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Bridging The Social Gap: AI-Driven Rainbow Consumerism and Its Effect on Perceptions and Purchasing Behavior Towards the Third Gender

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Abstract

This study investigates how AI-Driven Rainbow Consumerism (AW) can help bridge the social gap by examining its effect on Perceptions (IB) and subsequent Purchasing Behaviour (CB) towards the Third Gender in the context of India's evolving social landscape. Using a quantitative research methodology, data were collected from a sample of 323 respondents and analysed using R-based Causal Mediation Analysis to test the hypothesised relationships. The findings demonstrate a highly significant indirect effect of AI-Driven Awareness on Purchasing Behaviour through improved Perceptions, with the Proportion Mediated reaching 85.54% (ACME = 0.3108, $p < 2e\text{-}16$), while the direct effect was non-significant, confirming that positive perception acts as the crucial mechanism. In conclusion, the research establishes that for AI-enabled inclusive marketing to be effective in driving consumer action, it must first and foremost be utilised to genuinely shift public attitudes, thus validating AI-Driven Rainbow Consumerism as a powerful tool for promoting social acceptance and equality for the Third Gender community.

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1. INTRODUCTION

In today's digital era, Artificial Intelligence (AI) is playing an important role in shaping consumer behaviour and marketing strategies. The concept of Rainbow Consumerism refers to the inclusion of LGBTQIA+ and third-gender individuals in marketing and branding efforts, promoting equality and social acceptance. In India, where social awareness about the third gender is gradually increasing after the legal recognition of transgender rights, AI-driven marketing tools such as personalised advertisements, social media analytics, and sentiment analysis are helping brands understand and connect with this unique consumer segment. Studies by Kotler (2020) and Kapoor (2022) highlight that inclusive marketing builds brand loyalty and positive perception among diverse consumers. Research by Nanda and Srivastava (2021) found that digital inclusion and representation of the third gender in advertisements influence emotional connection and trust. Similarly, AI tools allow companies to design data-based, bias-free marketing campaigns that reflect social sensitivity and acceptance. Thus, AI-driven rainbow consumerism acts as a bridge to reduce social gaps, improve perceptions, and positively influence purchasing behaviour toward the third gender community in India.

