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Building Social Capital in Online Knowledge-Sharing Communities: The Impact of Personality Traits and Value Co-Creation

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Abstract

The rapid development of Information and Communication Technologies (ICTs) has transformed how people interact and encourage users to take on more active roles in online knowledge-sharing communities (OKSCs). While the influence of social capital on knowledge sharing is well-documented, its accumulation within OKSCs, particularly in relation to personality traits, remains underexplored. Few studies have examined the combined effects of personality traits and value co-creation on social capital accumulation, which is crucial for enhancing community engagement and knowledge flow. This study integrates the Big Five Personality Traits with Social Capital Theory, analyzing data from 433 members of CSDN, a leading Chinese developer community. The findings reveal that agreeableness, extraversion, and conscientiousness significantly enhance both participation and citizenship behaviors, ultimately fostering social capital accumulation. Moreover, value co-creation serves as a mediator between personality traits and the growth of social capital. These insights offer a deeper understanding of how personality traits drive engagement and knowledge sharing in OKSCs, providing both theoretical contributions and practical recommendations for nurturing social capital in these platforms.

Keywords: *Big Five Personality Traits, Social Capital Theory, Value Co-creation, Online Knowledge Sharing Community, CSDN*

1. INTRODUCTION

The rapid advancement of ICTs has fundamentally changed social behaviors, enabling individuals to actively create content and share knowledge. OKSCs have become important platforms for bringing people, resources and ideas together, facilitating the exchange of knowledge in various fields. These communities can be categorized into two main types: (i) those focused on technical and scientific knowledge exchange, and (ii) those centered on non-technical, daily life discussions [1]. OKSCs enable individuals to use their cognitive surplus to contribute to knowledge production and social interaction even during their short free time.

OKSC participants typically engage in knowledge-seeking, knowledge contribution, and knowledge creation that require meaningful participation within the community [2]. The sustainability of these communities depends on the continuous flow of knowledge and the active participation of their members. To

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achieve this, platforms implement strategies to generate and manage key knowledge and cultivate key opinion leaders (KOLs). These opinion leaders often possess significant social capital and have a key influence on community behavior and growth [3, 4].

Knowledge sharing is more than just the exchange of information; it is both an individual endeavor and a collective process. It begins with individual contributions and extends to impacting the broader community [5, 6]. This process reflects the dynamic interaction between individual characteristics and the social environment. Therefore, both personality traits (individual-level factors) and social capital (social-level factors) must be taken into account to determine their impact on knowledge sharing. Although knowledge sharing has been extensively studied, how social capital develops in OKSCs has not been fully understood. In addition, there is a significant research gap in exploring the combined effects of personality traits and value co-creation on social capital in OKSCs, as most studies tend to focus on only one of these aspects.

This study bridges the research gap by combining the Big Five personality traits with social capital theory to examine knowledge sharing in OKSCs. In this model, personality traits act as the underpinning, value co-creation serves as a mediating mechanism, and social capital accumulation is the outcome. Specifically, this research aims to:

(1) Explore how members accumulate social capital in OKSCs;

(2) Examine the mediating role of value co-creation between personality traits and social capital;

(3) Identify which personality traits are significantly influential in promoting value co-creation.

By offering new view on the interplay between personality traits, value co-creation, and social capital, this research enhances the theoretical comprehension of OKSC dynamics and to practical strategies for platform management.

2. l ITERATURE REVIEW

2.1 Social Capital Theory (SCT)

Social Capital Theory is widely recognized across the social sciences and humanities. Initially, social capital was primarily studied as an economic concept within organizational contexts [7]. However, The application of the theory in knowledge sharing has seen a rise in recent research [8]. Within the context of social structure, social capital is categorized into cognitive, relational, and structural [9, 10].

The cognitive dimension indicates that having a common language, shared narratives, visions, and goals enhances communication and understanding among individuals within an organization [11]. In OKSCs, cognitive capital often pertains to the enhancement of expertise, shared language, and a collective vision—often referred to as cognitive benefits [12].

