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How to achieve effective management of network communities? Absence of governance mechanisms, psychological contract breaches, and user behaviors

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Author contributions

All authors conceived and conducted the studies, analyzed the data, wrote the manuscript, and approved the final version of the manuscript for submission.

Conflict of interest

We declare that we have no conflict of interest.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Ethics statement

All procedures conducted in this study were in accordance with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Abstract

Maintaining the vitality of online communities necessitates robust governance mechanisms. Drawing upon the perspective of psychological contract breach, this study investigates the impact of absent governance mechanisms on user behavior. The findings reveal that the absence of accountability mechanisms, relational norms, and incentive systems triggers transactional psychological contract breaches. Conversely, the lack of relational norms, incentives, and network routines induces relational psychological contract breaches. Furthermore, both transactional and relational breaches drive user quitting behavior, whereas relational breaches specifically elicit negative word-of-mouth, lurking, and posting behaviors. Mediation analysis demonstrates that psychological contract breaches partially mediate the relationship between the absence of governance mechanisms and user behaviors. Additionally, tie strength is found to partially moderate this relationship. Ultimately, this study advances the understanding of multi-dimensional governance in online communities, offering actionable implications for effective community management.

Keywords Network community, Absence of governance mechanisms, Psychological contract breach, Negative user behaviors, Continuous user behaviors

Paper type Research paper

Introduction

Network communities, stemming from the confluence of market economies, consumerist culture, and mass media, play a pivotal role in fostering connections among individuals (i.e., community users) who share common interests (Zheng et al., 2022). For an online community to work well, it requires the user's active engagement. However, how online communities are managed is a critical factor in user engagement. For example, inadequate management can result in a loss of community vitality, leading to online lurking, negative word-of-mouth, or user quitting behaviors (Akrout & Nagy, 2018; Baker et al., 2016).

Unlike real-world social organizations, network communities lack clear employment relationships, giving users considerable freedom in joining or leaving (Zhou et al., 2013). Furthermore, when users join network communities, they encounter a lack of clear contracts, making it difficult to standardize user rights and obligations and formulate effective governance schemes, thereby increasing the risk of psychological contract breaches (Valck, 2007).

Notably, recognizing differences in governance mechanisms across network communities is crucial when assessing the impact of different forms of lack of governance mechanism on psychological contract breaches, which aids in effective operational management. This study focused on the complicated governance issues in the development of online communities and investigated how to promote the better operation of online communities.

In the current study, we categorized the absence of governance mechanisms into the absence of an accountability mechanism, the absence of relational norms, the absence of an incentive mechanism, and the absence of a network routine (cf. Chi et al., 2022). The forms of psychological contract breaches between users and network communities were classified into transactional and relational psychological contract breaches (cf. Chih, 2017; Hussain et al., 2021). Based on the stimulus-organism-response (S-O-R) theory, this study empirically investigated the influence of the absence of governance mechanisms of network communities on user behaviors (e.g., online lurking, quitting behaviors) through psychological contract breaches, and further, verified the moderation effect of tie strength in the mediation model.

Theoretical Background

Governance mechanism in network communities

The advent of online media has posed significant challenges to the management of social relationships, and

successful community functioning and management rely on effective governance mechanisms. Governance in network communities is centered around constructing mechanisms to protect interests of users and community, reduce opportunism, maintain user autonomy, and facilitate user self-extension (Chi et al., 2020). A robust community governance mechanism is essential for maintaining the implicit contract between a community and its users (Yang et al., 2017). Conversely, the absence of governance mechanisms can lead to breaches of implicit contracts within a network community (Li & Salomo, 2013).

Governance mechanisms are key to the effective management of online communities. Researchers have proposed different forms of community governance. De Laat (2007) categorized governance mechanisms in network communities into spontaneous, internal, and external governance; and Gu et al. (2019) classified governance mechanisms into open and restrictive governance mechanisms; and more rigorously and formally, Chi et al. (2002) classified the mechanisms into accountability mechanism, relationship norms, community incentives as well as network routines. Despite the different forms of governance mechanisms proposed by previous studies, these studies are consistent in showing that a community's governance mechanisms play a key role in user participation. Notably, different forms of governance mechanisms serve different functions in managing online communities, and an efficient online community requires multidimensional governance mechanisms.

