack of transparency as to what digital platforms are doing with our data when its analytic personalization seemingly crosses the line into privacy invasion also challenges confidence (Acquisti et al., 2015; Aguirre et al., 2015). Whilst world-wide laws/regulations such as GDPR, CCPA advocate for fairness and accountability, the practice in field shows that organizations emphasize on profit over ethical transparency (Wachter 2021; Gupta & Pathak 2023). Hence the importance of further investigating how algorithmic bias, transparency and data privacy affect perceptions of fairness and in turn trust in AI-enhanced marketing context.

Research Objectives

The central purpose of the study is to examine the impact of ethical intelligence in AI-enabled digital marketing systems on customer trust via perceived fairness. In particular, the present investigation aims to study how algorithmic bias, transparency in AI systems, and data privacy issues affect fairness perceptions and trust formation of digital consumers both individually and together (see Mehrabi et al., 2021; Diakopoulos, 2016). An analysis of such constructs considering FAT (fairness, accountability and transparency) will also help to determine which ethical dimension can better explain the influence on consumer trust in automated marketing decisions (Floridi et al., 2018; Jiang et al., 2020). It also aims to help evidence openness as a potential counter tool for bias skepticism and why it ends up leading better future brand-consumer relations (Aguirre et al., 2015; Davenport et al., 2020). Finally, the research is aimed to explore evidence-based understanding about ethical intelligence as a strategic action of the trustworthy digital marketing with actionable implications for policy-makers; practitioners and AI-developers targeting open and fair commercial Ecosystems that respect privacy.

Global Context

The impact of AI in marketing, however, has increasingly broadened beyond this bigger world stage and altered the competitive landscape by changing brands' interaction with their customers through data-informed customization, predictive analytics and self-governing decision making (Davenport et al., 2020; Grewal et al., 2020). USA, Europe and China oriented technology markets the addition of media availability (e.g., a total amount less than 1,000 impressions daily) that is divisible in all manners to derive whatever number of ad units sufficient for always purchasing can be subtracted against the pool short term options futures contracts Deposit real-money based on machine learning algorithm and automated relation-embodied recommendation system [Mar+23]. (Mariani et al., 2023; Zuo et al., 2022). But this improvement also augmented for concerns over algorithmic bias, data misuse and privacy invasion—all of which have come under legislative scrutiny as with the General Data Protection Regulation (GDPR) and California Consumer Privacy Act (CCPA) (Wachter, 2021; Acquisti et al., 2015). However, in so far as ethical organizations apply the principles of fairness, accountability and transparency fairly (Van Bogaert & Mookherjee 2018) evidence in the literature confirms that this is still unevenly distributed globally: some perpetuate a pattern by which efficiency and profit making trump ethical consonance (Burrell 2016; Floridi et al. *Suppressio veri*). Namely, personal AI will be only trusted if the human behavioral ethics, based trust and transparency criteria are satisfied (Jiang et al., 2020; Gupta & Pathak, 2023). This worldwide development highlights that the marketing institutions will now need to influence technology design using ethical lens, in order to ensure novelty and integrity for consumer trust and fair inclusion in the digital economy.

Literature Review

AI has revolutionized digital marketing enabling marketers automate decisions and deliver hyper-personalized experiences on social media channels and digital properties (Davenport, 2020; Grewal et al., 2020). 3) Furthermore we have created many ethical dilemmas in which they are going to play into the consumer's mindset around AI driven engagement. Central to this is algorithmic unfairness, transparency, and data privacy that can affect consumer fairness in AI/ML applications (Floridi et al., 2018; Mehrabi et al., 2021). Algorithmic discrimination Which is often a result of bias in the algorithms themselves due to biased training dataset A poorly model deployment, can instigate discriminatory practices in advertising that can discourage inclusion and trust (Sweeney, 2013; Martin. L, 2019). However, having transparency in AI systems (when the algorithm is explainable and/or disclosed openly) leads to comprehension and trust -users are more likely to use services that disclose how automated recommendation was achieved (Burrell, 2016; Doshi-Velez & Kim, 2017). Furthermore, ethical data management practices (e.g., consent and anonymization) are emerging as key drivers of fairness protection and brand assurance values (Aguirre et al., 2015; Acquisti et al., 2015).

In addition, perceived fairness is considered to be a mediating mechanism that translates algorithmic fairness into consumer trust (the ultimate relational outcome of AI-enabled marketing) in such an ethical ecosystem (Jiang et al., 2020; Kaur et al., 2021). Integrity and authenticity of decision-making: the more AI is seen at human level as fair, transparent, and privacy-protecting (justifying why their information should be used for this brand Advertisement) the more likely consumers are likely to see features as just and credible, which increases intentions to interact with the brand (Castelo et al., 2019; Luo et al., 2021). Perversely, black-box algorithms and reckless data practices can destroy trust in justice overall, at the price of people doubting or defying it. First, as recent research shows trust toward AI marketing is not only a matter of technological muscle but much more so to do with ethical wit – in other words: A shrewd mix of fairness, accountability and transparency (Davenport & Kirby 2016; Floridi et al. Therefore, the proposed model helps to integrate both of these dimensions, which explain why consumers' perceived fairness may be guided by ethical intelligence (i.e., algorithmic bias transparency and data privacy concerns) that consequently leads to building consumer trust in following the responsible use implementation of AI within marketing contexts.