Relational capital involves the personal relationships built over repeated interactions [13].Social trust is identified as the most prevalent norm associated with social capital and serves as a crucial element of its relational dimension. Trust facilitates interaction among members, particularly when the provided information is regarded as dependable [14].

The structural dimension relates to the nature and quality of the connections people have within the community. Strong connections can save time and effort when gathering information [13]. Key components of this dimension include social network ties [11, 13].

Scholars argue that digital networks facilitate the rapid global dissemination of information. As a result, it fosters the growth of social capital and the exchange of knowledge among participants located in various regions. [15].

2.2 Big Five Personality Traits

Personality denotes relatively stable patterns of thoughts, emotions, and behaviors that define individuals, serving as a consistent psychological framework [16]. Studies on knowledge sharing have primarily relied on the Big Five personality model, including five key dimensions: neuroticism, conscientiousness, extraversion, agreeableness, and openness to experience [17]. Particularly those high in agreeableness and conscientiousness

show a greater propensity for participating in knowledge sharing relative to individuals with lower levels of these traits [18]. Additionally, individuals high in extraversion tend to be more involved in sharing knowledge [19].

In light of this, the present study focuses on extraversion, agreeableness, and conscientiousness, as these traits align with the communal, interactive, and goal-oriented dynamics typical of high-tech knowledge-sharing communities.

2.3 Value co-creation

Value co-creation represents a procedure that begins with interactions between individuals and ends with a co-created value within a specific context [20]. Value co-creation has been explored across multiple fields [21], indicating that it has broad theoretical dimensions.

Value co-creation behaviors are comprised of two dimensions: member's participation behavior (MPB) and members citizenship behavior (MCB) [22, 23]. MPB includes actions such as answering queries, conducting research to address specific technological challenges, and sharing experiences, resources, knowledge, and skills [24, 25]. While MCB presents voluntary activities aimed at benefiting the OKSC [26], such as encouraging friends to join and participate, offering guidance and best practices, and offering constructive feedback.

3. RESEARCH FRAMEWORK AND HYPOTHESIS

3.1 Research framework

The research framework is developed by integrating big five personality traits and social capital theory, with value co-creation serving as the mediator. As depicted in Figure 1, the conceptual model is outlined.

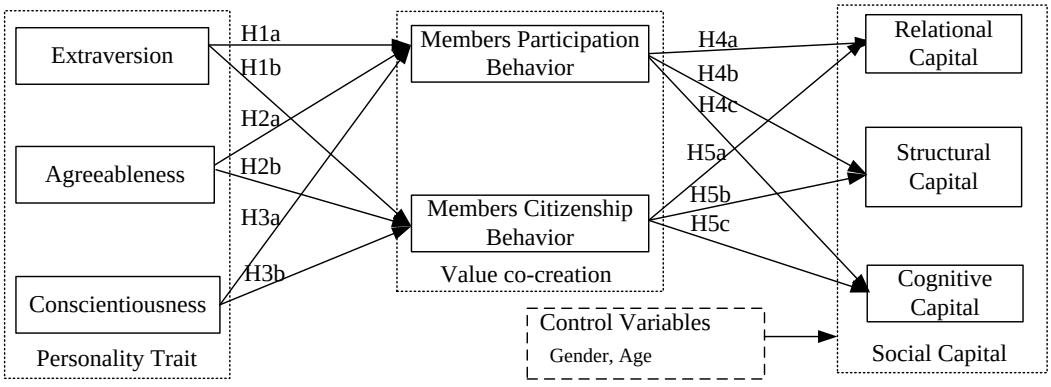

Figure 1. Research Model

3.2 Hypothesis development

3.2.1 Big Five Personality traits and value co-creation

Personality traits significantly influence a person's thinking, emotion and behavioral pattern and ergo help determine a person's likely behavior.