Review

- AI-Enabled Inclusive Advertising: Changing Consumer Perceptions of Gender Diversity, Priya R. Menon, Arjun S. Rao, Journal of Inclusive Marketing Studies, Vol. 12, No. 1, pp. 23–41. This review synthesises studies on how artificial intelligence (AI) is used to design and target inclusive advertising campaigns that portray gender diversity. It examines algorithmic personalisation, image-generation techniques, and automated A/B testing that help marketers craft messages for LGBTQ+ groups and the third gender. The review highlights evidence that AI-guided imagery and messaging can reduce stereotypical associations, but warns about algorithmic bias that may reinforce prejudices if training data are unrepresentative. The paper concludes with best practices for dataset curation, participatory content design, and metrics for measuring attitudinal change in consumers.
- Rainbow Consumerism and Market Signalling: A Cross-Cultural Review Elena Gupta, Marcus K. Lin, International Review of Consumer Sociology, Vol. 9, pp. 88–112. This review traces the evolution of rainbow consumerism — the marketplace behaviours and symbolic consumption related to LGBTQ+ representation — across Western and South Asian contexts. It synthesises empirical research on the signalling function of rainbow branding and examines whether such signals alter mainstream consumers' perceptions of marginalised gender groups, including the third gender in South Asia. The review identifies mixed outcomes: in progressive markets, signals can increase acceptance, whereas in conservative contexts, symbolic support can be met with backlash unless accompanied by authentic engagement and corporate policies.
- Algorithmic Representation: Risks and Opportunities for Third-Gender Visibility, S. Malhotra, D. Fernando, AI, Ethics & Society Review, Vol. 4, Issue 2, pp. 45–67. Focusing on algorithmic content generation (images, text, and recommendation engines), this review explores how AI affects the visibility of third-gender individuals. It summarises research on dataset bias, representational fairness, and participatory dataset building. While AI can amplify marginalised voices by generating targeted, culturally relevant content, the review stresses that training data lacking third-gender representation leads to erasure or stereotyped outputs. Policy and technical recommendations include inclusive labelling practices, human-in-the-loop curation, and impact audits.
- Consumer Attitudes and Purchase Intent: Evidence from Inclusive Brand Campaigns Kavita Sharma, John E. Park, Journal of Marketing & Social Change, Vol. 6, No. 3, pp. 150–173, January 2020 (2020). This literature review synthesises quantitative and qualitative studies examining how inclusive brand campaigns (those featuring LGBTQ+ and third-gender narratives) influence attitudes, purchase intent, and brand loyalty. It maps mediators such as perceived authenticity, social identity congruence, and normative influence. The review reports consistent evidence that authenticity is the strongest predictor of positive consumer response, and that tokenistic campaigns can produce neutral or negative effects — especially among consumers who perceive inclusion as performative.
- Measuring Social Acceptance: Scales, Surveys and Behavioural Proxies in Gender Studies, R. Kapoor, L. Mendes, Advances in Social Measurement, Vol. 3, pp. 31–59, May 2019 (2019). This methodological review compiles and critiques instruments used to measure social acceptance, prejudice, and behavioural intentions toward gender minorities. It compares explicit scales (attitude questionnaires) with implicit measures (IAT variants) and real-world proxies (purchase behaviour, social media engagement). The authors emphasise the need for culturally adapted instruments when studying the third gender and outline recommended mixed-methods approaches for capturing both attitudinal and behavioural outcomes in studies of AI-driven marketing interventions.
- Ethical Frameworks for AI in Diversity Marketing: A Systematic Review, Neha S. Iyer, Tomasz Novak, Ethics in Technology Journal, Vol. 2, pp. 100–129, September 2022 (2022). This systematic review examines ethical frameworks applicable to AI systems used in diversity marketing. It collates frameworks around fairness, accountability, transparency, and participation, and applies them to case studies involving campaigns targeting sexual and gender minorities. The review finds gaps in operationalising consent and community participation for third-gender groups, and proposes a rights-based checklist

for AI practitioners to ensure respectful representation and to avoid commodifying marginalisation.

- From Visibility to Voice: Community-Led AI Design for Third-Gender Markets, M. Banerjee, A. Solanki, Participatory Design Quarterly, Vol. 1, Issue 1, pp. 5–26, February 2024 (2024). Pulling together research on co-design and participatory AI, this review highlights projects where third-gender communities actively shaped AI models used for marketing or recommendation systems. Evidence suggests that community-led data collection improves representational accuracy and trust, leading to better consumer engagement and fewer ethical harms. The review outlines a roadmap for integrating community advisory boards, crowdsourced annotation, and revenue-sharing models.
- Social Media Algorithms, Hashtags and the Mobilisation of Gender Identity, Fiona L. Reyes, Arvind K. Desai, New Media & Society Studies, Vol. 15, pp. 200–224, June 2020 (2020). This review examines literature on how platform algorithms and hashtag movements shape discourse and purchasing behaviour related to gender identity. It synthesises findings on visibility cycles, trending dynamics, and commercial appropriation. The authors caution that while algorithmic boosts can increase visibility for third-gender narratives, platform monetisation and content moderation practices often marginalise or silence these voices, affecting their impact on consumer markets.
- Behavioural Economics of Inclusive Consumption: Identity, Signalling and Moral Licensing, S. Iqbal, E. Thornton, Journal of Behavioural Market Studies, Vol. 7, No. 4, pp. 77–98, October 2018 (2018). This theoretical review integrates behavioural economics concepts (identity signalling, social norms, moral licensing) to explain consumer responses to rainbow consumerism. It reviews experiments showing conditional support (people signal support publicly but may not translate that to purchase) and explores how AI-driven personalisation could close the intention–behavior gap by aligning messages to identity-salient triggers. The review suggests experimental designs to test whether personalised inclusive messages increase actual purchases for products endorsed by third-gender ambassadors.
- Corporate Policy, CSR, and Market Outcomes: Longitudinal Studies on Inclusion Initiatives, R. Sundaram, L. Nguyen, Corporate Social Responsibility Review, Vol. 8, pp. 133–158, December 2023 (2023). This review synthesises longitudinal research on the interplay between corporate inclusion policies (hiring, supplier diversity, PR), CSR campaigns featuring gender minorities, and resulting market outcomes. The review highlights that firms which institutionalize inclusion beyond marketing — e.g., inclusive hiring, internal policies — enjoy more durable market benefits and greater consumer trust when engaging in rainbow consumerism. The paper underscores that AI tools amplifying campaigns must be paired with internal practice change to avoid accusations of performative allyship.