Accountability mechanism. In an increasingly complex online environment, a formal and standardized accountability mechanism becomes an effective tool for managing network communities (Blohm et al., 2018). Community leaders and builders play a significant role in shaping and developing the accountability mechanism, which clarifies the powers and responsibilities between leaders and users. It oversees the implementation of management standards, daily operation strategies, and codes of conduct. User behavior in a network community is influenced by their needs and purposes for joining the community (Spaulding, 2010). Leaders need to listen to and respond to community user demands (Barger et al., 2016), which can uphold the uses' rights and obligations, thereby strengthening community management.

Relationship norms. Relationship norms refer to a powerful yet subtle form of control over human behaviors (Bettenhausen & Murnighan, 1985). Network communities, with their anonymity and extensity, provide conveniences for user communications while posing challenges and threats to relationship governance. Although the accountability mechanism is a powerful means of community management, it cannot predict the ever-changing community

environment. Relationship norms prompt community users to control and resist uncertainties in the external environment through interaction and implicit norms. While relationship norms function as informal governance measures, users generally tend to follow them, making relational norms more normatively influential compared to formal controls (Burnett & Bonnici, 2003). Disruption of relationship norms within a community has been shown to not only reduce an individual's sharing desires, sense of identification, and sense of belonging but also affect their evaluations of relevant brands (Sánchez-Franco & Roldán, 2015).

Incentive mechanism. Network communities serve as important information access channels for users, and a key way to sustain the long-term vitality of these communities is to establish a reasonable incentive mechanism that motivates users to continuously provide information resources (Li et al., 2019). The incentive mechanism in a community mainly includes material incentives and spiritual incentives (Zhou et al., 2022). Material incentives, such as coupons and gifts, satisfy users' expectations of economic returns, while spiritual incentives include reputation evaluations, extra privileges, and social status, representing a form of authority and group identity (Zhou et al., 2022). Therefore, the incentive mechanism serves as a return for users' contributions and recognition of their identity (Dong et al., 2020). In social exchange relationships, community users invest "costs" (e.g., time and knowledge) and they would also like to receive corresponding "returns". A well-functioning incentive mechanism in a community enhances the participation of community users, while its absence hinders user engagement, thereby diminishing users' contributions to the community (Braun et al., 2016).

Network routine. Network community users establish informal network routines through shared languages, values, and behaviors during interaction (Gu et al., 2019). Due to different backgrounds and personal characteristics, community users exhibit significantly varying levels of participation (Ozuem et al., 2021). Informal network routines aid in forming homogeneous user groups, enhancing identification with a network community, and facilitating continuous refinement of these routines. Consistent network routines can promote user interaction and communication, prevent network isolation and exclusion, and expedite the integration of users into a network community (Cazier et al., 2006). As an informal constraint, network routines coordinate and maintain the efficient operation of a network community, enable effective interaction among community users, and ultimately promote the vitality of the network community (Tang et al., 2018).

Psychological contract breach and users' behaviors

A psychological contract breach is essentially user's cognitive evaluation and subjective perception that a network community has not adequately fulfilled its obligations and promises (Morrison & Robinson, 1997; Topa et al., 2022). Because network communities lack the normative control of written contracts, the engagement of users' activities rely on their psychological contract on community (i.e., beliefs of a reciprocal exchange agreement between them and community; Rémi Jardat & Rozario, 1998; Robinson, 1996; Rousseau, 1996). When community users perceive that the community is not fulfilling its promises and obligations, they experience a psychological contract breach (Zhao et al., 2022). It has been demonstrated that a psychological contract breach can reduce users' identification with a community (Restubog et al., 2008), diminish their sense of trust and lead to indifference (Montgomery et al., 2018), online lurking (Preece et al., 2004), quitting and leaving behaviors (Farrell, 1983).

Notably, there are two different types of psychological contract: transactional and relational psychological contracts (Yu et al., 2023). Users with a transactional psychological contract who find that their benefits fall short of expectations may terminate transactions with the network community, resulting in a transactional psychological contract breach. On the other hand, users with a relational psychological contract who invest time and other costs in community interactions but do not receive the expected relational experience may withdraw their emotional attachment to the community, causing a relational psychological contract breach. Taken together, the negative user behaviors were induced after a psychological contract breach. In this research, we focused on users' negative behaviors (i.e., creating negative word-of-mouth, quitting behaviors) and subsequent engagement behaviors (i.e., lurking behaviors, posting behaviors) and examined the effect of both types of psychological contract breach on these users' behaviors.