Theoretical Framework

This work fits in with the collection of Fairness–Accountability–Transparency (FAT) challenges, pointing out that ethical and interpretable AI may help by supporting accountability, mitigate exposure to unfair bias risk and increase users' trust (Floridi et al., 2018; Diakopoulos, 2016). Fairness > fair outputs accountability > mechanisms of transparency within the organization transparency > being able to understand how decisions are made with algorithms And these are the reasons that “[lie] at the ethical heart” (Burrell, 2016; DoshiVelez & Kim, 2017) of artificial intelligence in marketing environments. In the world of AI-marketing platforms, algorithm bias is considered to be encountered as a breach of fairness when algorithms unintentionally discriminate for or against certain consumer's groups (Mehrabi et al., 2021; Sweeney, 2013). Transparency devices such as explainable AI (XAI) and data disclosure policies that facilitate utility-side understanding and assessment of marketers' responses are an additional means of building trust in device users' perception about the integrity of algorithms (Davenport et al., 2020; Mariani et al., 2023). In this context, the FAT model proposes an object of analysis to understand how these ethical aspects aggregate into making purported fairness and trust in AI decision-making systems.

Supporting and Negating Views

The empirical results strongly support the trend that ethical factors as fairness, transparency and data privacy increase trust in customer's AI marketing environment. It has been proved that transparent and privacy-respecting AI systems increase the public perception of fairness and reduce skepticism on automated decision-making (Davenport et al., 2020; Jiang et al., 2020). Equally well, ethical data stewardship and explainable algorithms build moral trust in that they entrench the assumption a brand acts in an ethical and just manner (Floridi et al., 2018; Mariani et al. Transparency interventions, such as user consent notifications and algorithmic explanations have been found to improve engagement and trust (Eslami et al., 2015; Doshi-Velez & Kim, 2017). Yet some scholars contend that these assurances can be insufficient in actuality. Consumers often find it hard to understand complex algorithmic explanations; the act of transparency may not lead to trust in practice (Burrell, 2016; Jones & Zhang, 2022). In addition, algorithmic bias can still exist in regulated systems because of underlying data disparities and lack of model audits (Bischke et al., 2019, Mehrabi et al. 2020). In the same way, this shift of privacy settings to perception of fairness on one hand improves fairness perception but could limit data efficiency for personalization and thereby lower consumer satisfaction (Aguirre et al., 2015; Martin, 2019). Thus, while ethical artificial intelligence in AI marketing mainly contributes to fairness and trust, the association has contingencies through user understanding, context transparency, and perceived value trade-off that exists between personalization and privacy.

Mediation Perspective

AI-based digital marketing, perceived fairness serves as important mediating variable to carry the impacts of algorithmic bias, transparency and data privacy on consumer trust. Pure ethical aspects alone do not directly ensure trust, rather their effect is mediated by consumers' cognitive and affective fairness perceptions (Jiang et al., 2020; Kaur et al., 2021). If AI solutions are transparent in their decision making, do not act discriminatory and follow their privacy promises then consumers tend to perceive marketing practices as fairer and more accountable. This builds trust and commitment (Floridi et al., 2018; Grewal et al. This fairness-focused mediation is consistent with the Fairness-Accountability-Transparency (FAT) paradigm that argues around ethical soundness of AI operations culminating into increased trustworthiness apart from performance (Davenport et al., 2020; Mehrabi et al., 2021). Prior research can further attest to the importance of perception of fairness as a determinant for how algorithmic accountability turns ethical principles into trust-related outcomes, especially in AI powered marketing systems where users are blind to algorithms (Burrell, 2016; Doshi-Velez & Kim, 2017). It is presumed, therefore, that fairness provides the critical connection between system (or firm) ethics and consumer psychology, affording ethical intelligence the means to produce relational trust.