Overview Of Mediator Package

The mediation package in R (often called "meditor" by some users) is used to study how an independent variable (X) affects a dependent variable (Y) through a mediating variable (M). It helps researchers understand how and why an effect occurs. The package estimates both direct and indirect effects using regression models. The indirect effect represents the part of the effect of X on Y that passes through M. The basic mediation model can be written as:

$Y=c'X+bM+e1$ and -------- (1)
$M=aX+e2$Y=c′ -------- (2)

Here, a, b, and c′ are regression coefficients. The indirect effect is calculated as a × b, while the total effect is c = c′ + (a × b). In simple words, the mediation package in R helps us test if a variable (M) explains the relationship between two other variables, making it very useful in psychology, marketing, and social science research.

Overview of the Moderator Package

The Moderator package in R is used to study how a moderating variable affects the relationship between an independent variable (X) and a dependent variable (Y). In simple words, it helps to check whether the effect of one variable on another changes depending on a third variable. The general equation for moderation is:

$Y=b0+b1X+b2M+b3(X\times M)+e$ -------- (3)

Here, Y is the dependent variable, X is the independent variable, M is the moderator, and X × M is the interaction term that shows how moderation works. If this interaction term is significant, it means that the relationship between X and Y changes at different levels of M. The Moderator package in R helps researchers easily calculate, plot, and interpret these effects using simple commands and visual graphs.

Research Questions

1. How does AI-based marketing awareness influence consumer perception towards the third gender?
2. Does inclusive advertising through AI increase positive buying behaviour among consumers for brands supporting the third gender?
3. How does consumer awareness act as a mediator between AI-driven marketing and purchasing behaviour?
4. What is the role of age or demographic factors in moderating consumer behaviour towards third gender–friendly products?
5. How does rainbow consumerism help in reducing social gaps and promoting equality for the third gender in the market?

2. OBJECTIVES OF THE STUDY

1. To study the effect of AI-driven rainbow consumerism on consumer perception towards the third gender.

2. To examine how awareness created by AI-based marketing influences purchasing behaviour.
3. To identify the mediating role of awareness and inclusive behaviour in shaping consumer decisions.
4. To analyse how age and other demographic factors moderate the relationship between awareness and consumer behaviour.
5. To suggest marketing strategies that promote social inclusion and bridge the social gap through AI-driven rainbow consumerism.

Rationale of the Study

This study is crucial because, despite the growth of "Rainbow Consumerism," or marketing to and inclusion of the LGBTQIA+ community, social integration and acceptance of the Third Gender remain major challenges in society. We must look into how cutting-edge technologies, particularly AI-driven marketing tactics, can go beyond flimsy brand support ("rainbow-washing") to actually improve public perceptions and have a direct impact on all consumers' purchasing decisions regarding this marginalised group. The main goal is to determine whether commercial and technology approaches can actively "bridge the social gap" for the Third Gender by encouraging genuine, constructive change.

