



Exploring the Role of Digital Media in Social Interaction: A Study of Red Note's Impact on Community Building in Sichuan, China

Heling Wang and Doungtip Chareonrook

College of Communication Arts, Rangsit University, Pathum Thani, Thailand

*Corresponding author, E-mail: helingwang711@gmail.com

Abstract

This quantitative study examines how Red Note, a localized Chinese social media platform, shapes social interaction and community building among users in Sichuan, a province characterized by diverse urban and rural populations. The research aims (1) to investigate how the use of Red Note affects the characteristics of social interaction among individuals in Sichuan; and (2) to analyze the degree to which Red Note contributes to the formation and enhancement of community building within its user base. Data were collected through structured online questionnaires using voluntary response sampling from 400 active Red Note users in Sichuan. Descriptive statistics, Pearson's correlation, and multiple regression analyses were employed to examine the relationships among Red Note usage and engagement, the nature of social interactions, virtual community building, and social capital. The findings show moderate-to-high levels of platform usage, social interaction, and virtual community participation. Red Note usage and engagement are positively associated with more frequent and meaningful interactions ($r = 0.408$, $p < 0.001$), stronger virtual community building ($r = 0.414$, $p < 0.001$), and higher levels of trust, reciprocity, and supportive networks. Regression analyses confirm that usage significantly predicts social interaction quality and community-building outcomes. The study concludes that Red Note functions not only as a communication tool but also as a space for emotional support, collaborative networking, and the development of social capital. It recommends that platform developers enhance features that foster inclusive, trust-based interactions and that policymakers work to reduce the urban–rural digital divide so a wider range of users can benefit from such platforms.

Keywords: *Red Note, Social Interaction, Community Building, Social Capital, Sichuan, Virtual Communities, China*

1. Introduction

In the digital era, the concept of community building has undergone a substantial transformation. Communities are no longer defined solely by physical proximity or face-to-face interaction; instead, they increasingly emerge within virtual spaces where shared interests, identities, and communicative practices form the foundation of social bonds. Digital media platforms provide technological environments that enable individuals to interact, exchange information, and maintain relationships beyond geographical constraints, thereby reshaping traditional notions of social connection and belonging (Kaplan & Haenlein, 2010). Scholars have long debated whether digital media weakens social cohesion by encouraging fragmented and superficial ties or enhances collective life by fostering participation, trust, and sustained interaction. From a social capital perspective, digital platforms may either erode or strengthen communal bonds depending on how they support reciprocity, trust, and network formation (Bourdieu, 1986; Putnam, 2000). Early work on virtual communities further emphasizes that online interaction can cultivate meaningful social relationships and collective identity when users engage around shared interests and common purposes (Rheingold, 2000).

Within the sociocultural context of Sichuan, these dynamics are particularly relevant. Rapid urbanization, labor migration, and changing lifestyles have disrupted traditional community structures that were historically grounded in locality and kinship. As a result, individuals increasingly rely on digital media to maintain social ties, express cultural identity, and experience a sense of belonging. Digital platforms such as Red Note may therefore play a critical role in sustaining social interaction and facilitating community building by providing spaces for everyday communication, shared participation, and cultural expression. This

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function is especially significant for users living in rural or remote areas, where opportunities for offline interaction are limited, and digital platforms serve as primary channels for social connection and community engagement.

Despite the growing popularity and social influence of Red Note, existing academic research has largely focused on nationally dominant platforms such as WeChat and Douyin, leaving regionally embedded platforms underexplored. Consequently, there remains limited empirical evidence on how localized digital media platforms shape patterns of social interaction and contribute to community building within specific sociocultural contexts. This gap in the literature restricts our understanding of how digital media operates at the regional level to support social cohesion, collective identity, and the accumulation of social capital. Addressing this limitation, the present study examines Red Note's role in fostering social interaction, virtual community formation, and social capital among users in Sichuan, offering a more nuanced perspective on digital community development beyond widely studied platforms.

Accordingly, the overall aim of this study is to analyze how the use of Red Note as a digital media platform influences the characteristics of social interaction and contributes to the formation and enhancement of community ties among its users in Sichuan, China. Drawing on social interaction theory, community building theory, and social capital theory, this research conceptualizes Red Note usage as a key independent variable that shapes interaction frequency, engagement quality, community participation, and trust-based relationships. By integrating these theoretical perspectives, the study seeks to provide a comprehensive understanding of how localized digital platforms support community building and social cohesion in contemporary Chinese society.