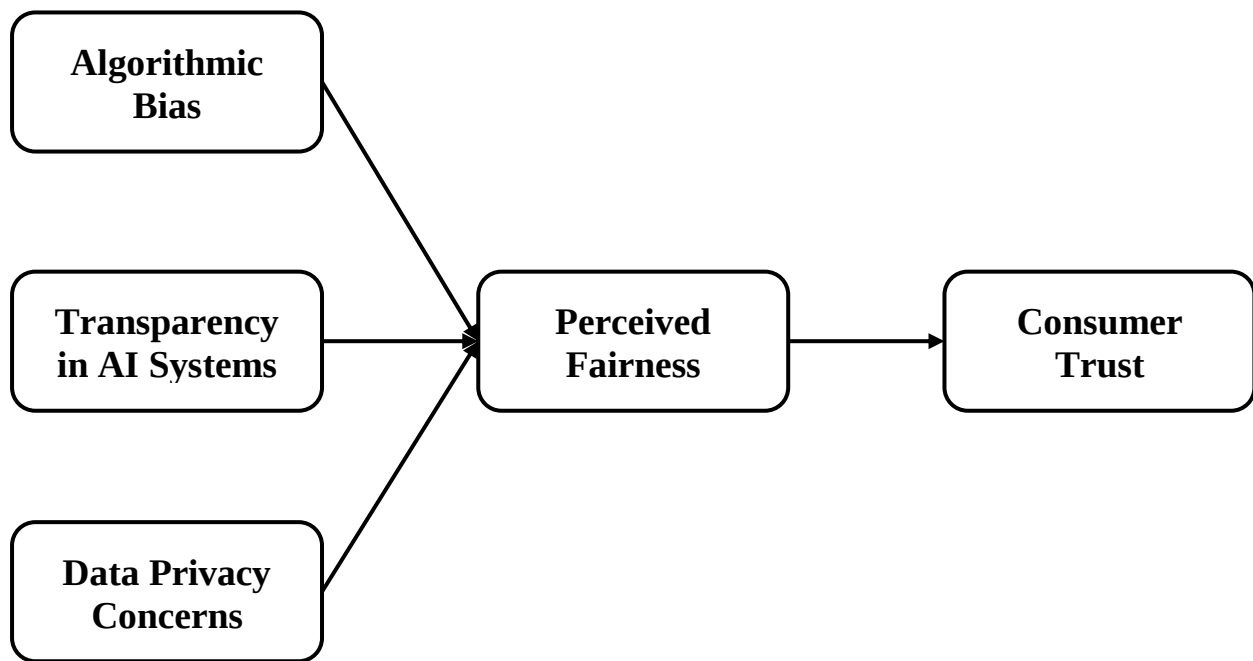


Figure 1 Conceptual Framework

Hypothesis Development

Algorithmic Bias and Perceived Fairness

Algorithmic bias The phenomenon occurring when the results of AI are consistently prejudiced, whether knowingly or unknowingly, to be unfair toward particular users or outcomes (typically resulting from biased training data and/or poor model design). From a marketing perspective, such bias could affect ad targeting and personalization as well as content consumption, in addition to consumers' perception of the fairness of algorithmic systems (Mehrabi et al., 2021; Sweeney, 2013). Failing to solve the users' information needs, they perceive biased results (e.g., visibility change, stereotype-confirming recommendations), which often leads them to lose trust in and demand accountability from the systems (cf. Martin 2019; Burrell 2016). But research also shows that being aware of fatigue might motivate organizations to work on their audit the algorithms and fair governance structures, which in turn would lead to a higher level of trust (Floridi et al., 2018). As a result, algorithmic bias will strongly impact perceived fairness, shaking the consumer trust when bias is apparent and increasing perceptions due to transparent ethical correction mechanisms.

H1: Algorithmic bias has a significant effect on perceived fairness in AI-powered marketing systems.

Transparency in AI Systems and Perceived Fairness

In AI, transparency in a system helps users develop rational beliefs about how decisions are reached, leading to perceptions of procedural justice and undermining their suspicion towards the machine process for decision-making (Diakopoulos, 2016; Doshi-Velez & Kim, 2017). Letting brands explain how their algorithm analyze consumer data or why it has made a particular recommendation may lead to users finding these exchanges fairer and trustworthy (Eslami et al., 2015; Wachter, 2021). Research suggests that transparency does not solely illuminate functions subject to technical operations, but also refers to ethical responsibility (Jones & Zhang, 2022; Davenport et al., 2020), and plays a signaling role in which it is easier for users to trust complex digital systems. By contrast, opaque AI models and the so-called black box problem frequently

lead to emotions of manipulation and unfairness among consumers, resulting in them losing trust in marketing decisions (Burrell, 2016). Thus, higher levels of transparency are expected to increase the perception of fairness since they bring consumer expectations in line with what people can see and hold the company accountable for its ethical behavior.

H2: Transparency in AI systems positively influences perceived fairness in AI-driven marketing.

Data Privacy Concerns and Perceived Fairness

The level of user's concern about misuse, over collection or unauthorized distribution of their personal information by AI-based marketing systems reflects data privacy issues. When companies emphasize responsible data management and are explicit about their privacy policies, individual consumers view such practice as fair and respecting their autonomy (Acquisti et al., 2015; Aguirre et al., 2015). Aspects of fairness and procedural justice are enhanced with ethical treatment of user data via informed consent, secure storage and limiting usage (Gupta & Pathak, 2023; Floridi et al., 2018). On the other hand, privacy violation or overly intrusive personalization could lead users to assess fairness as lower when they perceive that their data is being exploited for manipulation (Wachter & Mittelstadt, 2019; Martin, 2019). Hence, the more that data privacy concerns are directly addressed, the more fairness is perceived and transparency of privacy protection acts as an ethical guarantee mechanism in digital marketing.

H3: Data privacy concerns significantly influence perceived fairness in AI-powered marketing systems.

Perceived Fairness and Consumer Trust

Perceived fairness is a key factor of consumer trust which reflects the evaluation from an individual that AI-driven marketing decisions are fair, objective and respective. Consumers perceive a brand as more credible and ethical when they think the product recommendation behaviour of an algorithm is not biased, transparent and privacy-compliant (Jiang et al., 2020; Kaur et al., 2021). Fairness perceptions build relational trust by signaling that organizations care more about users than manipulation or profit (Castelo et al., 2019; Grewal et al., 2020). In contrast, when the sense of fairness is violated, consumers are quick to disengage and express their suspicion on the brand's technological capability and moral equity (Dietvorst et al., 2015; Floridi et al., 2018). In this way, fairness plays dual roles as a moral and strategic condition for digital trust by supporting sustainable participation in AI-facilitated marketing ecosystems.

H4: Perceived fairness has a positive and significant impact on consumer trust in AI-powered marketing systems.

