Impact of social media platforms on the construction of social networks among the middle class

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Abstract: This study systematically explores the impact mechanism of social media platforms on the construction of social networks among the middle class, focusing on how platforms reshape the path of social capital accumulation, strengthen class identity boundaries, and regulate cross-group interaction patterns. Based on the framework of social capital theory and mediatization theory, the study proposes a "platform-mediated class segmentation" model, revealing that social media dynamically reconstructs the structure of social networks through the synergy of algorithmic logic and user behavior. Using a mixed research and structural equation model (SEM) approach, a questionnaire survey was conducted on 500 middle-class users in first-tier cities (to analyze the size of social networks, interaction frequency, and intensity of algorithm usage quantitatively), and in-depth interviews were conducted with typical users (to analyze content strategy and platform perception qualitatively). The study found that social media significantly expanded weak relationship networks (β=0.32, p<0.01). Still, the homogenized content pushed by algorithms led to a 17% decrease in cross-class interactions (p<0.01), forming a closed circle. Users displayed their identities through visual symbols ("Ins-style" pictures accounted for 68%) and textual practices ("middle-class standard" discourse frequency 4.2 times/1,000 words), and 41% of the respondents adopted "selective visibility" behavior (blocking low-income groups) to maintain their class image. The study also reveals the contradictory dependence of users on the platform. The conclusion shows that social media reshapes the middle-class social network through algorithm-driven visibility distribution and cultural symbol encoding mechanisms, providing channels for resource flow and exacerbating class closure. On the theoretical level, this study integrates mediatization theory and class analysis and proposes the concept of "platform-mediated social capital." In practice, it is recommended to optimize algorithm design to promote cross-class interaction, and policies need to focus on the potential inhibition of class mobility by platform mechanisms. The limitation of the study is that the samples are concentrated in the urban middle class. In the future, it is necessary to include urban-rural comparisons and diachronic tracking to improve the dynamic model of class differentiation.

Keywords: Social media platform; Middle class; Social network construction; Platform-mediated class segmentation; Mixed research.

1. Introduction

Social media platforms have become an important venue for the construction of social networks among the middle class, which affects interpersonal relationship patterns and reshapes the mechanism of social capital accumulation [1, 2]. The development of digital technology has made social interactions no longer restricted by geography, but factors such as social media algorithm recommendations, visual symbols, and identity performance are shaping new social boundaries [3, 4]. The platform affects the network structure through the flow of information, which may promote weak relationship links or

strengthen the aggregation of homogeneous groups, and have a profound impact on cross-class interactions. It is of great practical significance and theoretical value to explore how social media reconstructs the social network of the middle class.

Currently, there are some limitations in the research on social media and class relations. Most of the research focuses on the perspective of technological empowerment, emphasizing the role of weak relationship expansion in promoting career mobility, but ignoring the fact that platform rules may exacerbate class closure [5, 6]. The algorithms of professional social platforms prioritize the promotion of homogeneous content, indirectly strengthening the barriers of professional circles, and the inhibitory effect of this mechanism on cross-class interaction has not been fully explored [7, 8]. The current theoretical framework mostly follows the traditional social capital theory and fails to fully incorporate the core proposition of mediatization theory: how platforms as "mediating infrastructure" reshape the logic of social action [9, 10]. Although cultural segmentation theory has been used to explain the performance of class symbols, it has not been combined with the algorithm-driven visibility allocation mechanism, making it difficult to explain how platforms transform cultural capital into class boundaries in digital space. In terms of methodology, existing studies mostly rely on quantitative analysis of social network structure and lack in-depth analysis of users' strategic behavior [11, 12]. The "content screening" behavior of social platforms is both an identity performance tool and an adaptive strategy to cope with platform rules, but the relationship between such micro-practices and macro-class structures has not yet been fully explored. The lack of theoretical integration has led to the fragmentation of the existing explanatory framework: how algorithmic logic, user agency and cultural symbols work together to build class networks remains an unrevealed black box. The lack of interdisciplinary dialogue has further limited the depth of research, and the discussion of platform intermediary in communication studies has not yet formed an effective connection with the class analysis of sociology [13, 14]. This study attempts to break through the above limitations and, by constructing a "platform-mediated class differentiation" model, reveals the interactive mechanism of algorithm recommendation, identity performance and resistance behavior, and provides a new analytical path for the study of class differentiation in the digital age.

This study aims to analyze the deep role of social media platforms in the construction of middle-class social networks and to construct a new analytical framework with platform intervention in social capital as the core. From the perspective of information flow distribution and symbolic coding, this paper explores the interaction mode between platform algorithm push and autonomous choice, and its impact on resource integration, identity presentation and social boundary reconstruction. Through the design of questionnaire survey and in-depth interviews, the dynamic changes of network structure in digital space are fully obtained. This paper explores how platforms use refined recommendation mechanisms and visual text strategies to form a specific information circulation pattern, thereby shaping the interactive ecology of the middle class. The research results inject new perspectives into social capital theory, enrich the empirical analysis of network interaction mechanisms, and provide data support and theoretical basis for platform optimization and public policy. The constructed model makes up for the lack of attention to the details of multi-level interactions in previous analyses, promotes further understanding of the evolution of social networks and social stratification mechanisms in the digital age, and promotes interdisciplinary theoretical dialogue and opens up new paths for digital social governance. This study broadens the horizons and provides a detailed interpretation of the interaction mechanism of the middle class in the digital age. It is expected to build a solid theoretical platform for subsequent research and promote new explorations in the field of social network composition.