Extraversion characterizes people who are outgoing, assertive, energetic, sociable, and enjoy engaging in conversation [17]. Their sociable nature allows them to excel at gathering information, frequently interacting with friends, family, and colleagues [27]. Additionally, extroverted customers thrive in social environments, interact well with others, and offer valuable feedback [28]. These individuals have a strong motivation for social interaction [29], as extroverts are more inclined to recognize personal relevance in and engage with

knowledge-sharing communities [30]. Thus,

H1a: Extraversion positively impacts member's participation behavior.

H1b: Extraversion positively impacts member's citizenship behavior.

Agreeableness refers to a personal attribute that contributes to shared understanding and the appreciation of social connections. [31]. Individuals high in agreeableness are typically harmonious, good-natured, and cooperative [32]. They exhibit trust and are often seen as reliable and supportive in social contexts, facilitating smoother knowledge sharing [33]. Agreeableness drives individuals to participate more actively in OKSC, because they value social connections and derive satisfaction from collaborative interactions. Therefore,

H2a: Agreeableness positively impacts customer participation behavior.

H2b: Agreeableness positively impacts customer citizenship behavior.

Conscientiousness, defined by traits such as loyalty, responsibility, organization, self-discipline, and diligence [34], plays a pivotal role in fostering customer participation and citizenship behaviors. Individuals high in conscientiousness naturally demonstrate dependable and responsible behavior, making them ideal contributors to collaborative processes. Research by Obrenovic et al. (2022) highlights that conscientious individuals are particularly effective in sharing tacit knowledge, a crucial element in co-creation efforts. Moreover, conscientiousness has been shown to enhance organizational citizenship behaviors [18], driving individuals to engage in actions that benefit not only themselves but the broader community [35]. These individuals, confident in their abilities and knowledge, tend to engage more actively in co-creating value through sharing insights and working toward collective goals [36]. By capitalizing on the strengths of conscientious individuals, organizations can foster greater collaboration and maximize the potential for meaningful value co-creation. So,

H3a: Conscientiousness positively impacts customer participation behavior.

H3b: Conscientiousness positively impacts customer citizenship behavior.

3.2.2 Value co-creation and social capital accumulation

Members engage in co-creation activities in virtual environments to derive learning, social integrative, personal integrative, and hedonic benefits from their interactions [37]. When members consistently participate by contributing valuable insights or offering assistance, they establish a reliable presence within the community, reinforcing their social capital. Regular participation strengthens relational capital by fostering trust and deeper connections, as members exchange knowledge, communicate, and share experiences [26]. These ongoing interactions become the foundation for stronger social bonds, enhancing collaboration and mutual understanding [38].

In addition, active engagement in discussions, providing feedback, and acknowledging others' contributions help cultivate a shared vision within the community. This shared vision contributes directly to the accumulation of cognitive capital, as members align their perspectives and develop a collective understanding [39]. Furthermore, the repeated use and reinforcement of key terms and concepts across various contexts standardizes communication, building a shared language that enhances structural capital by streamlining knowledge transfer and improving collective efficiency. Through these behaviors, members not only enrich their individual experience but also contribute significantly to the community's relational, cognitive, and structural capital accumulation, thus driving greater value in co-creation processes. Therefore, the following hypotheses are concluded.

H4a: MPB positively impacts member's relational capital accumulation.

H4b: MPB positively impacts member's structural capital accumulation.

H4c: MPB positively impacts member's cognitive capital accumulation.

A strong sense of trust and reliability develops when individuals regularly engage in knowledge-sharing

activities, such as providing support, exchanging insights, and volunteering for community events [40]. This consistent engagement builds deeper, more meaningful relationships within the community, and encourages members to cooperate with each other, thereby strengthening the relational capital that binds them together [41].

These citizenship behaviors are also essential to strengthening social ties and improving communication in online communities. By voluntarily participating in various activities, members help build a living, dynamic social space where knowledge can flows more freely, more diversely, and more deeply [42]. These efforts fortify the community's structural capital, as they deepen the social networks and frameworks that enable smooth collaboration and the seamless exchange of information.