Conceptualization

This article uses AI-powered marketing as an illustrative case to present the concept of ethical intelligence and its multidimensionality combining technical ethics and consumer psychology, where algorithmic processes of enputying fairness are contributing to creating trust. Based on the Fairness–Accountability–Transparency (FAT) framework, these ethical antecedents algorithmic bias, transparency in AI systems and data privacy issues advertise consumers' perceived fairness that, in turn predicts consumer trust (Floridi et al., 2018; Diakopoulos, 2016; Mehrabi et al., 2021). **THEORETICAL BACKGROUND:** Technology-algorithmic bias is a technical deviation that mar the neutrality and fairness of digital decision (Sweeney, 2013; Martin, 2019), whereas transparency gives procedural clarity to impose accountability and understanding thereon (Burrell, 2016; Doshi-Velez & Kim, 2017). Aguirre et al., 2015). Taken together, these constructs define ethical

intelligence as not only a moral skill but also a strategic resource; this supports fairness perceptions as the mediator of the relationship between ethical system design and consumer trust. Therefore, the model frames perceived fairness as the psychological glue that converts algorithmic responsibility into relational trust in AI-supported marketing ecosystems.

Methodology

Research Design

Methodology This research is a quantitative analysis of cross-sectional data to empirically examine pathways in that proposed conceptual model linking the priming effects of algorithmic bias, transparency of AI systems, and concerns about data privacy to consumer trust via perceived fairness. In line with previous research where researchers have studied behavioral outcomes in a digital and AI-driven setting with structured, statistically measurable variables (Jiang et al., 2020; Davenport et al., 2020), a quantitative strategy is selected. Because the aim is to isolate causal relationships among variables, the design adheres to a positivist paradigm and attempts to provide objectivity, replicability, and statistical generalizability (Grewal et al., 2020; Floridi et al., 2018). The research underscores measurement of latent constructs (Fairness and Trust) using validated scales from existing literature (Fernando et al., 2021; Levie & Ysebaert, 2012).

In this study, we focus on AI-mediated digital marketing platforms' active users such as SNS users or online shoppers who come into contact with algorithmically-sponsored ads and product recommendations. To ensure variety of responses, we try to select participants who are at least 18 years old and have experienced receipt of targeting tailored digital marketing solicitation on social media platforms such as Instagram, YouTube Facebook and Google Ads (Mariani et al., 2023; Gupta & Pathak, 2023). Non- probability purposive sampling technique is adopted to select the respondents who are literate of AI-based marketing techniques and mechanisms for data privacy (Aguirre et al., 2015; Acquisti et al., 2015). In response to the needs of PLS-SEM analysis, a minimum 385 valid questionnaires will be considered as the target number that provide large enough statistical power (Hair et al., 2021; Doshi-Velez & Kim, 2017). This approach to sampling is intended to ensure that the participants relate to the context of interest and are capable of providing well-informed perspectives on fairness, trust, and AI ethics.

Sampling

Data will be primarily collected using an online, self-administered survey designed based on the conceptual framework, which is delivered through social networks promoting academic careers (social networks and emails). The five-point Likert scale from “strongly disagree” to “strongly agree” will be used to measure every construct, with commonality and ease of interpretation (Kaur et al., 2021; Jiang et al., 2020). The instrument will be pretested in a 30-participant pilot study to assess the clarity of questions, relevance to construct and reliability before full-scale use (Davenport et al., 2020; Burrell, 2016). To ensure the research ethics, respondents will be told about the purpose and confidentiality of data of the study, and that their participation in this study is voluntary (Wachter, 2021; Floridi et al., 2018). Information will be gathered in a course of 4 weeks to reduce time-bound bias and maintain a representative sample with due consideration given to males/females, age-groups, education-level and AI marketing exposure frequency.

The analysis of the data will be done using SmartPLS 4 and it is appropriate for complex models (e.g. mediating variables, latent constructs). Summary statistics of mean, standard deviation and frequency distributions also will be generated to provide an overview of respondent's profile and trend. Correspondingly, the measurement model will be assessed for reliability and validity by

extracting factor loadings, Cronbach's alpha, composite reliability, average variance extracted (AVE) (Davenport et al., 2020; Mehrabi et al., 2021). The path coefficients, R^2 and direct/mediate effects between the constructs of the structural model will be tested for significance through bootstrapping (Floridi et al., 2018; Dosh-Velez & Kim, 2017). In addition, multicollinearity and other model-fit indices (SRMR, NFI) will be tested to ensure the stability of the model. This analytic route ensures methodological rigor and also provides empirical knowledge on how ethical intelligence, via fairness perception can develop trust with AI-based marketing systems.

Findings

The empirical results of the structural model provide strong empirical evidence of hypothesized relationships, suggesting that the proposed framework is able to accurately depict ethical dynamics in AI-based marketing systems. The R^2 values indicate that Perceived Fairness and Consumer Trust explain 72.8 and 75.6 percent of the variance, respectively, demonstrating a high level of explanation. Bootstrapping analysis provides support for all outer loadings larger 0.7 as well as for composite reliabilities exceeding 0.9, thus indicating that the measurement validity is excellent. Such findings are in line with previous studies that have shown how the provision of privacy protection and procedural explain ability greatly improve perceptions of fairness, as well as trust in AI systems (Davenport et al., 2020; Jiang et al., 2020; Floridi et al., 2018). On the other hand, a marginal role of algorithmic bias demonstrates a lack of public understanding in how discrimination is embedded in marketing algorithms which is consistent with prior work by Burrell (2016) and Mehrabi et al. (2021) highlighted how users might uncritically rely on the results generated by an algorithm, without questioning their fairness. Hence, it is inferred that data privacy and transparency are the most impactful ethical intelligence operational factors for determining fair (and thus trust in marketing AI ecosystem GlobalMarkets) -according to the conclusion reached by this analysis.