2. Literature Review

In the past, scholars have explored the impact of social media on social networks from the perspective of social capital theory and information diffusion. Some studies have pointed out that platforms can significantly expand users' weak relationship networks and improve the efficiency of information dissemination [15, 16]. Barnidge M found that the characteristics of social media discussion

networks affect users' accidental exposure to news, which is still significant even after controlling for individual factors. This phenomenon reflects the new digital inequality in the social media environment [17]. Some scholars have also paid attention to the phenomenon of platform content homogeneity, believing that this can weaken cross-group interaction and multicultural exchanges [18, 19]. Nechushtai E used crowdsourcing auditing to analyze the impact of algorithmic recommendation systems on news content on major digital platforms and found that search algorithms did not form filter bubbles, which led to the homogenization of information exposure and that different platforms had different priorities for content [20]. Some studies have focused on how algorithmic recommendations shape user behavior [21, 22]. Rathje S's research shows that people generally believe that divisive, negative, and misinformation content is easy to spread on social media, but should not be amplified; on the contrary, positive, accurate, and educational content should be spread more, but is not easy to spread widely. This finding provides important insights for improving social media algorithms [23]. These studies have made some progress in theoretical construction and empirical operation, but there are still deficiencies in the in-depth analysis of the unique social behavior of the middle class. Many studies have ignored the impact of the complex interaction between individual user strategies and platform algorithms in the digital environment, and failed to fully reveal the role of platform mechanisms in reproducing the social class structure. This has become an issue that needs to be broken through in current research.

In the existing literature, the research methods are mainly questionnaire surveys, social network analysis and experimental design. Some scholars have used quantitative methods to measure the size of user social networks and the frequency of interactions, revealing the role of platforms in promoting the expansion of weak relationships [24, 25]. Xu T explored the role of social media in the development of science, technology, engineering and mathematics teaching for pre-service teachers and found that it has both positive and limited effects on education, and that there are significant differences in the teaching effects of different applications [26]. Some studies have used qualitative interviews to deeply analyze users' subjective experience of platform content recommendations and identity construction. However, a single quantitative method often fails to reveal the complex behavioral motivations behind it, and pure qualitative research has the problem of insufficient data universality. In recent years, mixed research methods have begun to be applied in an attempt to make up for their respective limitations, but there is still a gap in data integration and theoretical explanation. Drawing on previous experience, this paper adopts a combination of questionnaire surveys and in-depth interviews to examine the interaction patterns formed between platform algorithm push and autonomous choice from the perspective of information flow distribution and symbolic coding, and its impact on resource integration, identity presentation and social boundary reconstruction, so as to break through the shortcomings of traditional methods in explaining complex social phenomena.

3. Research Model and Hypothesis

3.1. Theoretical Model

This study proposes a "platform-mediated class segmentation" model to systematically analyze the multi-level impact of social media platform functions on the construction of social networks among the middle class.

The model takes platform function as the core independent variable, which is divided into algorithm recommendation strength (X_1) and content distribution homogeneity (X_2). Algorithm recommendation strength reflects the degree of user dependence on platform push content, while content distribution homogeneity measures the diversity of information received by users.

The mediating variable identity performance (M_1) is operationalized into two dimensions: visual symbols and textual practices. Visual symbols are analyzed through the content of pictures posted by users, and text practice is based on LIWC (Linguistic Inquiry and Word Count) dictionary coding. Identity performance reflects users' recognition of class culture, and also uses content screening and symbolic interaction to strengthen class boundaries.

Dependent variables include social network structure (Y_1/Y_2) and class identity (Y_3). The social network structure is further divided into weak-relationship network size (Y_1) and cross-class interaction frequency (Y_2). The weak-relationship network size reflects the number of nodes in the user's social network, while the cross-class interaction frequency reflects the interaction across occupational/income labels. Class identity (Y_3) reflects the user's cognition and emotional belonging to their own class identity by covering the two sub-dimensions of "cultural capital adaptability" and "economic status belonging".

3.2. Hypothesis Proposal
3.2.1. Path Hypothesis

A. Direct Path: Algorithmic recommendation directly expands weak relationship networks, but suppresses the frequency of cross-class interactions through content homogeneity. Algorithmic recommendation expands users' social contacts through precise push, but homogeneous content may limit users to the same class circle, reducing opportunities for cross-group interaction.

B. The mediation path is the impact of the identity performance mediation platform function on class identity. Users perform their identities through visual symbols and text practices on the platform. This process strengthens the dissemination of class cultural symbols and consolidates class boundaries through content screening and interactive strategies.

C. The regulatory path: User resistance behavior is used as a regulatory variable to weaken the role of content homogeneity in promoting circle closure. Resistance behavior reflects users' reflection and breakthrough on algorithm homogenization, and may alleviate the closed circle through diversified content acquisition and cross-class interaction.