Tie strength of users and network communities

Tie strength involves users' emotional attachment, trust, and reciprocal relationships with network communities (Granovetter, 1973). Network communities consist of numerous nodes, with users and communities having different tie strengths influencing information communication, emotional exchange, and other aspects (Ketelaar et al., 2016). Strong ties involve high emotional intensity, frequent contact, and long-term participation of users in a network community, while weak ties refer to low emotional intensity, infrequent contact, and low participation of users. Building on this classification, the current study further examined the impact of the absence of governance mechanisms on outcome variables (e.g., psychological contract breach, user behaviors) under different levels of tie

strength.

Research Hypothesis

This study considers a psychological contract breach as a user's comprehensive perception following the absence of community governance mechanisms, influencing subsequent negative behaviors towards a network community. The conceptual model comprises the absence of the governance mechanism of a network community as the independent variable, psychological contract breach as the mediating variable, and negative behaviors and subsequent user participation as dependent variables. Given the different sunk costs (e.g., emotions and time) that users invest in a network community, the strength of the tie formed between users and the network community is also different. Therefore, this study incorporates tie strength as a moderating variable in the research model, as shown in Figure 1.

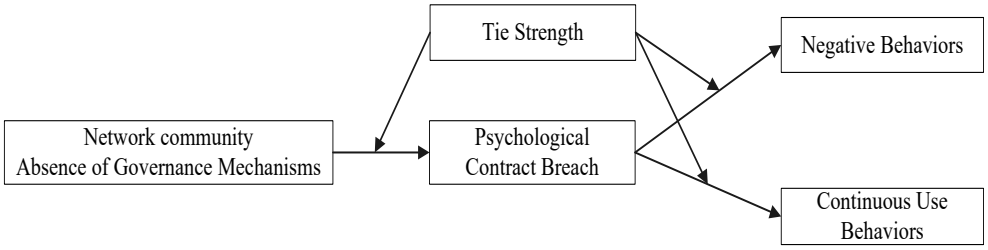


Figure 1. Research model

Impacts of governance mechanism absence on psychological contract breach

There are two types of psychological contracts: transactional and relational psychological contract, with the former formed in the short term and the latter formed over the long term. These psychological contracts signify not only transactional relationships and emotional bonds between parties but also the obligations one party owes to another (Chen et al., 2022). Violating commitments or obligations specified in such contracts leads to a contract breach (Zhan et al., 2017). Users join network communities for various purposes, acquiring social interaction, information, entertainment, and other valuable information from the communities (Zaglia, 2013). Additionally, users invest time and money by purchasing memberships and unlocking premium services on community platforms. Therefore, the absence of governance mechanisms, such as accountability mechanisms, relationship norms, incentive mechanisms, and network routines in a network community, can induce a transactional psychological contract breach of users.

H1a: The absence of a governance mechanism of a network community (accountability mechanism, relationship norms, incentive mechanism, and network routine) would induce a transactional psychological contract breach of users.

On the other hand, long-term use of a particular network community fosters an emotional bond, leading to a relational psychological contract between users and the community. As previously mentioned, there is a reciprocal expectation between the network community and users: Community leaders expect community operations through users, while the users expect the community to provide an environment conducive to realizing their self-interests (Zhao et al., 2019). As an information exchange platform, a good network community environment enhances relationship maintenance between users (Zhao et al., 2013). Drawing from social exchange theory (Homans, 1958), when users perceive that a network community provides a good governance mechanism, they maintain a long-term reciprocal relationship with the platform. Conversely, when users perceive the absence of a governance mechanism in the network community, a relational psychological contract breach occurs.

H1b: The absence of a governance mechanism of a network community (accountability mechanism, relationship norms, incentive mechanism, and network routine) would induce a relational psychological contract breach of users.

Impacts of psychological contract breaches on users' behaviors and participations

A psychological contract breach is a state of exchange imbalance, which may induce users' negative responses and attitudes (Zhao et al., 2007). For example, when consumers perceive a psychological contract breach, they showed lower level of purchase intentions (Malhotra et al., 2017) and create more negative word-of-mouth about communities (Chih et al., 2017). Therefore, in the context of network communities, a psychological contract breach can influence users' behaviors.

H2a: A transactional psychological contract breach would induce negative word-of-mouth and quitting behaviors among users.

H2b: A relational psychological contract breach would induce negative word-of-mouth and quitting behaviors among users.

In addition to negative word-of-mouth and quitting behaviors, users undergoing a psychological contract breach may also alter their subsequent participation behaviors. Negative behavior, stemming from an imbalance in the exchange and expressing dissatisfaction, may coexist with civic behaviors among community users (Balmer et al.,

2011). For example, following a psychological contract breach, users may contribute relevant information and feedback to the network community through posting behaviors. Moreover, a psychological contract breach may lead to decreased user loyalty (Montgomery et al., 2018) and prompt users to lurk in the network community (Preece et al., 2004).