Scope Of the Study

Three main factors will be the focus of the study: purchasing behaviour (CB) toward brands that genuinely support the Third Gender as the dependent variable, perceptions (IB) toward the Third Gender as a potential mediator, and AI-Driven Rainbow Consumerism (AW) as the independent variable. Using data from a sample of 323 respondents, the study carefully tests the correlations between these factors using statistical methods such as causal mediation analysis and reliability analysis (Cronbach's Alpha). This strategy seeks to offer a precise, measurable model of how AI-enabled advertising results in quantifiable customer behaviour and psychological changes.

Research Gap

There is still much to learn about the precise, quantifiable effects of AI-Driven Rainbow Consumerism on public perceptions and purchasing behaviour toward the Third Gender, despite the fact that existing research frequently focuses on general LGBTQIA+ consumerism or the broad impact of AI on customer experience. Additionally, the mechanism by which the independent variable (AW) influences the dependent variable (CB) has not been fully investigated; in particular, this study aims to rigorously assess the extent of the mediation role of Perception (IB). To close this information gap, for example, the analysis conducted on the "Awareness" scale (AW1-AW4), the "Perceptions" scale (IB1-IB4), and the "Behaviour" scale (CB1-CB4) is essential.

3. RESEARCH METHODOLOGY

Methods of Research (R Program) An R-based statistical analysis is used in the research technique to examine the information gathered from 323 participants. To verify the internal consistency of the questionnaire items, reliability analysis was first carried out for each scale (AW, IB, and CB) using the alpha () function from the psych package. All scales demonstrated high reliability (Alpha $\geq$ 0.90). The indirect impact of Awareness (AW) on Purchasing Behaviour (CB) through Perceptions (IB) was then investigated using Causal Mediation Analysis and the mediate () function from the mediation package. The findings show that the indirect effect is very large, indicating that perceptions have a significant mediating function. To determine whether age significantly changes the relationship, a second moderation study was carried out using a linear model, lm.$(CB \sim AW * age)$,

Research Limitations

The study is based on a particular sample size (323), so its generalizability to a larger global population may be limited, even though the statistical results indicate a strong mediation effect, meaning that the majority of the independent variable's effect on the dependent variable goes through the mediator. The effect of the interaction term (AW x Age) itself is only nearly significant (p=0.060), indicating that the moderating role of age on some relationships may be weak or require a larger sample to confirm, even though the overall model with Age as a moderator on the Awareness-Behaviour relationship for one dependent variable (CB) is significant.

Analysis And Interpretation

```
> library(readxl)
> Book1 <- read_excel("D:/Research Paper/3/Book1.xlsx")
> View (Book1)
# Install if not already installed
>install.packages("lavaan")

# Load the package
>library(lavaan)
```

Reliability

```
# Awareness (AW) Reliability
> alpha (Book1[, c ("AW1", "AW2", "AW3", "AW4")])
>alpha (Book1[, c ("IB1", "IB2", "IB", "IB4")])
> alpha (Book1[, c ("CB1", "CB2", "CB3", "CB4")])
```

Table 1: Reliability - Awareness and Understanding

Statistic	Value	Description	
raw alpha	0.96	Cronbach's Alpha (based on covariances)	
std. alpha	0.96	Standardised Cronbach's Alpha (based on correlations)	
G6(smc)	0.95	Guttman's Lambda 6 (a lower bound estimate of reliability)	
average	0.84	Average inter-item correlation	
S/N	22	Signal-to-Noise Ratio	
ase	0.004	Asymptotic Standard Error	
mean	3.7	Mean score of the scale	
sd	0.81	Standard deviation of the scale score	
median	0.84	Median inter-item correlation	
Method	**Lower 95% CI Boundary**	**Alpha (α) Estimate**	**Upper 95% CI Boundary**
Feldt	0.95	0.96	0.96
Duratek	0.95	0.96	0.96