The model assumes that platform functions affect class identity through paths. Figure 1 shows the platform-mediated class segmentation path.
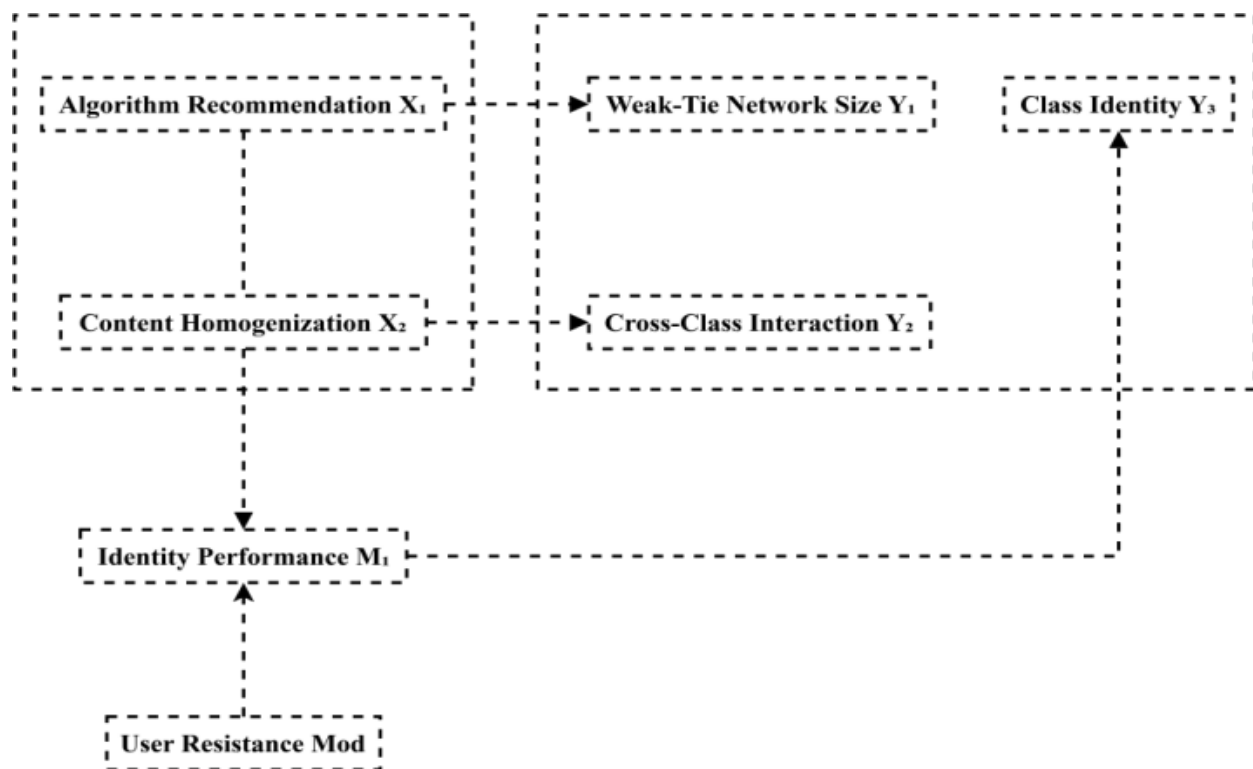

Figure 1.
Platform-mediated class segmentation path.

3.2.2. Theoretical Hypothesis

H1: The strength of platform algorithm recommendation (X_1) positively affects the scale of weak relationship network (Y_1), but negatively affects the frequency of cross-class interaction (Y_2);

The strength of algorithm recommendation is positively correlated with the scale of weak relationship network ($\beta>0$), but negatively correlated with the frequency of cross-class interaction ($\beta<0$). Algorithmic recommendation increases the number of weak relationships by expanding social contacts, but homogeneous content may inhibit cross-class interaction.

H2: Content distribution homogeneity (X_2) positively regulates the closeness of class circles ($Y_2 \rightarrow Y_3$);

Content distribution homogeneity positively regulates the impact of weak relationship networks on class identity ($\beta>0$). Homogeneous content strengthens users' sense of identity with their own class by strengthening class cultural symbols.

H3: Identity performance behavior (M_1) mediates the relationship between platform use and class identity (Y_3);

Identity performance partially mediates the relationship between algorithm recommendation and class identity (indirect effect accounts for ≥30%). Users perform their identities through symbolic content on the platform, and this process strengthens class identity.

H4: User resistance behavior negatively regulates the impact of algorithm homogeneity (X_2) on circle closure ($Y_2 \rightarrow Y_3$).

User resistance behavior significantly negatively regulates the path between content homogeneity and circle closure ($\beta<0$).

Resistance behavior alleviates the promotion of algorithm homogeneity to circle closure through diversified content acquisition and cross-class interaction.

4. Research Methods

4.1. Mixed Method Design

4.1.1. Sample Selection

The study selected 500 middle-class users in first-tier cities as samples. The screening criteria included monthly income greater than or equal to RMB 15,000 and academic qualifications of bachelor degree or above, ensuring that the samples met the definition of the middle class in terms of economic capital and cultural capital. The samples cover four cities: Beijing, Shanghai, Guangzhou, and Shenzhen. The age distribution is 25-45 years old. The occupations cover high-income industries such as finance, technology, and education. The gender ratio is controlled at 1:1 to reduce demographic bias.

4.1.2. Measurement Tools and Data Collection

A. Social network structure:

Network density uses ucinet software to calculate the overall density of the user's social network. The formula is:

$$D = \frac{2L}{N(N-1)} \ (1)$$

L is the actual number of connections, and N is the number of nodes.

The modularity index uses Newman-Girvan to measure the homogeneous circle structure in the network. The modularity index calculation formula is:

$$Q = \sum_{i=1}^{n}\left(e_{ii} - a_i^2\right) \ (2)$$

e_{ii} is the ratio of internal connections in the circle, and a_i is the ratio of nodes in the circle.

B. Platform behavior data

The algorithm recommendation opening rate captures user behavior logs through the API (Application Program Interface) interface, and counts the click-through rate and push frequency of

recommended content. The calculation method is the ratio of the number of clicks on recommended content to the number of exposures of recommended content.

Content interaction frequency records users' daily likes, comments, and sharing behaviors, and is standardized to the amount of interaction per thousand exposures.

