



The Impact of Media Literacy on Purchase Decisions in Algorithm-Driven E-Commerce Platforms: The Mediating Role of Perceived Algorithmic Manipulativeness and the Moderating Role of Algorithm Transparency Among Chinese Gen Z Consumers

Lixuan He^{1*}, Cijian Zhang²

¹ Nanfang College, Guangzhou GD 510970, China

² Guangdong University of Foreign Studies South China Business College, Guangzhou GD 510545, China

*Corresponding Author: lixuanhe5@gmail.com

Abstract. Algorithmic recommendation systems have become the dominant mechanism shaping consumer behavior on Chinese e-commerce content platforms such as Taobao, Douyin, and Xiaohongshu. While these systems offer personalized convenience, they also raise concerns about covert manipulation of consumer choices. This study investigates how media literacy influences purchase decisions among Chinese Gen Z consumers (aged 18–25), examining the mediating role of perceived algorithmic manipulativeness (PAM) and the moderating role of perceived algorithm transparency (PAT). An online survey was conducted with 358 valid respondents. Results from PROCESS mediation analysis revealed that PAM partially mediated the relationship between media literacy and purchase decisions, accounting for 41.0% of the total effect. However, algorithm transparency did not significantly moderate the media literacy–PAM pathway. These findings suggest that higher media literacy, while enabling consumers to better recognize algorithmic manipulation, paradoxically facilitates rather than inhibits purchase behavior driven by algorithmic recommendations.

Keywords: Media Literacy, Algorithmic Recommendation, Perceived Algorithmic Manipulativeness, Algorithm Transparency, Purchase Decision, Gen Z.

1 Introduction

Algorithmic recommendation systems have permeated every corner of China's e-commerce landscape. Platforms such as Taobao, Douyin, and Xiaohongshu deploy sophisticated algorithms that analyze user behavior—browsing history, dwell time, social interactions—to generate highly personalized product feeds. For Generation Z consumers (aged 18–25), who constitute the most active user base of these platforms, algorithm-curated content has become the default mode of product discovery and purchase decision-making[1].

While algorithmic recommendations enhance shopping efficiency, a growing body of research has raised concerns about their manipulative potential[2]. Consumers may feel that algorithms subtly steer their choices, restrict their information scope, or exploit their personal data for commercial gain. In this context, media literacy—the ability to access, evaluate, and critically reflect upon media content—emerges as a potentially crucial factor. Higher media literacy may enable consumers to recognize how algorithms shape their shopping experience. Yet whether such recognition translates into more or less algorithm-driven purchasing remains contested.

This study addresses this question by examining the relationship between media literacy and purchase decisions among Chinese Gen Z consumers on e-commerce content platforms. Specifically, we propose and test a moderated mediation model in which perceived algorithmic manipulateness (PAM) serves as the mediator and perceived algorithm transparency (PAT) functions as the moderator. By illuminating the psychological mechanism through which media literacy affects consumer behavior, this research contributes to the growing literature on algorithmic influence in digital commerce.

2 Literature Review and Hypotheses

2.1 Media Literacy and Purchase Decisions

Media literacy, originally defined as the capacity to interpret and critically evaluate media messages, has evolved in the algorithmic era[3]. Sun Pengfei and colleagues argued that traditional media literacy must extend into algorithmic literacy, encompassing the awareness of how algorithms filter, rank, and personalize content. Niu and Tian further operationalized algorithmic awareness into dimensions including recognition of personalized recommendations, understanding of algorithmic opacity, and critical evaluation of algorithmic fairness.

In the context of e-commerce, consumers with higher media literacy are more capable of navigating recommendation systems—they understand why certain products appear in their feed and how to cross-validate information across platforms. This enhanced navigation ability may lead to greater trust in and reliance on algorithmic recommendations for purchase decisions. Accordingly, we hypothesize:

H1: Media literacy positively predicts purchase decisions.

2.2 The Mediating Role of Perceived Algorithmic Manipulateness

Perceived algorithmic manipulateness refers to the consumer's subjective perception that algorithms deliberately induce impulse purchases, control the scope of available information, and exploit personal data for commercial purposes[4]. Cho and Rha identified manipulative practices as a key negative dimension of consumer perceptions toward AI-driven recommendations, demonstrating that such perceptions significantly influence consumer satisfaction through the mediation of perceived autonomy.

Kang and colleagues, drawing on the Persuasion Knowledge Model, found that TikTok users actively develop mental models of how algorithms operate as persuasive

agents. Their qualitative evidence revealed a striking paradox: even when users understand that algorithms are persuading them, they still find it difficult to resist algorithm-curated content. This paradox suggests that higher media literacy may heighten one's sensitivity to algorithmic manipulation, yet this heightened awareness does not necessarily lead to behavioral resistance.