H3a: A transactional psychological contract breach would induce online lurking and posting behaviors among users.

H3b: A relational psychological contract breach would induce online lurking and posting behaviors among users.

Mediating role of psychological contract breach

According to social exchange theory, the exchange of resources within communities is a mutually beneficial process (Homans, 1958). An imbalance between a user's investment and return in a network community can result in exchange failure, eliciting strong negative responses from users (Siegrist, 1999). The psychological contract of a network community reflects users' psychological perception of whether the community has fulfilled its obligations and responsibilities (Rousseau, 2001). Once perceiving a shortfall in the community meeting its obligations and responsibilities, a psychological contract breach occurs. As previously indicated, the absence of a community governance mechanism can trigger a psychological contract breach, subsequently reducing users' organizational identification and trust (Restubog et al., 2008). This leads to negative behaviors and influences the subsequent participation of users (Montgomery et al., 2018).

H4: A psychological contract breach would play a mediating role between the absence of a governance mechanism and the users' negative behaviors and subsequent participations.

Moderating role of tie strength

Tie strength indicates the intensity of the relationships between individuals and a network community and other community users, which plays a positive role in promoting information exchange, environment perception, and resource exchange (Phua et al., 2017). Research has demonstrated that tie strength influences the information-processing methods of individuals (Chang & Pham, 2018). When tie strength is high, users perceive a relatively close psychological distance to the community, enhancing attachment to the emotional bond (Phua et al., 2017). Meanwhile, individuals' attachment or identification with the community varies with tie strength. Specifically, individuals with high tie strength have a higher sense of group identification and attachment to the community than those with low tie

strength. Therefore, users who are deeply engaged in the network community for a long time have a relatively more robust relational psychological contract. In the absence of a governance mechanism, users with higher tie strengths are more likely to exhibit a tolerant attitude and less likely to experience a psychological contract breach.

H5: Tie strength would have a moderating effect on the mediating path. Specifically, tie strength would moderate the path that absence of governance mechanism → psychological contract breach (relational, transactional) → negative behaviors and subsequent participations.

Method

Data collection and measures

Data were collected between January 20 and August 28, 2024, through the Wenjuanxing online survey platform (https://www.wjx.cn) from users familiar with network communities. A total of 340 questionnaires were received. After removing 29 responses from individuals who were unfamiliar with or had never participated in any network community, 311 valid questionnaires remained for analysis, resulting in an effective response rate of 91.47%. All study procedures were conducted in accordance with the Declaration of Helsinki and its subsequent amendments. Ethical review and approval were waived by the relevant ethics committee at Guilin University of Electronic Technology because the study involved an anonymous questionnaire survey with minimal risk to participants. Informed consent was obtained from all participants before they completed the survey.

We first asked participants whether they were involved in a network community or had any experience with community engagement and then examined the lack of a community governance mechanism using a scale tailored to the Chinese context (Chi et al., 2022). This scale comprises specific items for measuring the absence of an accountability mechanism (e.g., “The community lacks rules and regulations to specify the rights and obligations of users.”; 3 items), the absence of relationship norms (e.g., “Problems occurring in the community are not considered a joint responsibility of leaders and members.”; 4 items), the absence of an incentive mechanism (e.g., “Members who actively participate in activities in the community do not receive level or prestige enhancement.”; 4 items), and the absence of network routine (e.g., “There is a lack of discussion of internet slang among community members.”). The transactional psychological contract breach was measured with four items (e.g., “The updated information of the community is not timely pushed and conveyed, resulting in delays.”; Chih, 2017), and the relational psychological

contract breach was measured four items (e.g., “The community does not value establishing a long-term relationship with me.”; Hussain et al., 2021). Regarding users’ negative behaviors, there were two items for measuring negative word-of-mouth (e.g., “I will tell friends about my bad experiences with this community.”; Chih, 2017) and four items for measuring quitting behaviors (e.g., “I will use this virtual community less frequently than I do now.”; Zhao et al., 2016). Regarding users’ subsequent participations (Morrison et al., 2013), there were three items for measuring online lurking (e.g., “I will silently follow the posts and comments on the community page.”) and three items for measuring posting behaviors (e.g., “I will post relevant complaints on the community page.”). Tie strength was measured by three items (e.g., “I have a certain obligation to support the co-creation of community value”; Zhu et al., 2020). All items were rated by a 7-point Likert scale. At the end of the survey, demographic information (e.g., gender, age) was recorded, and then participants were debriefed and thanked. (Table 1).