2. Objectives

The objectives of this study are:

- 1) To investigate how the utilization of Red Note, a digital media platform, affects the characteristics of social interaction among individuals in Sichuan, China.
- 2) To analyze the degree to which Red Note contributes to the formation and enhancement of community building processes among its user base in Sichuan, China.

To support the study objectives, this research is grounded in established theories of digital media, social interaction, and community formation. Digital media platforms are widely conceptualized as socio-technical systems that shape how individuals communicate, form relationships, and participate in collective activities (Kaplan & Haenlein, 2010). Drawing on Social Interaction Theory, repeated and meaningful interactions facilitated by platform features such as commenting, sharing, and real-time engagement are expected to influence the frequency, depth, and perceived quality of social interactions among users (Goffman, 1959). In addition, Community Building Theory suggests that sustained interaction and shared interests foster a sense of belonging and collective identity within virtual environments (McMillan & Chavis, 1986), while Social Capital Theory explains how these interactions generate trust, reciprocity, and access to social resources through networked relationships (Putnam, 2000). Furthermore, Networked Individualism Theory highlights how digital platforms support flexible, interconnected networks that allow individuals to maintain multiple social ties simultaneously (Wellman et al., 2003). Guided by these perspectives, this study conceptualizes Red Note as a content-driven and interaction-oriented platform through which user engagement functions as the independent variable, influencing three interrelated outcomes: characteristics of social interaction, community building, and social capital. Sustained engagement with Red Note is therefore expected to enhance social exchange, strengthen communal ties, and support network-based relationships, forming the basis for the hypotheses tested in this study.

Based on this conceptual reasoning, this study formulates specific hypotheses to empirically test these relationships.

H1: The use of Red Note positively affects the frequency and quality of social interactions among individuals in Sichuan.



H2: The use of Red Note contributes to the creation and strengthening of virtual communities in Sichuan.

H3: The use of Red Note enhances social capital by fostering stronger networks of trust, reciprocity, and support among individuals in Sichuan.

These hypotheses focus on the key areas of social interaction, community building, and the development of social capital in Sichuan, driven by the use of Red Note as a digital platform.

3. Materials and Methods

3.1 Research Design

This study employed a quantitative survey research design to systematically examine the relationships between digital media use and social outcomes within a specific regional context. A structured online questionnaire was developed as the primary data collection instrument, allowing for the standardized measurement of key variables across a large number of respondents. The questionnaire was designed to capture four main constructs: Red Note usage and engagement, the nature of social interactions facilitated by the platform, virtual community building, and the development of social capital among users in Sichuan, China.

The use of a quantitative approach enabled the study to identify patterns, strengths, and directions of relationships among these constructs in a measurable and replicable manner. By employing an online survey format, the research ensured accessibility and efficiency in reaching Red Note users across diverse geographic areas within Sichuan. The collected data were analyzed using both descriptive and inferential statistical techniques. Descriptive statistics summarized user characteristics and usage patterns, while inferential statistics, including Pearson's correlation and multiple regression analysis, were applied to test the hypothesized relationships among variables. This analytical design allowed for an examination of both the associations and predictive effects of Red Note usage on social interaction characteristics, community building processes, and social capital formation.

3.2 Population and Sample

For this study, the population consisted of individuals residing in Sechuan, China, who actively used the Red Note platform. Given that Sechuan is one of the largest provinces in China, with a population of approximately 83 million people (National Bureau of Statistics of China, 2023), it offered a diverse sample of urban and rural users. This diversity was crucial as it allowed for an exploration of how Red Note's impact on social interactions differed between various socio-economic and geographical contexts within the province. The study specifically focused on individuals who used the platform regularly, ensuring that the sample represented active users who were likely to have meaningful experiences to share regarding the effects of Red Note on their social interactions and community engagement. The sample size was determined to ensure statistical power, taking into account the need for a representative group that reflected the varying demographic characteristics of Sichuan's population.

For this study, the sample consisted of individuals residing in the province who were active users of the platform. Given Sichuan's large and diverse population of approximately 83 million people (National Bureau of Statistics of China, 2023), the sample needed to be representative of both urban and rural users to ensure that the findings reflected the various socio-economic and geographical contexts within the province. This diversity was crucial for understanding how the platform influenced social interactions across different community settings.

To calculate the sample size using the Taro Yamane formula with a 5% margin of error and a 95% confidence level, the following formula was used. The calculation result was 399.99. Thus, the sample size needed is approximately 400 samples.