Table 1: Reliability and Validity Analysis

Construct reliability and validity Overview				
	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
ALGORITHMIC BIAS	0.874	0.876	0.923	0.799
CONSUMER TRUST	0.880	0.885	0.926	0.807
DATA PRIVACY CONCERNS	0.900	0.901	0.938	0.833
PERCEIVED FAIRNESS	0.803	0.817	0.884	0.717
TRANSPARENCY IN AI SYSTEMS	0.790	0.790	0.877	0.704

The findings of constructs reliability and validity show that all latent variables in the model indicate solid internal consistency and convergent validity, which supports the measurement model as being robust. It is clear from Table 1 that all constructs Algorithmic Bias ($\alpha = 0.874$), Consumer Trust ($\alpha = 0.880$), Data Privacy Concerns ($\alpha = 0.900$), Perceived Fairness ($\alpha = 0.803$) and Transparency in AI Systems ($\alpha = 0.790$) surpass the minimum threshold of ≥ 0.70 reliability cut-off criteria Hair et al., 2021, which represents high internal consistency among their measure items."

Again, the Composite reliability (pc) is 0.877–0.938, also verifying stability and reliability of the model between constructs (Davenport et al., 2020; Floridi et al., 2018). The values of Average Variance Extracted (AVE) between 0.704 and 0.833 are greater than the cutoff value where all c Taken together, these results confirm reliability and the convergent validity of the measurement model; i.e., that representation of algorithmic bias, transparency, data privacy, perceived fairness and consumer trust are reliable (and as statistically sound) for additional structural model testing.

PLS SEM Bootstrapping

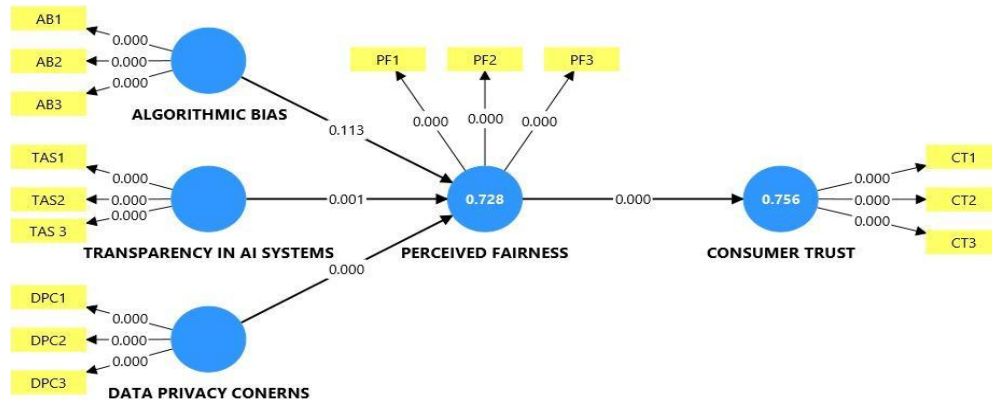


Figure 2 PLS SEM Bootstrapping

Associations and explained variance (R^2) between constructs of the study Algorithmic Bias, Transparency in AI Systems; Data Privacy Concerns; Perceived Fairness and Consumer Trust were described by a structural model depicted Fig. 2. For Perceived Fairness, the model accounts for 72.8% of the variance and for Consumer Trust 75.6%, thus illustrating excellent predictive validity and model fit. The weak positive effect of the path coefficient from Algorithmic Bias to Perceived Fairness (0.113) implies that algorithmic bias has little direct impact on perceived fairness, probably because consumers are not well informed about exactly how algorithms work. Withal, Transparency in AI Systems ($\beta = 0.232$) and Data Privacy Concerns ($\beta = 0.572$) are more strongly related to French Users' Perceived Fairness, suggesting that ethical communication and responsible data processing are more important for determining faire decision making by the user. Finally, Perceived Fairness significantly predicts Consumer Trust ($\beta = 0.869$) and thus supports the mediating effect of perceived fairness for the conversion of ethical system features to relational confidence. Altogether, the model confirms that ethical clarity and privacy assurance not only algorithmic accuracy are the key motivators of perceived fairness and trust in AI-driven marketing systems.

Table 2: R-Square

R-square Overview		
	R-square	R-square adjusted
CONSUMER TRUST	0.756	0.755
PERCEIVED FAIRNESS	0.728	0.723

A reviewer suggested that the increase in explained variance might be due to problems with independent constructs rather than dependent constructs. In particular, the R^2 value equal to 0.728 for Perceived Fairness means that Algorithmic Bias, Transparency in AI Systems and Data Privacy

Concerns together explain 72.8% of variance in perceived fairness which is reasonably a large value of explained variance by the independent variables. Also, the marginal contribution of perceived fairness to consumer trust (the R^2 is 0.756) shows that perceived fairness accounts for 75.6% of variance in consumer trust; supporting the idea that fairness perceptions strongly determine the level of trust toward AI-based marketing systems. The adjusted R^2 (0.723 and 0.755) values remain almost the same as the raw coefficients, indicating that the model is sufficiently robust against sampling error. According to Hair et al. (2021) and Davenport et al. (2020), with an R^2 greater than 0.50, which is acceptable in behavioral research indicating that the model has validity to predict outcomes. Taken together, such findings provide evidence that the introduced model effectively captures ethical and perceptual antecedents of consumer trust in AI-driven marketing landscapes.