Table 1. Descriptive statistics of the samples

Characteristic		Frequency	Percent	Characteristic		Frequency	Percent
Gender	Male	108	34.73%	Community use experience	≤ 3 months	95	30.55%
	Female	203	65.27%		3 - 6 months	38	12.22%
Age	≤ 20 years	55	17.68%		6 months - 1 year	33	10.61%
	21-30	245	78.78%		1 - 2 years	32	10.29%
	≥ 31 years	11	3.54%		≥ 2 years	113	36.33%
Education level	≤ High school	40	12.86%	Income (RMB)	≤ 2,000	177	56.91%
	University graduate	207	66.56%		2,001-8,000	101	32.48%
	≥ Postgraduate	64	20.58%		≥ 8,001	33	10.61%

Reliability and validity testing

All scales showed high internal consistency and composite reliability, with Cronbach’s alpha above 0.867, CR (composite reliability) values exceeding 0.868, AVE (average variance extracted) values above 0.622, and factor loadings ranging from 0.733 to 0.937. Specifically, the validity of the measurement model was examined through confirmatory factor analysis, χ^2 (890)=1513.890, χ^2/df=1.701, SRMR=0.047, GFI=0.899, RMSEA=0.051, NFI=0.898, CFI=0.988, and TLI=0.978. The square root of the AVE value for each variable was greater than the absolute value of the correlation coefficient, indicating good discriminant validity (Table 2).

Table 2. Discriminant validity testing

Constructs	1	2	3	4	5	6	7	8	9	10

Absence of accountability mechanism	**0.858**									
Absence of relationship norms	0.256	**0.832**								
Absence of incentive mechanism	0.462	0.315	**0.893**							
Absence of network routine	0.456	0.486	0.413	**0.858**						
Transactional psychological contract breach	0.566	0.442	0.642	0.413	**0.846**					
Relational psychological contract breach	0.389	0.439	0.738	0.553	0.533	**0.876**				
Online lurking	0.081	-0.026	0.065	0.055	0.072	0.218	**0.876**			
Posting behavior	0.007	0.137	0.209	0.181	0.128	0.385	0.515	**0.915**		
Quitting behaviors	0.182	0.291	0.408	0.279	0.480	0.543	0.207	0.300	**0.788**	
Negative word-of-mouth	-0.027	0.201	0.246	0.187	0.348	0.586	0.261	0.314	0.427	**0.929**

Diagonal: The square root of AVE of a latent construct.

Results

Structural model test: hypothesis testing

A goodness-of-fit test was conducted for the proposed theoretical model and showed a good model fit, χ^2/df=1.998, SRMR=0.055, GFI=0.838, RMSEA=0.057, NFI=0.883, CFI=0.937, and TLI=0.931. Concerning the relationship between the absence of a community governance mechanism and a psychological contract breach (Table 3), the absence of accountability mechanisms (β=0.294, p<0.001), the absence of relationship norms (β=0.270, p<0.001), and the absence of incentive mechanisms (β=0.312, p<0.001) positively affected the transactional psychological contract breach of users, partially validating H1a. Similarly, the absence of relationship norms (β=0.188, p=0.002), absence of incentive mechanism (β=0.374, p<0.001), and absence of network routine (β=0.194, p=0.002) positively affected the relational psychological contract breach of users, partially validating H1b.

However, the results show that the absence of network routines (β=0.029, p=0.623) does not significantly affect transactional psychological contract breach, as such routines mainly facilitate user interaction rather than directly influencing perceived benefits. Similarly, the absence of an accountability mechanism (β=0.050, p=0.387) does not significantly impact relational psychological contract breach, likely because relational contracts develop over time, during which users adapt to community norms, reducing sensitivity to such mechanisms.

Table 3. Hypothesis path testing

Hypotheses				*β*	*S.E.*	*C.R.*	*p*
H1a	Absence of accountability mechanism	→	Transactional psychological contract breach	0.294	0.055	5.051	<0.001
	Absence of relationship norms			0.270	0.066	4.526	<0.001
	Absence of incentive mechanism			0.312	0.050	5.558	<0.001