In addition, the citizenship behaviors of community members are crucial in shaping a shared language, especially within online communities in high-tech sectors, where specialized terminology and complex concepts often dominate. By taking on mentoring roles or actively curating and sharing resources, these members help to standardize communication, making it easier for others to grasp and exchange ideas with greater clarity [43]. Such behaviors improve interpersonal connections and at the same time promote the accumulation of relational, structural, and cognitive capital, thereby driving value co-creation within the community. Thus, we put forward the following hypotheses.

H5a: MCB positively impacts member's relational capital accumulation.
H5b: MCB positively impacts member's structural capital accumulation.
H5c: MCB positively impacts member's cognitive capital accumulation.

4. RESEARCH METHODOLOGY

4.1 Research Background

In the digital age, online knowledge-sharing platforms have become essential for fostering collaboration and innovation among developers. Communities like CSDN (China Software Developer Network), a highly regarded and extensively-used knowledge-sharing platform in China, serve as vital spaces where developers actively co-create value by sharing technology insights, solutions, and resources. CSDN offers a comprehensive ecosystem with features such as articles, Q&A forums, videos, and interactive options like subscriptions, following, and favorites. Its point system and social interactions further enhance participation, making it a rich environment for studying relationship between social capital and effective knowledge sharing.

4.2 Data collection and Survey administration

To collect survey data, we used a professional platform called "Wenjuanxing" to create the survey instrument. The questionnaire is made up of three parts: the objective of the survey, demographic details of the participants, and the assessment of latent constructs. The survey items are adapted from previous studies and tailored for OKSC.

The participants were given a Chinese translation of the questionnaire. Each variable was assessed with a seven-point Likert scale, with 1 representing "completely disagree" and 7 signifying "completely agree".

We employed a referral-based sampling strategy to collect data, distributing the questionnaire link through the WeChat platform. Participants were first asked to confirm if they were members of CSDN before proceeding to complete the survey. During the primary study, 457 responses were received. Among them, 24 responses were omitted because of incompleteness or insufficient response time. Ultimately, 433 valid responses were retained for further analysis, leading to a survey return rate of 94.75%. The sample size exceeded the minimum requirement of 350 recommended by Jackson [44]. Participants' demographic characteristics are outlined in Table 1.

Table 1. Demographic information (N=433)

Measure	Items	Freq.	Percent	Measure	Items	Freq.	Percent
Gender	Male	220	51	Gender	Female	213	49
Age	<23	58	13.4	Monthly Salary (RMB)	<4000	50	11.6
	24-30	150	34.7		4001-6000	105	24.2
	31-35	121	27.9		6001-8000	151	34.9
	36-40	69	15.9		8001-15000	82	18.9
	40~	35	8.1		15001~	45	10.4
Education	High school	70	16.2	Community Usage Frequency	Every day	90	20.9
	College	83	19.2		Every week	135	31.1
	University	177	40.8		Monthly	208	48
	Graduate school	103	23.8				

4.3 Measurement development

Social capital was measured using four items across three dimensions: relational capital (social trust, based on Meek et al., 2019 [9]), cognitive capital (shared language and shared vision), and structural capital (social interaction ties). Both cognitive and structural capital items were drawn and modified from Li et al. (2019) [45]. Value co-creation was assessed through four items each for citizenship behavior (Xu et al., 2012) [46] and participation behavior (adapted from Chang & Chuang, 2011) [38]. Big Five personality traits included three dimensions: Five items each for Extraversion, Agreeableness, and Conscientiousness were sourced from Abou-Shouk et al. (2022) [47]. Gender and age were included as control variables.

4.4 Data analysis

The data analysis was conducted through structural equation modeling (SEM) utilizing partial least squares (PLS-SEM). SmartPLS3 was applied in a two-phase approach, focusing first on the measurement model, and then on the structural model.