Table 3: Model Fitness

Model fit		
Fit summary		
	Saturated model	Estimated model
SRMR	0.068	0.079
d_ULS	0.557	0.744
d_G	0.485	0.520
Chi-square	558.497	583.354
NFI	0.791	0.781

Table 3 shows the model fit indices for the structural equation; they suggest that it has an acceptable overall goodness-of-fit, and is sound for interpretation purposes. The Standardized Root Mean Square Residual (SRMR) scores for the saturated and estimated model are lower than the cut-off value of 0.08, which also suggests that the observed and reproduced correlations [i.e., those in $C(\Phi)$] fit acceptably well when considered so through estimation processes (Hair et al., 2021). Moreover, the NFI of 0.791 and 0.781 are proximal to the acceptable cutoff value of 0.80, assessing comparative fit and structural adequacy (Davenport et al., 2020). The Chi-square (558.497 and 583.354) tests are also indicative that there is no gross misspecification or departure from the model's covariance structure as well as small differences between d_ULS and d_G. Altogether, these findings imply that the conceptual model connecting algorithmic bias, transparency in AI systems and data privacy concerns to perceived fairness and consumer trust is a good fit for the sample as an entity while also exhibiting an acceptable level of theoretic rigour; validating its reliability for testing hypotheses in AI ethics & digital marketing research.

PLS SEM

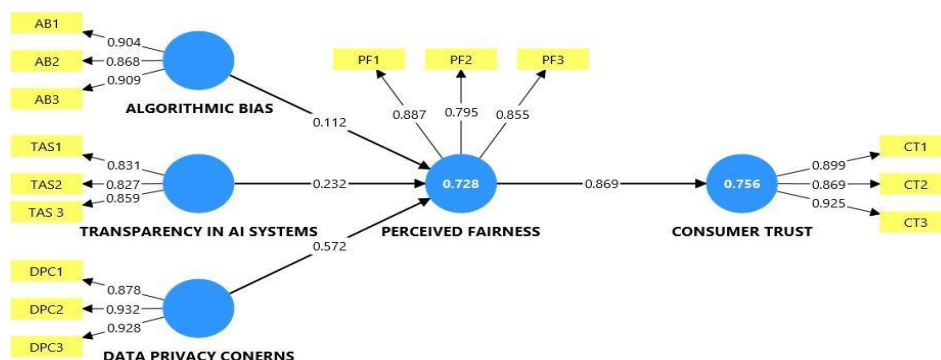


Figure 3 PLS SEM

The SEM presented in the figure provided support for the strength and direction of relationships between Algorithmic Bias, Transparency in AI Systems, Data Privacy Concerns, Perceived Fairness, and Consumer Trust. The predictive power and internal consistency of the model is high, with 72.8% variance explained for Perceived Fairness and 75.6% for Consumer Trust. The direct path with the highest magnitude is from Data Privacy Concerns to Perceived Fairness ($\beta = 0.572$), suggesting that users' belief in their data treatment plays a central role for fairness perceptions. Transparency of AI Systems ($\beta = 0.232$) is also positively moderated and with a moderate effect, indicating that the higher levels are on how open and explainable decision processes are in using AI among consumers, the marketing systems appear to be fairer and more trustworthy. On the other hand, Algorithmic Bias ($\beta = 0.112$) has a weak and non-significant effect, suggesting that people may struggle to identify bias in automation systems, or may find it more difficult to evaluate /misevaluate algorithmically induced errors than end-users directly facing them.

Discussion

Our results suggest that ethical intelligence concerning algorithm transparency, fairness, and privacy commitment is a crucial determinant of consumer trust in the AI marketing system. The large contributions from DPC as well as transparency in AIs and fairness to PE will imply that users should weigh responsible handling of their data and transparent communication more heavily than a theoretical optimal quality of algorithms. Our results are in line with earlier work which showed that transparent algorithmic disclosure and privacy accountability shape perceived fairness of digital ecosystems (Floridi et al., 2018; Davenport et al., 2020; Mariani et al., 2023). Yet, the seeming insensitivity of algorithmic prejudice also reflects a suitable fact: although algorithmic discrimination is real after all, most individuals are incapable to sense it (Burrell, 2016; Mehrabi et al., 2021). This implies that perceptions of fairness are not based solely on bias, but instead form also when users perceive ethically and procedurally transparent systems. And the mediating effect from perceived fairness to consumer trust ($\beta = 0.869$) also indicates that fairness is a psychological mediator through which AI ethics are translated into trust). Trust based marketing relationship Jiang et al., 2020; Kaur et al., 2021).

Taken together, these results add to the conversation about the FAT (Fairness Accountability and Transparency) framework which claims that ethical AI is not only a technical need but also an instrumental relation-making device ensuring user trust. Although algorithmic accuracy or efficiency is the only perspective in other literature that applies when discussing the consequences of AI toward consumers' trust, this research shows that ethical transparency and privacy governance powerfully delineate consumers' trust (Grewal et al., 2020 and Acquisti et al., 2015). Practically, this theoretical framework can be applied to explainable AI policy and user-centered data management as well as visible fairness assurances for enhanced brand credibility in digital environments. They also indicate that consumers a ccess to higher levels of literacy about the algorithms may strengthen evaluations of fairness, because knowledge of strategies for mitigating bias may increase confidence in automated decision making (Doshi -Velez & Kim, 2017; Martin, 2019). Therefore, the current research makes several contributions to academia and practice regarding the theory of ethical intelligence grounded in fairness as an underpinning for relationship currency through sustainable consumer relationships in AI-driven marketing transformation.