	Absence of network routine			0.029	0.056	0.491	0.623
H1b	Absence of accountability mechanism	→	Relational psychological contract breach	0.050	0.062	0.865	0.387
	Absence of relationship norms			0.188	0.075	3.134	0.002
	Absence of incentive mechanism			0.374	0.058	6.509	<0.001
	Absence of network routine			0.194	0.065	3.137	0.002
H2a	Transactional psychological contract breach	→	Quitting behaviors	0.283	0.065	4.267	<0.001
	Transactional psychological contract breach		Negative word-of-mouth	0.101	0.075	1.591	0.112
H2b	Relational psychological contract breach	→	Quitting behaviors	0.299	0.057	4.543	<0.001
	Relational psychological contract breach		Negative word-of-mouth	0.316	0.072	4.600	<0.001
H3a	Transactional psychological contract breach	→	Online lurking	-0.011	0.084	-0.173	0.862
	Transactional psychological contract breach		Posting behavior	-0.012	0.061	-0.174	0.862
H3b	Relational psychological contract breach	→	Online lurking	0.251	0.074	3.797	<0.001
	Relational psychological contract breach		Posting behavior	0.177	0.054	2.592	0.010

Results indicate that transactional psychological contract breach significantly increases quitting behavior (β=0.283, p<0.001) but does not affect negative word-of-mouth (β=0.101, p=0.112), likely due to users' low sunk costs and short-term orientation. In contrast, relational psychological contract breach significantly promotes both quitting (β=0.299, p<0.001) and negative word-of-mouth (β=0.316, p<0.001), supporting H2b.

Although results show that relational psychological contract breach significantly increases online lurking (β=0.251, p<0.001) and posting (β=0.177, p=0.010), supporting H3b. In contrast, transactional psychological contract breach has no significant effect on lurking (β=-0.011, p=0.862) or posting (β=-0.012, p=0.862), rejecting H3a. This may be because transactional users, with lower sunk costs and short-term orientation, tend to exit directly, whereas relational users, due to long-term investment, engage through posting or lurking.

Testing of mediation effect of psychological contract breach

To test for the statistical significance of mediation effects (i.e., 0 not included in bootstrap confidence intervals), we performed a series of mediation analyses and estimated the bias-corrected bootstrap confidence intervals using the bootstrapping procedure in AMOS with 5,000 resampling. The absence of accountability mechanisms, relationship norms, and incentive mechanisms affected the quitting behaviors through transactional psychological contract breach, and the absence of relationship norms, incentive mechanisms, and network routines influenced quitting behaviors through relational psychological contract breach, indicating the mediation effects (H4) were partially significant (Table 4).

Table 4. Mediation effect testing

Hypotheses						Bias-corrected 95% CI	
				β	*S.E.*	Lower	Upper
Absence of accountability mechanism →	Transactional psychological contract breach →	Posting behavior		-0.003	0.020	-0.045	0.032
		Online lurking		-0.003	0.025	-0.054	0.047
		Quitting behaviors		**0.083**	**0.027**	**0.039**	**0.145**
		Negative word-of-mouth		0.030	0.022	-0.009	0.083
	Relational psychological contract breach →	Posting behavior		-0.001	0.006	-0.020	0.007
		Online lurking		-0.001	0.007	-0.021	0.011
		Quitting behaviors		0.014	0.022	-0.024	0.063
		Negative word-of-mouth		0.005	0.010	-0.007	0.035
Absence of relationship norms →	Transactional psychological contract breach →	Posting behavior		-0.003	0.019	-0.047	0.029
		Online lurking		-0.003	0.023	-0.055	0.040
		Quitting behaviors		**0.076**	**0.029**	**0.028**	**0.143**
		Negative word-of-mouth		0.027	0.021	-0.008	0.080
	Relational psychological contract breach →	Posting behavior		-0.002	0.014	-0.038	0.021
		Online lurking		-0.002	0.017	-0.039	0.031
		Quitting behaviors		**0.053**	**0.023**	**0.018**	**0.111**
		Negative word-of-mouth		0.019	0.016	-0.005	0.060
Absence of incentive mechanism →	Transactional psychological contract breach →	Posting behavior		-0.004	0.022	-0.049	0.038
		Online lurking		-0.004	0.027	-0.055	0.050
		Quitting behaviors		**0.088**	**0.032**	**0.037**	**0.162**
		Negative word-of-mouth		0.031	0.025	-0.011	0.087
	Relational psychological contract breach →	Posting behavior		-0.004	0.025	-0.057	0.043
		Online lurking		-0.004	0.031	-0.066	0.060
		Quitting behaviors		**0.106**	**0.034**	**0.049**	**0.186**
		Negative word-of-mouth		0.038	0.029	-0.012	0.102
Absence of network routine →	Transactional psychological contract breach →	Posting behavior		0.000	0.005	-0.017	0.008
		Online lurking		0.000	0.007	-0.020	0.009
		Quitting behaviors		0.008	0.021	-0.028	0.061
		Negative word-of-mouth		0.003	0.009	-0.008	0.034
	Relational psychological contract breach →	Posting behavior		-0.002	0.014	-0.035	0.023
		Online lurking		-0.002	0.017	-0.042	0.028
		Quitting behaviors		**0.055**	**0.027**	**0.013**	**0.122**
		Negative word-of-mouth		0.020	0.016	-0.004	0.065