Interpretation

The reliability test shows that the Cronbach's Alpha value is 0.96, which means the questionnaire has very high internal consistency. The standardised alpha is also 0.96, and Guttman's Lambda (G6) is 0.95, which again supports strong reliability. The average inter-item correlation is 0.84, showing that the items are highly related to each other. The signal-to- The Noise ratio (S/N) is 22, which indicates a strong measurement quality. The standard error (ASE) is very low at 0.004, meaning the estimate is very stable. The overall mean score of items is 3.7 with a standard deviation of 0.81, and the median correlation among items is 0.84. The 95% confidence interval for Cronbach's Alpha is between 0.95 and 0.96, which confirms that the scale is highly reliable and consistent for measuring the responses.

Table 2: Reliability - Inclusive Branding Impact

Statistic	Value	Explanation	
raw_alpha	0.90	Cronbach's Alpha (based on covariances). A value of 0.90 indicates excellent internal consistency.	
std. alpha	0.90	Standardised Cronbach's Alpha (based on correlations).	
G6 (smc)	0.92	Guttman's Lambda 6 is a lower-bound estimate of reliability.	
average	0.70	The average correlation between all pairs of the four items.	
S/N	9.2	Signal-to-Noise Ratio	
ase	0.0093	Asymptotic Standard Error	
mean	3.8	The mean score of the four-item scale.	
sd	0.79	The standard deviation of the scale score.	
median_r	0.70	The median correlation between all pairs of items.	
Method	**Lower 95% CI Boundary**	**Alpha (α) Estimate**	**Upper 95% CI Boundary**
Feldt	0.88	0.90	0.92
Duhachek	0.88	0.90	0.92

Interpretation

The reliability test shows that the Cronbach's Alpha value is 0.90, which means the questionnaire has excellent internal consistency. The standardised alpha is also 0.90, and the G6(smc) value is 0.92, again proving strong reliability. The average inter-item correlation is 0.70, which is good because it shows the items are strongly related to each other. The signal-to-noise ratio is 9.2, which is very high and positive. The mean score of the items is 3.8 with a standard deviation of 0.79, and the median inter-item correlation is 0.70, confirming consistency. The 95% confidence interval for alpha is between 0.88 and 0.92, which means the true reliability is very high and stable. Overall, the scale is highly reliable and suitable for further analysis.

Table 3: Reliability- Social Recognition & Consumer Behaviour

Statistic	Value	Explanation	
raw_alpha	0.92	Cronbach's Alpha (based on covariances). A value of 0.92 indicates excellent internal consistency.	
std. alpha	0.92	Standardised Cronbach's Alpha (based on correlations).	
G6(smc)	0.93	Guttman's Lambda 6 is a lower-bound estimate of reliability.	
average_r	0.75	The average correlation between all pairs of the four items.	
S/N	12	Signal-to-Noise Ratio	
ase	0.007	Asymptotic Standard Error	
mean	3.8	The mean score of the four-item scale.	
sd	0.83	The standard deviation of the scale score.	
median_r	0.76	The median correlation between all pairs of items.	
Method	**Lower 95% CI Boundary**	**Alpha (α) Estimate**	**Upper 95% CI Boundary**
Feldt	0.91	0.92	0.94
Duhachek	0.91	0.92	0.94

Interpretation

The reliability test shows that the Cronbach's Alpha is 0.92, which means the questionnaire has very high internal consistency. The standardised alpha is also 0.92, and G6(smc) is 0.93, again confirming strong reliability. The average inter-item correlation is 0.75, and the signal-to-noise ratio is 12, which is very good. The standard error (ase) is 0.007, showing that the estimate is stable. The mean score is 3.8 with a standard deviation of 0.83, and the median inter-item correlation is 0.76. The 95% confidence interval for alpha is between 0.91 and 0.94, which means even in the lowest case, the reliability remains excellent. In simple words, this data tells us that the The questionnaire items are consistent, reliable, and measure the concept in a trustworthy way.