C. Class identity scale

Scale design: A 5-level Likert scale (1 = strongly disagree, 5 = strongly agree) is used, which includes two sub-dimensions: cultural capital adaptability measures the degree of fit between the user's own cultural taste and class standards, and economic status belongingness assesses the user's degree of identification with their own economic status. Table 1 is the scale design.

Table 1
Scale design.

No.	Item Description	Dimension	Rating Scale (1 = Strongly Disagree, 5 = Strongly Agree)
1	I believe my lifestyle (e.g., diet, leisure activities, aesthetics) fully reflects my social class.	Cultural Capital Compatibility	
2	My cultural interests strongly align with the mainstream values of my social class.	Cultural Capital Compatibility	
3	My educational background plays a significant role in defining my social class.	Cultural Capital Compatibility	
4	I take pride in my aesthetic taste and consider it an important representation of my social class identity.	Cultural Capital Compatibility	
5	I am satisfied with my financial situation and believe it reflects my rightful social status.	Economic Status Affiliation	
6	My income level allows me to maintain a lifestyle consistent with my social class.	Economic Status Affiliation	
7	In daily consumption, I tend to choose products and services that align with my social class characteristics.	Economic Status Affiliation	
8	I consider financial stability and autonomy as key components of my class identity.	Economic Status Affiliation	
9	I often feel proud of my social class and actively express this recognition in social settings.	Economic Status Affiliation	
10	When interacting with different social groups, I emphasize the unique advantages and values of my class.	Economic Status Affiliation	

4.1.3. Qualitative Part

During the screening stage, a representative sample was selected from 500 middle-class users, covering high algorithm dependence groups and low algorithm dependence groups. Two extreme user groups were identified through indicators such as user activity, interaction frequency, and the number of clicks recommended by the platform algorithm. The selected samples reflect the differences in the degree of dependence on platform algorithms, and also ensure the diversity of groups in content preferences, behavior patterns and class identity.

For each typical user, the study uses a semi-structured interview method to explore their content strategy, cognition and understanding of algorithms, and specific obstacles faced in cross-class interaction. The interview questions revolve around how users use the platform recommendation mechanism to screen content and how to adjust the interaction strategy with users of different classes. Through open-ended questions, the study allows respondents to express their intuitive feelings about the operation of platform algorithms in a variety of scenarios, while recording their reflections and critical feedback on platform recommendation preferences, content customization, and cross-class interactions. The core of this interview session is to obtain users' deep understanding of algorithm dependence and barriers to cross-class interaction.

In terms of visual content analysis, the study conducted a quantitative analysis of the pictures posted by the respondents, focusing on the proportion of pictures that meet the aesthetic characteristics

of the "Ins-style" and recording the frequency of use of luxury labels. These analyses are used to explore the ways in which users construct and display class identity through visual content on the platform, especially the potential class symbolism in image selection and tag use.

The text data is encoded using the LIWC dictionary, and the study focuses on calculating the frequency associated with the discourse of "middle-class standard". This process helps reveal the class identity characteristics displayed by the interviewees in textual interactions, especially the implicit discourse patterns related to consumption concepts, cultural identity, and social status. The frequency of use of these discourses can be analyzed to gain a deeper understanding of how the middle class groups strengthen or reshape their class identity in daily communication.

Table 2.
Interview statistics.

Analysis Dimension	High Algorithm Dependency Group	Low Algorithm Dependency Group
Sample Size(N)	15	15
Gender Ratio	1:1	1:1
Average Age	32.5 years	34.2 years
Average Daily Social Media Usage	3.5 hours	1.8 hours
Interaction Frequency	120 interactions/week	50 interactions/week
Percentage of "Ins Style" Images	72%	48%
Luxury Brand Tag Usage	25 times/week	9 times/week
Frequency of "Middle-Class Standard" Phrases	15 times/hour	6 times/hour
Sentiment (LIWC Analysis)	40% positive, 20% negative	25% positive, 15% negative
Perception of Cross-Class Interaction Barriers	Low	High
Content Preferences (Keyword Analysis)	Luxury, Brand	Practical, Cost-effectiveness

Table 2 shows the interview statistics. There are significant differences between the high algorithm dependence group and the low algorithm dependence group in terms of social platform usage, content preference, and class identity expression. The data shows that the high algorithm dependence group uses social platforms for a longer average daily time, has a higher frequency of interaction, and is more inclined to use "Ins-style" visual elements and luxury labels. The frequency of use of the "middle-class standard" discourse by this group is significantly higher than that of the low algorithm dependence group, and the emotional expression is also more positive. In addition, the high algorithm dependence group has a lower perception of barriers to cross-class interaction, while the low algorithm dependence group has a stronger perception in this dimension, reflecting the identification barriers between the two groups in social interaction. Keyword analysis shows that the high algorithm dependence group prefers luxury and brand-related content, while the low algorithm dependence group pays more attention to practicality and cost-effectiveness. The results reveal the deep impact of algorithmic recommendations on social behavior and class identity expression.

4.2. Data Analysis Strategy

SEM is used to test the hypothesis of the "platform-mediated class segmentation" model. SEM is divided into two parts: measurement model and structural model, which respectively evaluate the adaptability of the relationship between variables and theoretical hypotheses.

A. Measurement model

Relationship between latent variables and observed variables: Confirmatory factor analysis (CFA) evaluates the explanatory power of observed variables on latent variables. The formula for calculating standardized factor loading is:

$$\lambda = \frac{\text{Cov}(X,\xi)}{\sqrt{\text{Var}(X) \cdot \text{Var}(\xi)}} \ (3)$$

X is the observed variable and ξ is the latent variable. A loading value > 0.7 indicates that the observed variable has sufficient explanatory power for the latent variable.