4.4.1 Measurement model

This research ensured the accuracy of the measurement model based on three indicators: internal consistency reliability, convergent validity, and discriminant validity. Internal consistency reliability was examined based on Cronbach's alpha value or composite reliability value. All measurements in Table 2 exceeded the suggested benchmarks. Thus, internal consistency reliability was adequate.

Second, two measurement standards were used to evaluate convergent validity [48]. Criterion (1) required all factor loadings to be significant and surpassed .8, while Criterion (2) stipulated that the average variance extracted (AVE) of each dimension exceeded .5. All item factor loading (shown in Table 2) were beyond suggested benchmark. As is apparent in Table 2, all the AVEs ranged from .661 to .710. Therefore, the findings from both factor loadings and AVE values demonstrated sufficient convergent validity.

Third, as indicated in Table 3, the correlations between construct pairs are well below .85. [49]. Additionally, the square root of the AVE exceeds the inter-correlation values. [48]. Therefore, the results demonstrated good discriminant validity of the measurements.

Since the data for the study was gathered through self-reported methods, there may be potential problems of common method bias (CMB). Harman's single-factor test was applied using exploratory factor analysis (EFA) to examine the influence of common method bias. In light of the results, the first factor explained 43.336%

of the variance, which is well below the 50% threshold. This indicates that common method bias likely did not significantly affect the study. Additionally, variance inflation factor (VIF) was utilized to evaluate the extent of multi-collinearity. The VIF values varied between 1.720 and 2.499 (shown in Table 2), which was significantly below the suggested benchmark 3.3 [50], indicating that our data did not exhibit any significant multi-collinearity issues.

Table 2. The measurement model

Construct	Item description	Loading	VIF	Cronbach's α	Composite reliability	AVE
Agreeableness (AB)	AB1	.846	2.240	.889	.919	.693
	AB2	.808	2.038			
	AB3	.807	1.967			
	AB4	.852	2.409			
	AB5	.848	2.332			
Extraversion (EV)	EV1	.818	2.100	.885	.916	.685
	EV2	.849	2.399			
	EV3	.825	2.121			
	EV4	.821	2.005			
	EV5	.823	2.063			
Conscientiousness (CT)	CT1	.820	2.051	.886	.917	.687
	CT2	.802	1.898			
	CT3	.810	1.977			
	CT4	.850	2.499			
	CT5	.862	2.637			
Member's Participation Behavior (MPB)	MPB1	.813	1.721	.829	.886	.661
	MPB2	.820	1.786			
	MPB3	.812	1.802			
	MPB4	.807	1.785			
Member's Citizenship Behavior (MCB)	MCB1	.844	1.942	.847	.897	.685
	MCB2	.816	1.812			
	MCB3	.828	1.895			
	MCB4	.822	1.868			
Relational Capital (RC)	RC1	.823	1.795	.834	.889	.668
	RC2	.829	1.866			
	RC3	.808	1.806			
	RC4	.808	1.720			
Structrual Capital (SC)	SC1	.852	2.166	.864	.908	.710
	SC2	.841	2.083			
	SC3	.858	2.238			
	SC4	.821	1.822			
Cognitive Capital (CC)	CC1	.859	2.108	.853	.900	.694
	CC2	.844	1.974			
	CC3	.820	1.909			
	CC4	.807	1.833			

Table 3. Discriminant validity

	AB	MCB	CT	EV	SIT	MPB	SL	ST	age	gender
AB	**0.832**									
MCB	0.590	**0.828**								
CT	0.574	0.521	**0.829**							
EV	0.645	0.634	0.552	**0.827**						
SC	0.615	0.550	0.550	0.587	**0.843**					
MPB	0.633	0.553	0.582	0.574	0.584	**0.813**				
CC	0.630	0.552	0.506	0.578	0.640	0.561	**0.833**			
RC	0.555	0.611	0.550	0.563	0.592	0.594	0.516	**0.817**		
age	0.473	0.461	0.406	0.451	0.475	0.433	0.774	0.391	**1**	
gender	0.393	0.366	0.345	0.337	0.392	0.357	0.619	0.323	0.509	**1**

Note: The bold numbers indicate the square roots of AVE. The Discriminant validity is based on the Fornell and Larcker criterion

4.4.2 Structural model

Following Hair et al.(2017) , the structural model was evaluated using the following four metrics: (1) the significant of path coefficients; (2) value of explained variance (R^2); (3) effect size (f^2); and (4) predictive relevance(Q^2).