Testing of moderation effect of tie strength

Tie strength was tested via a median split into high (M=5.980) and low (M=4.300) groups. Results show a

significant moderating effect on the link between absence of accountability and relational psychological contract breach (CR=2.619, p=.005), with stronger effects for high tie strength users. Tie strength also moderates the relationship between relational breach and negative word-of-mouth (CR=-2.654, p<0.05), where the effect is stronger for low tie strength users. The moderating effects of tie strength in other pathways were not statistically significant. Therefore, H5 was partially validated (Table 5).

Table 5. Moderation effect testing

Hypotheses			Low relationship intensity (*N*=145)		High relationship intensity (*N*=166)		*C.R.*
			β	*p*	*β*	*p*	
Absence of accountability mechanism	→	Transactional psychological contract breach	0.261	0.000	0.424	0.000	1.170
Absence of relationship norms			0.375	0.000	0.291	0.006	-0.565
Absence of incentive mechanism			0.222	0.000	0.363	0.000	1.309
Absence of network routine			0.011	0.891	0.006	0.947	-0.036
Absence of accountability mechanism	→	Relational psychological contract breach	**-0.117**	**0.210**	**0.257**	**0.007**	**2.619**
Absence of relationship norms			0.389	0.002	0.144	0.149	-1.529
Absence of incentive mechanism			0.383	0.000	0.366	0.000	-0.140
Absence of network routine			0.173	0.093	0.226	0.015	0.386
Transactional psychological contract breach	→	Quitting behaviors	0.208	0.034	0.270	0.000	0.526
		Negative word-of-mouth	-0.006	0.957	0.184	0.027	1.428
		Online lurking	-0.002	0.980	-0.070	0.321	-0.646
		Posting behavior	-0.068	0.525	-0.011	0.912	0.399
Relational psychological contract breach	→	Quitting behaviors	0.346	0.000	0.148	0.025	-1.904
		Negative word-of-mouth	**0.476**	**0.000**	**0.151**	**0.067**	**-2.654**
		Online lurking	0.171	0.007	0.108	0.143	-0.651
		Posting behavior	0.378	0.000	0.150	0.138	-1.705

Conclusion and future outlook

Conclusion

This study explored the impact of the absence of governance mechanism of a network community on the negative behaviors and subsequent participation of users from the perspective of a psychological contract breach. The specific conclusions are as follows: First, during the operation and management of a network community, the absence of accountability mechanism, relationship norms, and incentive mechanism lead to a transactional psychological contract breach of users. The absence of relationship norms, incentive mechanism, and network routine induce a relational psychological contract breach of users. Of note, although the effect of the absence of a network routine on

the breach of the transactional psychological contract was not confirmed, it led to a breach of users' relational psychological contracts. Similarly, despite the lack of validation for the impact of the absence of an accountability mechanism on the breach of the relational psychological contract, it induced a breach of users' transactional psychological contracts. Therefore, during the operation and management process of network communities, the rules and regulations of governance mechanism need to be clearly defined to prevent cases of psychological contract breach by users due to the absence of a governance mechanism. Furthermore, the leaders of a network community, as an emerging channel of knowledge sharing, value co-creation, and maintaining brand-customer relationships, should consider the psychological needs and contract form changes of users as an intervention to maintain the vitality of the network community.

Second, for the relationship between a psychological contract breach of users and negative behaviors and subsequent participations, a transactional psychological contract breach promotes quitting behaviors, but its impact on negative word-of-mouth, online lurking, and posting behaviors were not validated. A relational psychological contract breach triggers negative word-of-mouth, quitting behaviors, and online lurking and posting behaviors of users. A transactional psychological contract breach directly induces quitting behaviors, while users with a relational psychological contract breach have the capacity for remediation. This study confirmed that users in network communities hold two distinct psychological contracts, and breaches of these contracts could trigger varied negative behaviors, influencing subsequent user participation. In addition, the underlying mechanism of psychological contract breaches between the absence of a governance mechanism and negative behaviors and subsequent participations of users were disclosed.