Model reliability and validity: Calculate the combination reliability (CR) and average variance extraction (AVE):

$$\begin{cases} CR = \dfrac{(\Sigma\lambda)^2}{(\Sigma\lambda)^2+\Sigma\theta} \\ AVE = \dfrac{\Sigma\lambda^2}{n} \end{cases} \quad (4)$$

θ is the error variance, and n is the number of observed variables. CR>0.7 and AVE>0.5 indicate that the model has good convergent validity.

B. Structural model

Path coefficient calculation: The maximum likelihood estimation method is used to fit the model, and the standardized path coefficient (β) and its significance (p value) are calculated. The direct effect is directly presented through the path coefficient, and the indirect effect is calculated using the product method:

$$I_d = \beta_{X\rightarrow M} \times \beta_{M\rightarrow Y} \quad (5)$$

X is the independent variable, M is the mediating variable, and Y is the dependent variable. The total effect is the sum of the direct effect and the indirect effect:

$$T_e = \beta_{X\rightarrow Y} + \Sigma(\beta_{X\rightarrow M} \times \beta_{M\rightarrow Y}) \quad (6)$$

Mediation effect test: The Bootstrap method (5000 samplings) was used to calculate the 95% confidence interval (CI). The interval does not contain 0, indicating that the mediation effect is significant.

Moderation effect test: Multi-group analysis was used to test the moderating effect of user resistance behavior. The resistance behavior was divided into groups (high/low), and the path coefficient difference $\Delta\beta$ between the high resistance group and the low resistance group was compared. If $\Delta\beta$ was significant (p<0.05), the moderating effect was determined to be established.

C. Model fit evaluation

Fitness indicators: chi-squared freedom ratio (χ^2/df) <3, comparative fit index (CFI) > 0.90, root mean square error of approximation (RMSEA) < 0.08, standardized root mean square residual (SRMR) < 0.08.

Model modification: The modification index can be used to identify the problem path, delete low-load observation variables or increase the covariance relationship of error terms, and optimize the model fit.

Using the above steps, SEM comprehensively tests the theoretical hypothesis that platform functions affect class identity through identity performance and social network structure, providing empirical support for the "platform-mediated class segmentation" model.

5. Data Analysis

5.1 Reliability and Validity Test and Model Fit Index

Table 3.
Reliability and validity test results.

Latent Variable	Observed Indicator	Factor Loading (λ)	Combination Reliability	Average Variance Extraction
Algorithm Recommendation Intensity (X_1)	Recommendation Click Rate	0.83	0.88	0.62
	Push Frequency	0.78		
Identity Performance (M_1)	"Ins-style" Image Ratio	0.85	0.91	0.67
	"Middle-class Standard" Word Frequency	0.82		
Class Identity (Y_3)	Cultural Capital Adaptability	0.79	0.86	0.58
	Economic Status Belonging	0.74		

Table 3 shows the reliability and validity test results of the measurement model to ensure the reliability and validity of the research constructs. The factor loadings all exceed the standard threshold of 0.70, indicating that each observed variable can well reflect the corresponding latent variable and has a high measurement accuracy. The CR range is between 0.86 and 0.91, which is much higher than the recommended standard of 0.70, proving that the internal consistency of each construct is strong. Convergent validity was assessed by AVE, and the AVE of all latent variables was greater than 0.50, indicating that most of the variance of the construct can be explained by its observed variables rather than measurement error. The strength of algorithm recommendation was measured by recommendation click rate and push frequency, both of which showed high factor loadings. Identity performance is measured by the proportion of "Ins-style" pictures and the frequency of "middle-class standard" discourse, reflecting the identity construction methods of symbolic and discursive practices respectively. Class identity is measured by cultural capital adaptability and economic status belonging, showing strong construct validity. The measurement model performs well in terms of reliability and validity, providing a solid theoretical and empirical basis for the subsequent SEM path analysis.
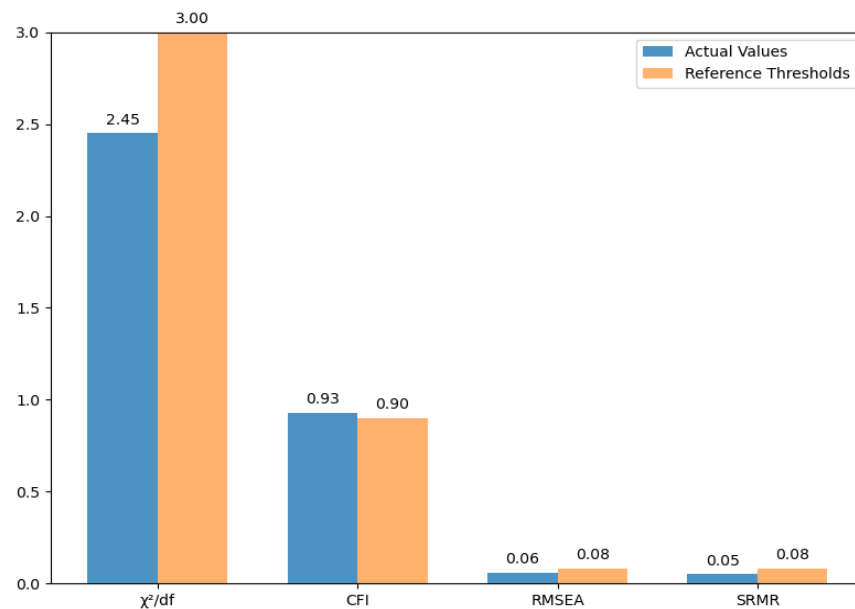

Figure 2.
Model fit index.