We propose that media literacy enhances the ability to detect algorithmic manipulation. Consumers who understand how recommendation systems work are more likely to recognize when algorithms are nudging them toward certain products, withholding alternatives, or capitalizing on their behavioral data. This perceived manipulateness, in turn, may influence purchase decisions. Based on the persuasion knowledge literature, we hypothesize:

H2: Perceived algorithmic manipulateness mediates the relationship between media literacy and purchase decisions.

2.3 The Moderating Role of Algorithm Transparency

Perceived algorithm transparency captures the extent to which consumers believe that platforms disclose how their recommendation algorithms operate and that users can exercise control over algorithmic outputs[5]. Niu and Tian identified algorithm opacity and transparency as a core dimension of algorithmic critical awareness. When platforms provide accessible explanations of recommendation logic and offer adjustable personalization settings, consumers may perceive greater transparency.

We theorize that algorithm transparency may weaken the media literacy–PAM pathway. When consumers perceive high transparency, they may interpret algorithmic recommendations as a neutral, understandable service rather than a covert manipulation strategy. Conversely, under low transparency, the same level of media literacy may amplify perceptions of manipulation, as consumers can detect algorithmic influence but lack the explanatory framework to understand it. Thus:

H3: Algorithm transparency negatively moderates the relationship between media literacy and perceived algorithmic manipulateness, such that the positive effect of media literacy on PAM is weaker when transparency is high.

3 Method

3.1 Measures

All constructs were measured using multi-item scales adapted from established instruments and administered in Chinese. Each item was rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Media literacy was assessed with 18 items covering information acquisition, critical evaluation, content production, and privacy protection, adapted from Niu and Tian and Potter. Perceived algorithmic manipulateness was measured with 12 items across three dimensions—induced consumption, information control, and data exploitation—adapted from Cho and Rha. Algorithm transparency was measured with 12 items covering knowability of algorithm operation, controllability, and perceived fairness, adapted from Niu and Tian. Purchase decisions were

assessed with 11 items covering purchase intention, purchase frequency, and purchase satisfaction, adapted from Dodds and colleagues.

Table 1. Scale Reliability and Descriptive Statistics (N = 358).

Variable	Items	M	SD	Cronbach's α
Media Literacy (ML)	18	3.74	0.97	.968
Perceived Algorithmic Manipulativeness (PAM)	12	2.63	1.10	.961
Perceived Algorithm Transparency (PAT)	12	3.64	0.98	.951
Purchase Decision (PD)	11	3.63	0.94	.939

Note: All items on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

As shown in Table 1, all four scales demonstrated excellent internal consistency (α ranging from .939 to .968), well above the recommended threshold of .70.

3.2 Data Collection and Sample

An online survey was distributed in June 2026 targeting Chinese Gen Z consumers who use e-commerce content platforms at least three times per week. The questionnaire included attention-check items to ensure response quality. A total of 440 responses were collected. After screening—removing respondents outside the 18–25 age range, those not meeting the platform usage criterion, and those failing attention checks—358 valid responses were retained for analysis. Gender, education, income, and daily platform usage time were included as control variables in all regression models.

4 Results

4.1 Sample Characteristics

Table 2 summarizes the demographic profile of the sample. The majority of respondents were aged 18–23 (87.2%), with a balanced gender distribution. Nearly half were current undergraduate students, and 78.5% reported monthly income below 3000 RMB, consistent with a student-dominated Gen Z sample. Daily platform usage was concentrated between 30 minutes and 3 hours for the majority (70.4%).

Table 2. Sample Demographics (N = 358).

Variable	Category	n (%)
Gender	Male	125 (34.9)
	Female	137 (38.3)
	Undisclosed	96 (26.8)
Age	18–20	152 (42.5)
	21–23	160 (44.7)
	24–25	46 (12.8)
Education	Junior college	95 (26.5)
	Undergraduate	165 (46.1)

Monthly income (¥)	Bachelor graduate	73 (20.4)
	Master or above	24 (6.7)
	< 1000	40 (11.2)
	1001–2000	123 (34.4)
	2001–3000	158 (44.1)
Daily usage	> 3000	37 (10.4)
	< 1 h	151 (42.2)
	1–2 h	88 (24.6)
	2–3 h	77 (21.5)

4.2 Descriptive Statistics and Correlations

Table 3 presents the means, standard deviations, and Pearson correlations among the four core variables. All bivariate correlations were positive and significant at the $p < .01$ level, ranging from .39 to .54. Notably, PAM showed a lower mean ($M = 2.63$) than ML ($M = 3.74$). All correlation coefficients satisfied the preconditions for mediation analysis.

Table 3. Descriptive Statistics and Pearson Correlations.

Variable	M	SD	1	2	3
1. ML	3.74	0.97	1		
2. PAM	2.63	1.10	.49**	1	
3. PAT	3.64	0.98	.54**	.39**	1
4. PD	3.63	0.94	.50**	.50**	.51**

Note: ** $p < .01$.