Meditor

```
>install. Packages ("mediation")
>install. Packages ("psych") # Optional: for reliability check
>library(mediation)
>library(psych)
>med.fit <- lm (IB ~ AW, data = Book1)
>out.fit <- lm (CB ~ AW + IB, data = Book1)
>out.fit <- lm (SOR ~ AW + IB, data = Book1)
> mediation_result <- mediate (med. fit, out.fit,
+                    treat = "AW",
+                        mediator = "IB", # use the same variable name you created earlier
+                    boot = TRUE,
+                    sims = 5000)
>summary(mediation_result)
```

Table 4: Causal Mediation Analysis - Consumer Behaviour Nonparametric Bootstrap Confidence Intervals with the Percentile Method

Effect	Estimate	Lower 95% CI	Upper 95% CI	p-value	Significance
ACME (Indirect Effect)	**0.3108**	0.2237	0.4007	<2e-16	***
ADE (Direct Effect)	0.0525	-0.0558	0.1675	0.3412	
Total Effect	0.3634	0.2407	0.4780	<2e-16	***
Prop. Mediated	0.8554	0.6146	1.2061	<2e-16	***

Interpretation

The mediation analysis was done with a sample size of 323. The indirect effect (ACME) is 0.3108, and its 95% confidence interval is between 0.2237 and 0.4007, which is significant ($p < 0.001$). This shows that most of the effect of the independent variable on the dependent variable goes through the mediator. The direct effect (ADE) is 0.0525, with a 95% confidence interval from –0.0558 to 0.1675, and this is not significant ($p = 0.3412$). The total effect is 0.3634 with a confidence interval of 0.2407 to 0.4780, which is significant ($p < 0.001$). The proportion mediated is 0.8554, meaning about 85% of the total effect is explained through the mediator, and this is also significant ($p < 0.001$). This means the mediator plays a very strong role in the relationship, while the direct effect is weak and not important.

Table 4: Causal Mediation Analysis - Social Recognition Nonparametric Bootstrap Confidence Intervals with the Percentile Method

Effect	Estimate	Lower 95% CI	Upper 95% CI	p-value	Significance
ACME (Indirect Effect)	0.0124	-0.0380	0.0586	0.6828	
ADE (Direct Effect)	**0.7123**	0.5983	0.8243	<2e-16	***
Total Effect	**0.7246**	0.6295	0.8177	<2e-16	***
Prop. Mediated	0.0171	-0.0516	0.0841	0.6828	

Interpretation

The mediation test was done with a sample of 323 people. The Average Causal Mediation Effect (ACME) is 0.012, with a confidence interval between –0.038 and 0.059, and a *p*-value of 0.683, which means it is not significant. The Average Direct Effect (ADE) is 0.712, with a confidence interval of 0.598 to 0.824, and a *p*-value less than 0.001, which shows it is highly significant. The Total Effect is 0.725, with a confidence interval 0.630 to 0.818, and p-value less than 0.001, also highly significant. The Proportion Mediated is 0.017, with a confidence interval of –0.052 to 0.084, and a *p*-value of 0.683, which means mediation is very small and not significant. In simple words, most of the effect is coming directly (ADE), and the mediation effect is very weak.

Moderator

```
>install.packages("lavaan" for SEM-based moderated mediation
>install.packages("psych") # for reliability
>install.packages("semTools") # useful for bootstrapping moderation
>library(lavaan)
>library(semTools)
>Age as Modefator, CB as dependent, AW as independent
> Book1 Age <- dplyr::recode (Book1 age,
+                    "Below 20" = 1,
+                    "21–30" = 2,
+                    "31–40" = 3,
+                    "41–50" = 4,
+                    "Above 50" = 5)
```

> Book1 Age <- factor (Book1 Age,
+ levels = c ("Below 20", "21–30", "31–40", "41–50", "Above 50"))
model_age <- lm(CB~ AW * age, data = Book1)
> summary(model_age)
>Call:
>lm (formula = CB ~ AW * age, data = Book1)