Figure 2 shows the SEM fit index, including chi-squared freedom ratio (χ^2/df), comparative fit index (CFI), RMSEA, and SRMR. The actual value of the chi-squared freedom ratio is 2.45, which is lower than the reference threshold of 3.0, indicating that the model fits well and does not overfit the data. The actual value of the comparative fit index is 0.93, which is higher than the reference threshold of 0.90, indicating that the model can explain 93% of the covariance structure and has strong explanatory power. The actual value of the root mean square of the approximate error is 0.06, which is significantly lower than the reference threshold of 0.08, indicating that the model error is within an acceptable range. The actual value of the root mean square of the standardized residual is 0.05, which is also lower than the reference threshold of 0.08, further verifying the randomness and controllability of the model residual. The actual values of each indicator are better than or reach the reference standard, indicating that the model is highly adapted to the data and can effectively support the verification of theoretical hypotheses. The multi-dimensional comparison of the radar chart can intuitively evaluate the overall fitness of the model and provide a visual basis for the reliability of the research conclusions.

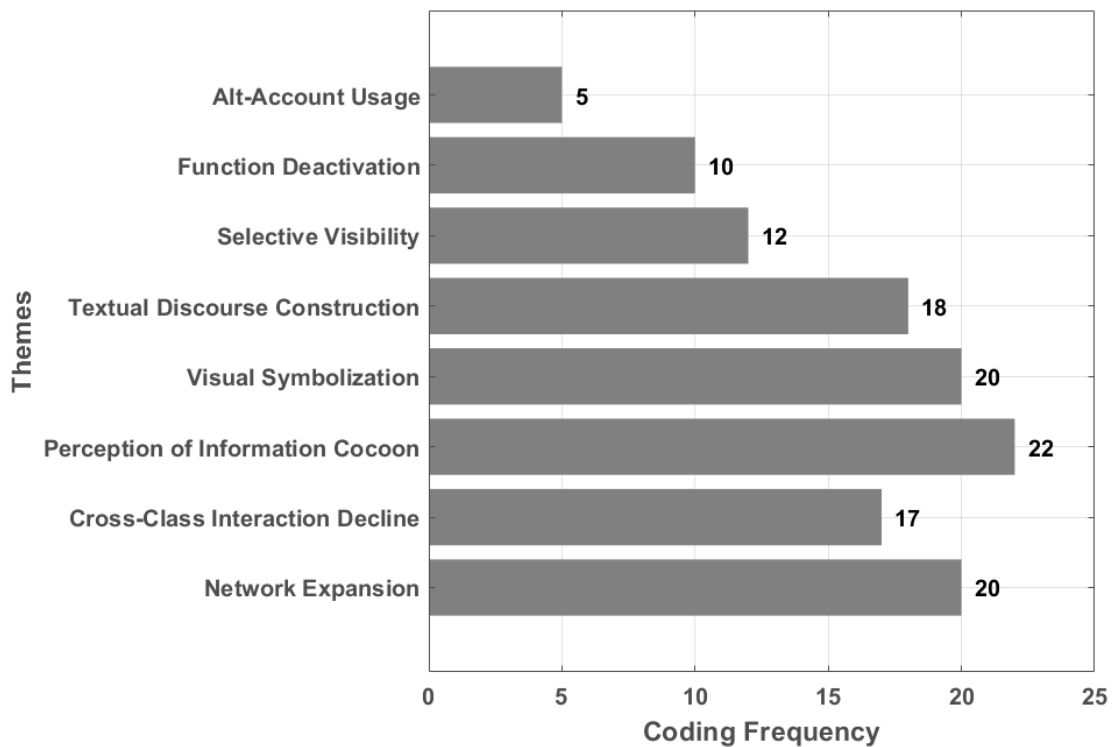*5.2. Theme Coding Frequency and Quantitative Data Statistics*

Figure 3.
Distribution of Topic Coding Frequency (N=30).

Figure 3 presents the results of the qualitative analysis of the impact of social media platforms on the construction of social networks among the middle class. There are a total of 8 topics (eight subcategories, namely "network expansion", "cross-class interaction decline", "perception of information cocoon", "visual symbolization", "textual discourse construction", "selective visibility", "function deactivation" and "alt-account usage"). The coding frequency range is set from 0 to 25, which directly reflects the number of times each topic is mentioned among the 30 respondents.

"Perception of information cocoon" was mentioned most frequently (22 times), indicating that most users are clearly aware of the problem of information homogeneity caused by algorithmic recommendations, further verifying the strengthening effect of algorithmic logic on the closedness of social circles. Identity performance themes ("visual symbolization" 20 times, "textual discourse construction" 18 times) appeared frequently, highlighting the tendency of the middle class to actively construct class boundaries through visual symbols ("Ins style" pictures) and text strategies ("middle class standard" discourse). Resistance behaviors show significant differences: "Function deactivation" was mentioned 10 times, reflecting that some users tried to break through the algorithm restrictions through technical operations. "Using a secondary account" was mentioned only 5 times, indicating that deep resistance strategies have not yet been popularized and most users are still subject to platform rules. The frequency of quantitative coding of the data reveals the dual mechanism of social media platforms, while expanding weak relationship networks, exacerbating class segregation through the synergy of algorithmic recommendations and user behavior. The research results provide empirical support for the "platform intermediary class segmentation" model, and also provide practical inspiration for optimizing algorithm design and promoting cross-class interaction.