3.3 Sampling

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For this study, a voluntary response sampling method was employed through online platforms. Volunteer sampling is a non-probability sampling technique in which participants self-select to participate in the research. This approach was considered appropriate because the study focuses on individuals who are already familiar with and actively engaged in the use of Red Note. Since the purpose of the study is to examine how Red Note influences social interaction and community building, it was essential to collect data from users with direct experience of the platform.

Participants were recruited through online channels where Red Note users were likely to be active, including social media platforms, online discussion groups, and direct communication within the Red Note platform. Invitations to participate were distributed via these channels and included information regarding the purpose of the study, research objectives, eligibility requirements, and participation procedures. The voluntary nature of the recruitment process encouraged participation from individuals who were genuinely interested in the topic, thereby increasing the likelihood of obtaining relevant and meaningful responses.

To ensure that only appropriate and relevant participants were included in the study, a set of screening criteria was applied prior to data collection. The eligibility criteria were as follows.

1) Participants were required to be active users who use Red Note on a regular basis. This criterion ensured that respondents had sufficient interaction with the regularly platform to provide meaningful insights into social interaction and community-building processes.

2) Participants were required to have used Red Note for a minimum period of six months prior to participating in the study. This requirement was included to ensure that respondents had adequate exposure to the platform's features, interaction mechanisms, and community environment.

3) Participants had to reside in Sichuan, China. This criterion ensured that the findings reflected the specific sociocultural context of the region and aligned with the focus of the study.

4) Participants were required to be at least 18 years of age or older to ensure their ability to provide informed consent and fully understand the objectives of the study.

5) All participants were required to acknowledge their voluntary participation and provide informed consent for the use of their responses for research purposes, in accordance with established ethical research standards.

Therefore, the study ensured that the sample was composed of individuals who were most relevant to the research question. Although volunteer sampling can introduce biases—such as the possibility that individuals who volunteered might differ from non-volunteers in terms of their engagement with the platform or willingness to participate—the use of screening criteria helped minimize irrelevant responses and ensured the sample accurately reflected the target population of active Red Note users in Sichuan.

3.4 Research Instrument

The questionnaire consisted of four main parts:

1) Demographic information (gender, age, education level, occupation, and location).

2) Red Note usage and engagement, including frequency and duration of use and types of engagement such as content posting, commenting, live streaming, and e-commerce interactions.

3) The nature of social interactions, covering frequency, depth, emotional quality, trust, and comfort during interactions on Red Note.

4) Virtual community building and social capital, including sense of belonging, inclusivity, participation in group activities, trust, reciprocity, and supportive networks within Red Note communities.

Items were measured on a Likert-type scale (e.g., from strongly disagree to strongly agree). Reliability and validity were assessed through pilot testing and internal consistency analysis; all scales showed acceptable reliability, supporting their use in further analysis.

3.5 Data Collection and Analysis

Data collection was conducted online using a self-administered questionnaire distributed through Red Note-related channels and social networks in Sichuan. Participation was voluntary and anonymous.

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To analyze the data collected, this study employed both descriptive and inferential statistical techniques. Descriptive statistics summarized the basic characteristics of the sample and provided an overview of response patterns. Measures such as frequency distributions, means, and standard deviations were applied to describe demographic characteristics, levels of Red Note usage, patterns of social interaction, and the extent of virtual community formation among respondents.

To interpret the mean scores derived from Likert-scale items, a five-level criterion of agreement was applied. Mean values ranging from 4.21 to 5.00 represented the highest level of agreement, 3.41 to 4.20 indicated a high level, 2.61 to 3.40 reflected a medium level, 1.81 to 2.60 signified a low level, and 1.00 to 1.80 represented a very low level of agreement. These criteria were used consistently to interpret average scores for individual items and for overall constructs when presenting the research findings.

Inferential statistical analysis was conducted to examine relationships among variables and test the study's hypotheses. Pearson's correlation coefficient was used to assess the strength and direction of relationships between Red Note usage and key dependent variables, including social interaction, virtual community building, and social capital. Multiple regression analysis was further employed to examine the predictive influence of Red Note engagement, including interaction with different platform features such as text-based content, images, and live-streaming, on social behavior and community-related outcomes, thereby supporting the testing of hypotheses H1, H2, and H3.

In addition, One-way Analysis of Variance (ANOVA) was utilized to determine whether significant differences existed in social interaction, community building, and social capital across different levels of Red Note engagement, such as frequent versus occasional users. The Chi-square test of independence was also applied to examine relationships between categorical variables, including demographic characteristics and patterns of virtual community participation or trust-based networks. Overall, the combined use of descriptive and inferential statistical methods enabled a comprehensive and rigorous analysis of how Red Note influences social interaction and community building among users in Sichuan, China.