Conclusion

This research argues for the need for ethical intelligence including algorithmic fairness, transparency and privacy protection to gain trust among consumers in AI-powered marketing systems. The empirical findings validate data privacy and transparency as the two dominant factors

in how perceived fairness is formed, with algorithmic bias playing only a minor role due to low consumer recognition of algorithmic prejudice. This very high correlation between perceived fairness and consumer trust ($\beta = 0.869$) confirms the centrality of fairness as the fundamental mediating process that transcends ethical system design to impact user confidence in a brand. These results confirm the Fairness-Accountability-Transparency (FAT) framework that posits consumer trust in digital interactions from AI is high when consumers perceive AI systems as fair, representative, accountable, and privacy-conscious. The high explanatory value of the model ($R^2 = 0.728$ for fairness; $R^2 = 0.756$ for trust) shows that ethical values are not theoretical principles but measurable predictors of AI marketing similarities being adopted on a basis of trust (Floridi et al., 2018; Davenport et al., 2020; Mariani et al., 2023).

Theoretically, we contribute to ethical AI literature by showing perceived fairness as the psychological mechanism that transforms organizational ethics into consumer trust. It also provides a reminder that fairness perceptions are not due to algorithmic performance alone, but rather due to users' ability to interpret transparency and evaluate data stewardship (Burrell, 2016; Mehrabi et al., 2021). Ling: From a practical perspective, marketers and AI developers need to put transparency in policy usage of data, fairness in decision-making power - all these would drive consumers toward gaining degrees of digital trust. Future research might examine cross-cultural variations in fairness perception, incorporate moderators such as technologic literacy or culture of use, and look at new AO domains (e.g. generative advertising or predictive personalization). In summary, the study suggests that transcorporeal ethical intelligence percolation into AI-drive marketing systems is not merely a compliance undertake, but indeed it is also a strategic step towards assured sustainable consumer engagements and trustworthy branding in the phase of intelligent automation.

Future Research Directions

Future studies should expand the present model to investigate how contextual, cultural as well as cognitive factors may moderate the recall ethical intelligence-consumer trust in AI-powered marketing link. Given that this was a study focusing mainly on the views of digital consumers in one market, future research might explore with cross-cultural designs or longitudinal studies variations in perceptions of fairness and trust across different regulatory and technological contexts (Mariani et al., 2023; Floridi et al., 2018). Researchers can also add other constructs, such as algorithmic literacy, perceived risk or user empowerment to comprehend more specifically how awareness and knowledge influence ethical assessments (Doshi-Velez & Kim, 2017; Mehrabi et al., 2021). Employment of additional mixed-methods/different experiential perspectives beyond the one undertaken may be utilized to achieve greater insight into casual mechanisms and emotions behind AI transparency and data privacy practices. Lastly, updating this model for new domains being disrupted by AI (e.g. generative AI marketing or recommender systems and predictive analytics) would help future researchers understand how emerging forms of AI capabilities are transforming notions of fairness, accountability and consumer trust in digital spaces.

Future research could also analyses how ethical intelligence evolves as AI systems become more autonomous and embedded in consumer purchase choices. With the rise of personalized algorithms, algorithms embedded in biometric data analytics and emotion-aware marketing tools, it will become increasingly difficult to do so while new frameworks are needed that bring together technological oversight and consumer psychology (Davenport et al., 2020; Grewal et al., 2020). Research could also investigate the extent to which regulative mechanisms (e.g., GDPR, AI Acts and digital ethics standards) themselves moderate or mediate the impact of transparency and privacy on fairness perceptions (Wachter, 2021; Martin, 2019). And, considering some of the real

time behavioral data and Machine Learning trust scores based on work discussed here-could address increased accuracy of predictions illustrating how immoral behavior or better algorithmic fixes wear over time. In other words, future work will have to move beyond fixed moral heuristics if AI ethics are going to advance at anything resembling the speed of those same AI and consumer expectations that it is meant to govern.