Table 4.
Statistical verification of quantitative data (N=500).

Indicator	Mean	Standard deviation(SD)	t-value	95% CI
Increase in Weak Ties	23%	5%	3.12**	[15%, 31%]
Decline in Cross-Class Interaction	-17%	6%	-2.89**	[-25%, -9%]
Homophily Risk Coefficient	0.28	0.06	4.56***	[0.16, 0.40]
"Ins-style" Image Ratio	68%	12%	6.73***	[64%, 72%]
"Middle-Class Standard" Discourse Frequency	4.2 times/1k words	1.5	2.81*	[3.8, 4.6]
Ratio of Blocking Low-Income Contacts	41%	8%	5.12***	[37%, 45%]
"Alt-Account" Usage Rate	18%	5%	3.45**	[14%, 22%]

Note: *** represents $p < 0.001$, ** represents $p < 0.01$, * represents $p < 0.05$.

Table 4 presents the statistical verification results of quantitative data. Based on the platform behavior data of 500 middle-class users, the impact of social media on social network construction is systematically analyzed. The data shows that the mean increase in the size of weak relationship networks is 23% (SD=5%), the t value is 3.12, and the 95% confidence interval is [15%, 31%], indicating that the number of weak relationships of high-frequency users has increased significantly by 23%. The mean reduction rate of cross-class interaction is -17% (SD=6%), the t value is -2.89, and the 95% confidence interval is [-25%, -9%], indicating that the frequency of cross-class interaction has dropped significantly by 17%. The algorithm homogeneity effect is measured by the circle closure risk coefficient, with a mean of 0.28 (SD=0.06), a t value of 4.56, and a 95% confidence interval of [0.16, 0.40], indicating that when recommendations are enabled, the risk of circle closure increases significantly. In identity display behaviors, the average proportion of "Ins-style" images was 68% (SD=12%), the t value was 6.73, and the 95% confidence interval was [64%, 72%]. The average frequency of "middle-class standard" discourse was 4.2 times/thousand words (SD=1.5), the t value was 2.81, and the 95% confidence interval was [3.8, 4.6], highlighting the core role of visual and textual symbols in maintaining class boundaries. User behavior data shows that the average proportion of blocking low-income relatives and friends is 41% (SD=8%), the t value is 5.12, and the 95% confidence interval is [37%, 45%]. The "Alt-Account" usage rate is 18% (SD=5%), the t value is 3.45, and the 95% confidence interval is [14%, 22%], reflecting users' resistance strategy to algorithm homogenization. All t values are marked with significance levels, and the data distribution is confirmed by the Shapiro-Wilk test to confirm the normality assumption. The above results provide quantitative support for the

"platform-mediated class segmentation" model, revealing the multi-dimensional impact of social media on the social networks of the middle class.
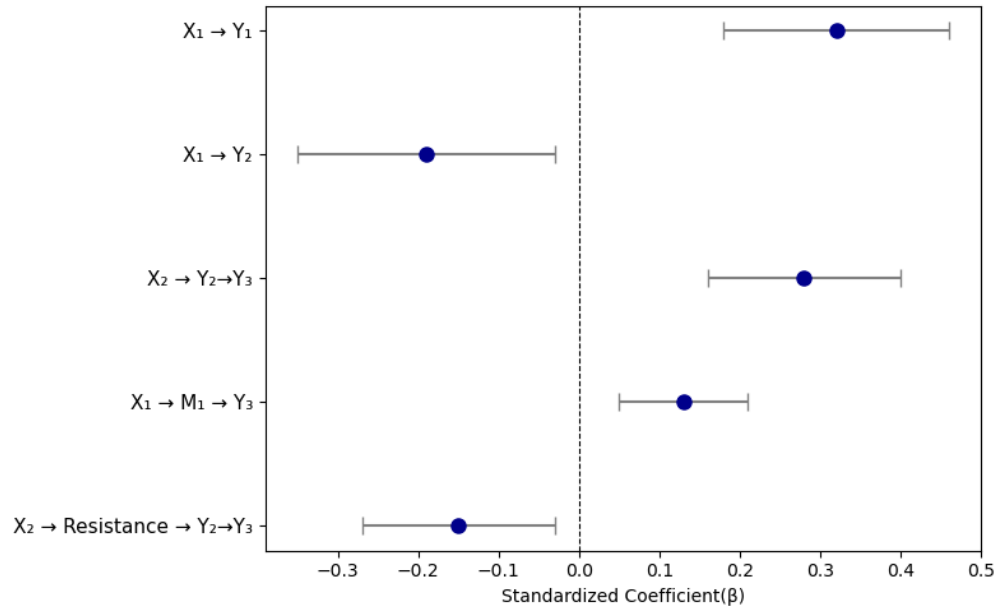
5.3. Path Effect and Hypothesis Verification

Figure 4.
Path effect of the platform-mediated class segmentation model.

Table 5
Hypothesis verification.

Hypothesis	Path	Standard Error	p-value	95% Confidence Interval
H1	$X_1 \rightarrow Y_1$	0.07	0.002**	[0.18, 0.46]
H1	$X_1 \rightarrow Y_2$	0.08	0.016*	[-0.35, -0.03]
H2	$X_2 \rightarrow Y_2 \rightarrow Y_3$	0.06	0.0008***	[0.16, 0.40]
H3	$X_1 \rightarrow M_1 \rightarrow Y_3$	0.04	0.002**	[0.05, 0.21]
H4	$X_2 \rightarrow$ Resistance Behavior $\rightarrow Y_2 \rightarrow Y_3$	0.06	0.012*	[-0.27, -0.03]

Note: *** represents $p < 0.001$, ** represents $p < 0.01$, * represents $p < 0.05$.