Third, we further validated the moderation effect of tie strength in the mediating pathways. On one side, tie strength moderated the connection between the absence of an accountability mechanism and a breach in relational psychological contracts. That is, the higher tie strength between users and a community, the more likely the absence of an accountability mechanism leads to a relational psychological contract breach of users. On the other hand, the tie strength moderated the relationship between a relational psychological contract breach and negative word-of-mouth. This suggests that the higher the tie strength between users and a community, the less likely users with a relational psychological contract breach engage in negative word-of-mouth behaviors. Therefore, we believe that network community leaders should pay attention to the relationship management with users. They should not only provide

more comprehensive community governance mechanisms for users with high tie strength but also establish reasonable emergency mechanisms and service remediation measures to address negative behaviors for users with low tie strength.

Management suggestion

In previous studies, researchers focused on the positive influence of community governance mechanisms on user behaviors (e.g., knowledge sharing, civic behaviors) through identification and perceived value (Chi et al., 2020; Gu et al., 2019). In contrast, our study confirmed the effects of the absence of community governance mechanisms on negative behaviors and subsequent participations of users, to increase awareness among community leaders. Based on our research results, we propose the following management suggestions.

***Suggestion 1*:** Improve community governance mechanisms and management level. As a new type of organization for user communication and information sharing, network communities are different from traditional organizations in that there is no explicit employment relationship between community members and leaders, and users can join or leave a community at any time, making it difficult to maintain the psychological contract of users. It is crucial to take into account how the absence of accountability mechanism, relational norms, incentive mechanism, and network routines breaches users' psychological contracts. Regarding the accountability mechanism, which serves as a compulsory mechanism to maintain the community atmosphere, leaders need to clarify the scope of supervision, establish a norm that everyone should abide by, while preserving flexibility and reducing users' concerns. In terms of relational norms, soft constraints should be used to regulate user behaviors, strengthen emotional connections, promote user collaboration, encourage user integration into communities, and thus avoid a psychological contract breach. As for the incentive mechanism, focusing on the purpose of users joining a community, appropriate measures should be taken to ensure that users' expectations of material and spiritual rewards are met, to establish a fair and just evaluation system, and thus reinforce the users' relational psychological contracts. In terms of network routines, communities should build a community culture, promote the sharing of community values, and provide general behavioral norms for the users.

Suggestion 2: Pay attention to psychological needs and remediation measures. The main reason for a psychological contract breach is that users think a community has not fulfilled its obligations and responsibilities. Because psychological contracts are subjective and represent implicit agreements and expectations of users and communities, implementing strategies to reduce the occurrence of psychological contract breaches based on the

practical needs of users. Community users can feel satisfied with the information, interaction, entertainment, and other values obtained from the community and gradually form a relational psychological contract through interactions with others. This contractual relationship can motivate community users to uphold community interests and actively participate in value co-creation. Developing effective normative systems and incentive mechanisms aligned with user needs is essential. This ensures that users perceive institutional guarantees for their self-actualization needs, thereby minimizing psychological contract breaches. Moreover, based on our results, regardless of the transactional psychological contract breach or a relational psychological contract breach, users take some actions to restore exchange imbalance (e.g., quitting behavior) after perceiving a contract breach. This requires community leaders to formulate feedback mechanisms that allow timely perception and mitigation of potential risks, and thus decrease the risk of psychological contract breaches. Fortunately, the results of this study showed that users with a relational psychological contract breach may use posting behaviors to express their dissatisfaction or suggestions, and this is also an avenue through which leaders can address the issues properly and strengthen emotional bonds.

Suggestion 3: Strengthen user interaction and tie strength. The conclusion about the moderation effect of tie strength was that: tie strength positively moderated the path of the absence of accountability mechanism → relational psychological contract breach while negatively moderated the path of relational psychological contract breach → negative word-of-mouth. This indicates that users with high tie strength invest more sunk costs, and thus have higher reciprocal expectations for the community and are more likely to experience psychological contract breaches. This serves as a reminder for community leaders to enhance interactions and communication with existing users to uphold relational psychological contracts. Additionally, users with strong ties pose less of a threat to the community, such as negative word-of-mouth and online lurking, following breaches in relational psychological contracts. Thus, community leaders should develop approaches that encourage user participation in interactions while improving the tie strength between users and the community.

Limitation and future outlook

This study has several limitations. The absence of a fine-grained classification of network communities limits the generalizability of the findings; future research should differentiate among specific community types. In addition, the study focuses primarily on behavioral outcomes and does not account for underlying emotional mechanisms. Future work should incorporate emotional variables and further examine the psychological processes linking

psychological contract breach to subsequent behaviors.

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