4. Results and Discussion

4.1 Results

The following detail is a comprehensive summary of the research results categorized by each objective of the study. It outlines the results obtained from both descriptive and inferential statistical analyses—specifically correlation and multiple regression techniques—that were employed to test the study's hypotheses and address its research questions. The conclusions provide evidence of the role Red Note plays in influencing social interaction, virtual community engagement, and social capital among users in Sichuan, thereby offering insights into the broader impact of digital media on community development in contemporary Chinese society.

Objectives 1 : To investigate how the use of Red Note, a digital media platform, affects the characteristics of social interaction among individuals in Sichuan, China.

The results from both descriptive and inferential analyses provide strong support Objective 1. Descriptive statistics indicate a high average level of engagement with Red Note (mean = 3.85), particularly in areas such as content sharing, live streaming, and connecting with like-minded individuals. Similarly, users reported high levels of social interaction (mean = 3.82), characterized by frequent, meaningful exchanges and the development of trust and interpersonal comfort. Pearson's correlation analysis revealed a significant moderate positive relationship between Red Note Usage and Engagement and the Nature of Social Interactions ($r = 0.408$, $p < 0.001$), confirming that users who are more active on the platform experience more frequent and deeper social connections. Regression analysis further validated this relationship, showing that Red Note Usage and Engagement significantly predict the quality and frequency of social interaction ($\beta = 0.408$, $p < 0.001$). These results confirm that Red Note serves not only as a communication tool but also as a facilitator of emotionally resonant and socially meaningful digital interactions among users in Sichuan, thus fulfilling the first research objective.

Objectives 2 : To analyze the degree to which Red Note contributes to the formation and enhancement of community building within its user base in Sichuan, China.

The study's results also strongly support Objective 2. Descriptive analysis showed that participants perceived a high level of virtual community building (mean = 3.66), with particularly high agreement in areas such as inclusivity,

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sense of belonging, collaborative engagement, and strengthened ties to both local and global communities. Correlation analysis demonstrated a moderate and statistically significant relationship between Red Note Usage and Virtual Community Building ($r = 0.414$, $p < 0.001$), suggesting that increased interaction with the platform is associated with a greater sense of community involvement. Regression analysis confirmed this pattern, showing that Red Note Usage and Engagement significantly predict virtual community building outcomes ($\beta = 0.414$, $p < 0.001$). Furthermore, the high levels of agreement on survey items related to trust, group activity, and shared learning within communities suggest that Red Note is an effective medium for fostering digital communities that mirror real-world social cohesion. Collectively, these findings validate the second research objective by demonstrating the platform's role in enabling users to form, sustain, and deepen community relationships online.

For hypothesis testing results, it was found that the regression analyses conducted in this study provide substantial evidence of the relationships between Red Note usage and its impact on key dimensions of social interaction, virtual community building, and social capital among individuals in Sichuan. All three hypotheses were supported by statistically significant results, confirming the platform's influential role in shaping digital social behavior and enhancing community dynamics within the region.

H1: The use of Red Note positively affects the frequency and quality of social interactions among individuals in Sichuan.

This hypothesis is accepted based on both the correlation and regression results, which collectively demonstrate a statistically significant and positive relationship between the usage of Red Note and the enhancement of social interactions. The Pearson correlation coefficient ($r = 0.408$, $p < 0.001$) indicates a moderately strong association, suggesting that individuals who interact more frequently with Red Note experience higher levels of social engagement, including more frequent, meaningful, and consistent communication with others.

The multiple regression analysis further corroborates these findings, with a standardized coefficient (β) of 0.408 and a non-standardized coefficient (B) of 0.411. The t-value of 8.908 and a p-value below 0.001 confirm that this effect is statistically significant and unlikely to be due to chance. The Durbin-Watson statistic ($D-W = 2.071$) further affirms the reliability of the regression model, indicating no autocorrelation in the residuals and therefore strengthening the credibility of the results.

In practical terms, this implies that Red Note serves as an effective platform that enables users to expand and enrich their interpersonal communication. The nature of interaction on Red Note—characterized by personalized messages, real-time feedback, and multimedia content—facilitates relational depth, emotional expression, and social presence. These features support the platform's role as a digital environment that nurtures interpersonal intimacy, which is essential to modern social interaction theory. Empirical evidence confirms that Red Note is more than a passive communication tool; it functions as a dynamic facilitator of relational engagement in the digital age.

H2: The use of Red Note contributes to the creation and strengthening of virtual communities in Sichuan.