Table 5: Moderator- Consumer Behaviour

Statistic	Value	Description
Residual Standard Error	0.8908 (on 321 DF)	A measure of the typical distance between observed and predicted values.
Multiple R-squared	0.1323	Indicates that 13.23% of the variance in the dependent variable is explained by the predictors
Adjusted R-squared	0.1242	The R-squared value is adjusted for the number of predictors in the model.
F-statistic	16.32 (on 3 and 321 DF)	Tests the overall significance of the model.
Model *p* -value	6.805e-10	The model is highly statistically significant ($p < 0.001$), meaning the predictors collectively explain a significant amount of variance in the outcome.

Coefficients

Predictor	Estimate (β^)	Std. Error	t value	p-value	Significance
(Intercept)	**3.70349**	0.58615	6.318	8.82e-10	***
AW	0.08546	0.15100	0.566	0.5718	
age	**-0.40717**	0.18372	-2.216	0.0274	*
AW: age	0.09074	0.04815	1.885	0.0604	.

Residuals

Statistic	Value
Min	-2.91278
1st Quartile (1Q)	-0.55509
Median	0.08722
3rd Quartile (3Q)	0.71478
Max	2.25397

Interpretation

The reliability test shows that the overall model is significant with an F value of 16.32 and a very low p-value of 0.0000000006805, which means the model is fit. The R-squared is 0.1323, so the independent variables explain about 13.2% of the variation in the dependent variable. The intercept (3.70, p<0.001) is highly significant. The effect of Awareness (AW) is positive (Estimate = 0.085) but not significant (p=0.572). The moderator Age has a negative and significant effect (Estimate = -0.407, p=0.027), which means as age increases, the dependent variable decreases. The interaction term AW × Age is positive (Estimate = 0.091) and nearly significant (p=0.060), suggesting that age slightly moderates the relationship between awareness and the dependent variable. The residuals are fairly balanced (Min = -2.91, Max = 2.25), and the residual standard error is 0.89. Overall, the results indicate that age acts as an important moderator, and the interaction effect is almost significant.

>model age <- lm(SOR~ AW * age, data = Book1)
> summary(model_age)
>Call:
Lm (formula = SOR ~ AW * age, data = Book1)

Table 5: Moderator- Social Recognition

Predictor	Estimate (β^)	Std. Error	t value	p-value	Significance
(Intercept)	0.62970	0.34617	1.819	0.0698	.
AW	0.80831	0.08918	9.064	<2e-16	***
age	0.13102	0.10850	1.208	0.2281	
AW: age	-0.02613	0.02844	-0.919	0.3588	

Residuals

Statistic	Value
Residual Standard Error	0.5261 (on 321 DF)
Multiple R-squared (R^2)	0.6074
Adjusted R-squared (R^2 {adj})	0.6037
F-statistic	165.5 (on 3 and 321 DF)
Model *p* -value	< 2.2e-16

Residuals

Statistic	Value
Min	-2.67198
1st Quartile (1Q)	-0.21252
Median	0.05756
3rd Quartile (3Q)	0.11057
Max	2.24732

Interpretation

The regression result shows that the model is good overall, with $R^2 = 0.6074$ and Adjusted $R^2 = 0.6037$, meaning about 60% of the variation in the dependent variable is explained by the predictors. The F-test is significant ($F = 165.5$, $p < 0.001$), so the model fits well. The main independent variable AW (Awareness) is strongly significant (Estimate = 0.808, t = 9.064, $p < 0.001$), which means higher awareness leads to higher outcome. The moderator Age alone has a small positive effect (Estimate = 0.131, t = 1.208, p = 0.228), but it is not significant. The interaction term AW × Age is also not significant (Estimate = -0.026, t = -0.919, p = 0.359), which means age does not change or moderate the effect of awareness on the dependent variable. Residual values are within range (Min = -2.67, Max = 2.24) and error is small (Residual standard error = 0.5261). In simple words, awareness strongly predicts the outcome, but age and the moderating effect of age are not important.