4.3 Mediation Analysis

PROCESS Model 4 (Hayes, 5000 bootstrap samples) was employed to test the mediation hypothesis, with gender, education, income, and daily usage entered as covariates. Table 4 presents the full results.

Table 4. Mediation Analysis Results (PROCESS Model 4).

Path	B	SE	t	p	95% CI
a: ML → PAM	0.529	0.059	9.03	< .001	[0.414, 0.644]
b: PAM → PD	0.290	0.041	7.02	< .001	[0.208, 0.371]
c (total): ML → PD	0.373	0.048	7.72	< .001	[0.278, 0.469]
c' (direct): ML → PD	0.220	0.050	4.38	< .001	[0.121, 0.319]

Indirect Effect	Effect	Boot SE	Boot 95% CI	Mediation %
a × b (ML → PAM → PD)	0.153	0.025	[0.106, 0.204]	41.0%

Note: Bootstrap = 5000. Covariates: gender, education, income, daily usage time.

The total effect of ML on PD was significant ($B = 0.373$, $p < .001$), supporting H1. Both path a (ML $\rightarrow$ PAM: $B = 0.529$, $p < .001$) and path b (PAM $\rightarrow$ PD: $B = 0.290$, $p < .001$) were significant. The indirect effect through PAM was 0.153, with a bootstrap 95% confidence interval of [0.106, 0.204] that excluded zero, confirming a significant mediation. H2 was supported. The direct effect remained significant ($B = 0.220$, $p < .001$), indicating partial mediation. The mediated path accounted for 41.0% of the total effect.

4.4 Moderated Mediation Analysis

PROCESS Model 7 was used to test whether PAT moderates the ML $\rightarrow$ PAM pathway. Variables were mean-centered prior to constructing the interaction term. Table 5 displays the results.

Table 5. Moderated Mediation Analysis (PROCESS Model 7).

Predictor	DV: PAM				DV: PD			
	B	SE	t	p	B	SE	t	p
Constant	2.649	0.257	10.32	< .001	2.114	0.216	9.80	< .001
ML	0.442	0.066	6.75	< .001	0.220	0.050	4.38	< .001
PAT	0.247	0.066	3.75	< .001	—	—	—	—
ML $\times$ PAT	0.016	0.051	0.31	.761	—	—	—	—
PAM	—	—	—	—	0.290	0.041	7.02	< .001
R ²	.285				.397			

PAT Level	Value	Indirect Effect	Boot SE	Boot 95% CI
Low (−1SD)	−0.978	0.124	0.023	[0.081, 0.172]
Medium (M)	0.000	0.128	0.023	[0.085, 0.177]
High (+1SD)	0.978	0.132	0.030	[0.076, 0.193]
IMM	—	0.005	0.013	[−0.023, 0.030]

Note: Bootstrap = 5000. Covariates: gender, education, income, daily usage time. IMM = Index of Moderated Mediation.

The critical ML $\times$ PAT interaction term was not significant ($B = 0.016$, $p = .761$), indicating that PAT did not moderate the relationship between ML and PAM. H3 was not supported. Conditional indirect effects were significant at all three levels of PAT, confirming the robustness of the mediation pathway. The Index of Moderated Mediation was 0.005, 95% CI [−0.023, 0.030], which included zero, further confirming the absence of a significant moderated mediation effect.

5 Discussion and Conclusion

This study reveals that among Chinese Gen Z consumers, media literacy positively predicts algorithm-driven purchase decisions, with perceived algorithmic manipulativeness (PAM) accounting for 41% of this total effect as a partial mediator. Algorithm

transparency (PAT), despite positive correlations with all core variables, did not significantly moderate the ML–PAM pathway.

The findings contribute three theoretical insights. First, PAM represents a distinct mediating mechanism—a defensive pathway rooted in persuasion awareness—that complements the autonomy-based route documented by Cho and Rha. Second, the positive PAM–PD relationship is counterintuitive yet meaningful: consumers who more strongly perceive manipulation paradoxically report higher purchase tendencies. This aligns with Kang and colleagues' persuasion knowledge paradox on TikTok, suggesting that in e-commerce contexts, the functional utility of algorithmic recommendations outweighs the discomfort of perceived manipulation. Third, PAT's failure as a moderator indicates that transparency alone—disclosing recommendation logic—may be insufficient to alter consumers' psychological experience of manipulation without more substantive control mechanisms.

Practically, media literacy education should incorporate critical reflection, not merely technical knowledge about algorithms. Platforms should complement transparency measures with genuine user choice tools. Limitations include the single-country Gen Z sample and reliance on self-report measures; future research should adopt cross-cultural designs and incorporate behavioral data.

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