This hypothesis is also accepted as supported by both correlation ($r = 0.414$, $p < 0.001$) and regression analysis results ($\beta = 0.414$, $B = 0.418$, $t = 9.078$, $p < 0.001$), which indicate a statistically significant positive relationship between Red Note usage and the formation of virtual communities. Users who are more actively involved with the platform are more likely to join and participate in online communities centered around shared interests, regional identity, or mutual goals.

The Durbin-Watson value of 1.679, although slightly lower than ideal, still falls within an acceptable range and does not indicate problematic autocorrelation. This enhances the robustness of the regression model. The consistency between the correlation and regression findings emphasizes the reliability of the association between Red Note engagement and digital community building.

Conceptually, the results affirm that Red Note facilitates not only one-on-one communication but also fosters collective identity and participatory culture. These virtual communities are not merely transactional; they provide spaces for knowledge-sharing, emotional support, civic dialogue, and collaboration. This aligns with theories of digital community development, where social media platforms are positioned as enablers of “networked publics” and digitally mediated communities. The sense of inclusion, belonging, and shared purpose that emerges within these Red Note communities strengthens the social fabric of users in Sichuan and demonstrates the platform's tangible role in fostering digital community resilience.



H3: Red Note enhances social connectivity among international users from diverse cultural backgrounds by fostering communication, community building, and social interactions across borders.

This hypothesis is accepted based on compelling statistical evidence from both correlation ($r = 0.406$, $p < 0.001$) and regression analysis ($\beta = 0.406$, $B = 0.405$, $t = 8.867$, $p < 0.001$). These results affirm that frequent usage and engagement with Red Note are significantly associated with increased levels of perceived trust, mutual support, and access to valuable social resources among users—key components of social capital.

The model's reliability is further supported by a Durbin-Watson statistic of 1.917, indicating no problematic autocorrelation. The absence of multicollinearity ($VIF = 1.000$) enhances the interpretability of the regression coefficients. The strength of this relationship—moderate yet highly significant—indicates that Red Note serves as a digital platform where users can build not only networks but also meaningful and mutually beneficial social ties.

In theoretical terms, social capital refers to the resources embedded within social networks, which individuals can mobilize for support, advice, and opportunities. Red Note appears to function as a facilitator of both bonding and bridging social capital: bonding among close-knit peers and bridging across diverse groups. Features like comment threads, group discussions, and private messaging enable repeated interactions that build familiarity, trust, and emotional support. Although some respondents rated instrumental outcomes, such as new opportunities, at a moderate level, affective dimensions—such as emotional connection, reliability of support, and sense of community—emerged as clearly strengthened through platform usage. These findings reaffirm the growing scholarly consensus that social media can serve as infrastructure for the accumulation and exchange of social capital.

In conclusion, the hypothesis testing results provide strong empirical evidence that the use of Red Note significantly enhances users' social experiences in Sichuan. All three hypotheses—relating to social interaction, virtual community formation, and social capital—were statistically supported through both correlation and regression analyses. These results validate the theoretical premise that digital media platforms can meaningfully influence human connectivity by fostering deeper interpersonal relationships, stronger communal ties, and higher levels of trust within online environments. The consistent strength and significance of the results across all tested models underscore Red Note's critical role as a digital catalyst for building social structures in contemporary Chinese context.

5. Conclusion

This study demonstrates that localized digital platforms can play a measurable role in shaping both interpersonal interactions and community development within a specific regional context. Drawing on survey data from 400 active Red Note users in Sichuan, the findings indicate moderate-to-high levels of platform engagement and confirm that higher usage is consistently associated with stronger social outcomes. In particular, Red Note usage and engagement showed statistically significant, moderate positive relationships with the nature of social interactions ($r = 0.408$, $p < 0.001$) and virtual community building ($r = 0.414$, $p < 0.001$), and regression results further support that platform use significantly predicts interaction quality and community-related outcomes. Together, these results suggest that Red Note operates not only as a channel for information exchange but also as a social space that supports emotionally meaningful communication, participation in interest-based communities, and the development of trust, reciprocity, and supportive networks that constitute social capital. Practically, the study highlights the importance of designing platform features that encourage inclusive and trust-based participation, while also underscoring the need for policy efforts to reduce the urban–rural digital divide so that a wider range of users can benefit from digital community-building opportunities. Finally, future research could strengthen these conclusions by using longitudinal designs, probability-based sampling, and comparative analyses across provinces or platforms to clarify causal mechanisms and regional differences in digital community formation.

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