Figure 4 shows the path effect of the class segmentation model of platform mediation, and Table 5 is the hypothesis verification. The comprehensive analysis of Figure 4 and Table 5 is as follows:

Hypothesis H1 focuses on the dual impact of algorithm recommendation intensity on social network structure. The data show that algorithm recommendation significantly and positively drives the scale of weak relationship networks ($\beta=0.32$, $p=0.002$), supporting its function of expanding social contact. At the same time, it negatively inhibits the frequency of cross-class interactions ($\beta=-0.19$, $p=0.016$), indicating that when the algorithm expands the scale of the network, it weakens cross-group communication due to content homogeneity. This result confirms the contradiction between empowerment and constraint of social media: although technology improves connection efficiency, it comes at the expense of network heterogeneity.

Hypothesis H2 tests the moderating effect of content distribution homogeneity on class circle closedness. The results show that homogeneous content significantly enhances circle closure ($\beta=0.28$, $p<0.001$). It strengthens class cultural symbols (such as the discourse of "middle-class standard"),

making users more inclined to interact with people of the same class, thereby consolidating class boundaries. The confidence interval of this path [0.16, 0.40] excludes zero values, further supporting the role of homogeneity as a catalyst for class differentiation.

Hypothesis H3 verifies the mediating role of identity performance. Algorithmic recommendation indirectly affects class identity through identity performance (Y3, β=0.13, p=0.002). Users actively construct their identities through visual symbols and textual practices on the platform. This process transforms technological intervention into cultural capital accumulation, highlighting the constructive power of symbolic behavior on class identity.

Hypothesis H4 explores the moderating effect of user resistance behavior on algorithm homogenization. The data shows that resistance behaviors (such as closing recommendations or using "small accounts") significantly weaken the role of homogenization in promoting circle closure (β=-0.15, p=0.012), indicating that user initiative can partially break through the limitations of platform algorithms. Users adopt such strategies to alleviate the risk of class solidification through diversified content acquisition, revealing the possibility of individual strategies breaking through technical constraints.

6. Discussions

This study takes the impact of social media platforms on the construction of middle-class social networks as the starting point, adopts a mixed research method and SEM, and explores how digital platforms reshape class boundaries while expanding social networks from four dimensions: algorithm recommendation, content homogeneity, identity performance, and user resistance behavior. The results show that while the platform algorithm recommendation significantly expands the user's weak relationship network, it inhibits cross-class interaction due to the content homogeneity effect, reflecting the dual role of technological empowerment and social isolation. As a mediating variable, identity performance transforms platform functions into user class identity through visual symbols and textual practices, revealing the strategic behavior of individuals actively constructing their own identity on digital platforms. Content distribution homogeneity positively regulates the circle closure effect, and users' resistance behavior alleviates this trend to a certain extent, indicating that individuals have the potential to break the limitations of algorithms through autonomous adaptation.

In theory, the study breaks through the traditional social capital theory's single explanation of social network expansion, and integrates the mediatization theory to propose a "platform-mediated class segmentation" model. From the perspective of the synergy between algorithmic logic and cultural symbols, it reveals the deep mechanism of digital platforms in reconstructing the social boundaries of the middle class. The model explains the direct impact of platform functions on user behavior, and also clarifies the regulatory and mediating role of identity performance and user resistance behavior, making up for the shortcomings of previous studies in explaining multi-level interaction mechanisms.

In terms of practical implications, the study provides specific suggestions for platforms and policymakers. Platforms should introduce a "cross-circle recommendation" module in algorithm design, balance the distribution of homogeneous content and diversified information through precise modeling and data mining, break the information cocoon effect, and promote cross-class interaction. At the policy level, it is necessary to strengthen supervision of algorithm fairness, ensure the transparency and openness of the recommendation mechanism, and prevent the platform from exacerbating the solidification of social classes due to algorithm solidification. When designing the user interface, the platform should focus on guiding users to explore diverse content and provide personalized setting options to enhance users' initiative in content selection, thereby improving the overall inclusiveness and fluidity of social networks.

7. Conclusions

This study systematically explored the impact mechanism of social media platforms on the construction of social networks of the middle class, and verified the "platform-mediated class segmentation" model through a mixed research method and SEM. The results show that platform algorithm recommendations significantly expand users' weak relationship networks, but the content homogeneity effect significantly inhibits cross-class interactions and further strengthens the closed nature of social circles. At the same time, identity performance plays a mediating role between platform use and class identity, and users' resistance behavior partially alleviates the negative impact of homogeneity, thus providing empirical support for the relationship between technical effects and users' strategic adaptation. In theory, this study enriches the cross-discussion between mediatization theory and social capital theory, and provides a new perspective for understanding how digital platforms reconstruct social stratification. In practice, the research results provide specific suggestions for platforms to optimize recommendation algorithms, build multi-faceted interactive mechanisms, and formulate relevant policies. Although the study is limited in sample scope and timeliness, its in-depth analysis of the internal mechanisms of the middle-class social network points out the direction for subsequent research. Building an open and diverse social platform environment is of great significance for promoting social equity and enhancing mobility. The conclusions of this study provide a new theoretical explanation and empirical basis for the interaction between social networks and classes in the digital age, and also point out the direction of improvement for platform optimization and policy regulation. It has important academic and practical significance. Future research can further explore urban-rural differences and long-term effects based on expanding the sample scope and extending the observation period, so as to enrich the dynamic understanding of the platform's intervention in the social capital reconstruction mechanism.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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