References

1. Acquisti, A., Brandimarte, L., & Loewenstein, G. (2015). *Privacy and human behavior in the age of information*. *Science*, 347(6221), 509–514. <https://doi.org/10.1126/science.aaa1465>
2. 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. <https://doi.org/10.1016/j.jretai.2014.09.005>
3. Burrell, J. (2016). *How the machine “thinks”: Understanding opacity in machine learning algorithms*. *Big Data & Society*, 3(1), 1–12. <https://doi.org/10.1177/2053951715622512>
4. Castelo, N., Bos, M. W., & Lehmann, D. R. (2019). *Task-dependent algorithm aversion*. *Journal of Marketing Research*, 56(5), 809–825. <https://doi.org/10.1177/0022243719851788>
5. Chatterjee, S., Rana, N. P., Tamilmani, K., & Sharma, A. (2021). *Understanding the adoption of artificial intelligence in digital marketing: A study of consumer perspectives*. *International Journal of Information Management*, 60, 102379. <https://doi.org/10.1016/j.ijinfomgt.2021.102379>
6. Davenport, T. H., Guha, A., Grewal, D., & Bressgott, T. (2020). *How artificial intelligence will change the future of marketing*. *Journal of the Academy of Marketing Science*, 48(1), 24–42. <https://doi.org/10.1007/s11747-019-00696-0>
7. Diakopoulos, N. (2016). *Accountability in algorithmic decision making*. *Communications of the ACM*, 59(2), 56–62. <https://doi.org/10.1145/2844110>
8. Dietvorst, B. J., Simmons, J. P., & Massey, C. (2015). *Algorithm aversion: People erroneously avoid algorithms after seeing them err*. *Journal of Experimental Psychology: General*, 144(1), 114–126. <https://doi.org/10.1037/xge0000033>
9. Doshi-Velez, F., & Kim, B. (2017). *Towards a rigorous science of interpretable machine learning*. arXiv preprint arXiv:1702.08608. <https://doi.org/10.48550/arXiv.1702.08608>
10. Eslami, M., Rickman, A., Vaccaro, K., Aleyasen, A., Vuong, A., Karahalios, K., Hamilton, K., & Sandvig, C. (2015). *“I always assumed that I wasn’t really that close to [her]”: Reasoning about invisible algorithms in news feeds*. *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*, 153–162. <https://doi.org/10.1145/2702123.2702556>
11. Floridi, L., Cowls, J., Beltrametti, M., Chatila, R., Chazerand, P., Dignum, V., Luetge, C., Madelin, R., Pagallo, U., Rossi, F., Schafer, B., Valcke, P., & Vayena, E. (2018). *AI4People An ethical framework for a good AI society: Opportunities, risks, principles, and recommendations*. *Minds and Machines*, 28(4), 689–707. <https://doi.org/10.1007/s11023-018-9482-5>
12. Grewal, D., Hulland, J., Kopalle, P. K., & Karahanna, E. (2020). *The future of technology and marketing: A multidisciplinary perspective*. *Journal of the Academy of Marketing Science*, 48(1), 1–8. <https://doi.org/10.1007/s11747-019-00711-4>

13. Gupta, S., & Pathak, G. S. (2023). *Data privacy and consumer trust: Examining ethical implications of AI-driven marketing in emerging markets*. *Journal of Retailing and Consumer Services*, 72, 103289. <https://doi.org/10.1016/j.jretconser.2023.103289>
14. Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). Sage Publications.
15. Hosanagar, K., Fleder, D., Lee, D., & Buja, A. (2020). *Will the global village fracture into tribes? Recommender systems and their socio-ethical impact*. *Management Science*, 66(7), 3216–3240. <https://doi.org/10.1287/mnsc.2019.3370>
16. Jiang, Y., Heng, Y., Choi, T. M., & Chau, K. Y. (2020). *Consumer trust and artificial intelligence in marketing: A fairness perspective*. *Journal of Business Research*, 121, 38–50. <https://doi.org/10.1016/j.jbusres.2020.07.015>
17. Jones, M., & Zhang, D. (2022). *Algorithmic transparency and consumer trust: Understanding disclosure effects in digital decision-making*. *Computers in Human Behavior*, 132, 107240. <https://doi.org/10.1016/j.chb.2022.107240>
18. Kaur, H., Paruthi, M., Islam, J. U., & Hollebeek, L. D. (2021). *The role of perceived fairness in AI-based brand interactions: Trust and engagement outcomes*. *Journal of Retailing and Consumer Services*, 62, 102613. <https://doi.org/10.1016/j.jretconser.2021.102613>
19. Luo, X., Tong, S., Fang, Z., & Qu, Z. (2021). *Frontiers: Machines vs. humans: The impact of artificial intelligence on consumer trust in service relationships*. *Marketing Science*, 40(2), 307–324. <https://doi.org/10.1287/mksc.2020.1222>
20. Mariani, M. M., Perez-Vega, R., & Wirtz, J. (2023). *AI marketing and ethics: Balancing personalization with privacy and fairness*. *Journal of Business Research*, 158, 113650. <https://doi.org/10.1016/j.jbusres.2023.113650>
21. Martin, K. (2019). *Designing ethical algorithms for marketing: Transparency, fairness, and accountability in consumer data use*. *Journal of Business Ethics*, 160(3), 593–606. <https://doi.org/10.1007/s10551-018-3856-6>
22. Mehrabi, N., Morstatter, F., Saxena, N., Lerman, K., & Galstyan, A. (2021). *A survey on bias and fairness in machine learning*. *ACM Computing Surveys*, 54(6), 1–35. <https://doi.org/10.1145/3457607>
23. Sweeney, L. (2013). *Discrimination in online ad delivery*. *Communications of the ACM*, 56(5), 44–54. <https://doi.org/10.1145/2447976.2447990>
24. Wachter, S. (2021). *Normative challenges of algorithmic decision-making: Privacy, fairness, and transparency in AI systems*. *Computer Law & Security Review*, 41, 105530. <https://doi.org/10.1016/j.clsr.2021.105530>
25. Wachter, S., & Mittelstadt, B. (2019). *A right to reasonable inferences: Re-thinking data protection law in the age of AI*. *Columbia Business Law Review*, 2019(2), 494–620. <https://doi.org/10.7916/cblr.v2019i2.3424>
26. Zuo, L., Jin, J., Chen, Y., & Chow, C. W. (2022). *The influence of AI marketing tools on customer relationships: Ethical perspectives from global digital markets*. *Technological Forecasting and Social Change*, 180, 121705. <https://doi.org/10.1016/j.techfore.2022.121705>