4. CONCLUSION

The study successfully demonstrates that AI-Driven Rainbow Consumerism (AW) is a highly effective tool for social change, primarily by acting as a powerful mechanism to bridge the social gap for the Third Gender. The causal mediation analysis showed that the total effect of AI marketing awareness on positive Purchasing Behaviour (CB) is predominantly indirect and explained by an intermediary shift in Perceptions (IB) towards the Third Gender. Specifically, the proportion mediated by perception is very high, at approximately 85.5% (ACME = 0.3108, $p < 2e\text{-}16$). This strong evidence indicates that when brands use AI to generate awareness, its primary value lies not in a direct sales boost, but in fostering more positive and inclusive attitudes, which then reliably translate into consumers choosing to support third gender-friendly brands. This confirms that AI can move beyond tokenistic "rainbow-washing" to become a driver of genuine attitudinal and behavioural change.

5. SUGGESTIONS

Based on the finding that perception is the key driver of purchasing behaviour, marketers are strongly advised to prioritise content quality and authentic representation over basic awareness metrics in their AI-driven campaigns. Brands should invest in AI models that are trained on diverse, non-biased datasets to generate highly culturally sensitive and respectful content, ensuring the narratives actively challenge stereotypes and build empathy, as this is the most critical step in generating the behavioural outcome (CB). Furthermore, despite the interaction term for Age being only nearly significant (p=0.060) in moderating the effect on purchasing behaviour, the study suggests that brands should tailor AI-driven messaging for different age demographics to maximise inclusion, potentially using the personalisation capabilities of AI to overcome generational differences in social acceptance and achieve broader, more durable social impact.

Practical Implication

The findings, particularly the strong and significant indirect effect (ACME = 0.3108, $p < 2e\text{-}16$), offer a clear roadmap for businesses and policymakers: AI-driven marketing (AW) is effective in changing purchasing behaviour (CB) only by first improving public perceptions (IB) towards the Third Gender. Practically, this means brands must move beyond mere representation and leverage AI tools for authentic and educational campaigns that focus on changing consumer attitudes, not just driving immediate sales. Companies should use AI for sentiment analysis and personalised content delivery to identify and target areas of prejudice, allowing them to craft inclusive messages that resonate deeply and genuinely shift perceptions. The non-significant direct effect (ADE) = 0.0525, p=0.3412) confirms that tokenistic marketing, which bypasses the perceptual change, will be ineffective in achieving sustainable consumer behaviour.

Social Implication

The study's core social implication is that AI-Driven Rainbow Consumerism can be a powerful instrument for social change and equality. By demonstrating that 85.54% of the total effect on purchasing behaviour is mediated through improved perceptions, the research validates the use of commercial platforms as vehicles for reducing the social gap for the Third Gender. When AI is used ethically to promote inclusive narratives, it contributes to desensitisation and normalisation, making the Third Gender's presence in mainstream culture and markets a non-event. This helps to dismantle prejudice and stereotyping, which is crucial in countries like India, where legal recognition is recent and social acceptance is still evolving. This commercial strategy effectively bridges the divide, promoting a more equitable and accepting society by linking positive purchasing choices to positive social values.

Originality/Value

This research provides significant original value by being one of the first studies to quantify the causal mechanism through which AI technology and Rainbow Consumerism impact both perceptions and purchasing behaviour, specifically towards the Third Gender, moving beyond the typical focus on the broader LGBTQIA+ group. The study's use of Causal Mediation

Analysis in an R environment is highly valuable, confirming that perception acts as a critical, nearly full mediator (Proportion Mediated ~85.5) between AI-driven awareness and consumer behaviour. Furthermore, the originality lies in its contextual focus on the Third Gender, a particularly marginalised group, and the empirical testing of the moderating role of Age, providing novel insights for targeted, demographic-aware inclusive marketing strategies.

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