Table 4. Results of hypotheses testing

Path	Std. Path coeff.(β)	BCa Confidence intervals		T-stats	P-values	Cohen's f^2	Conclusion
		2.50%	97.50%				
EV → MPB	.198	.104	.290	4.193	.000	.042	Supported
EV → MCB	.380	.289	.470	8.157	.000	.148	Supported
AB → MPB	.350	.253	.439	7.299	.000	.124	Supported
AB → MCB	.249	.145	.344	4.963	.000	.060	Supported
CT → MPB	.273	.179	.368	5.597	.000	.090	Supported
CT → MCB	.169	.079	.260	3.637	.000	.033	Supported
MPB → RC	.350	.258	.437	8.161	.000	.149	Supported
MPB → SC	.339	.234	.440	8.269	.000	.136	Supported
MPB → CC	.183	.113	.253	7.650	.000	.077	Supported
MCB → RC	.385	.258	.437	9.818	.000	.175	Supported
MCB → SC	.252	.164	.337	7.414	.000	.072	Supported
MCB → CC	.124	.062	.189	7.214	.000	.035	Supported

*Note: *** p <.001 ** p<.01 * p<.05*

First, bootstrap 5000 resampling was adopted to to estimate t-value of path coefficients. According to Table 5 , all hypothesis were supported.

Second, the explained variance (R^2) of each dependent construct was figured out and the findings are presented in Table 5. The adjusted R^2 value of members citizenship behavior, members participation behavior, structural capital, cognitive capital, and relational capital are .472, .490, 0447, .718, and .471. Hair et al. (2019) suggested that, a model is regarded as having relatively substantial explanatory power when the R^2 value ranged from .33 to .67. Therefore the research model had a certain degree of explaining power and the results

of the study were valid.

Third, Cohen's f^2 [53] was calculated to estimate the effect size of the predictor variables. Following Cohen (1988) , recommended thresholds for f-square are .02, which represents a small effect size, .15 indicating a medium effect size, and .35, suggesting a large effect size According to the results in Table 5, the values of Cohen's f^2 suggested enough effect size [51].

Fourth, the StoneGeisser's Q^2 was also reported to demonstrate the model's predictive capacity. As proposed by Henseler et al. (2009), the suggested threshold for Stone-Geisser's Q^2 is typically categorized as small when exceeding .02, medium when exceeding .15, and large when exceeding .35. The Q^2 in this model all exceeded .35, thus suggesting adequate predictive abilities.

Table 5. Results of hypotheses testing

Variables	R^2 adjusted	Q^2
Member's Citizenship Behavior	.472	.466
Member's Participation Behavior	.490	.484
Structural Capital	.447	.453
Cognitive Capital	.718	.662
Relational Capital	.471	.408

4.4.3 Mediating effect analysis

To analyze the strength of the mediating effect of value co-creation between personality traits (extraversion, agreeableness and conscientiousness) and social capital (relational capital, structural capital and cognitive capital), a bootstrapping analysis with 5000 sub-samples was conducted. As displayed in Table 6, the findings validated the partial mediation effect of value co-creation (member's citizenship behavior and member's participation behavior). The results of this study are summarized in Figure 2.

Table 6. Mediation analysis

Indirect Effect	Coeffi-cients	P-value	Results	Indirect Effect	Coeffi-cients	P-value	Results
AB -> MPB -> CC	.064	.000	Partial	AB -> MCB -> SC	.062	.000	Partial
CT -> MPB -> SC	.093	.000	Partial	AB ->MCB -> CC	.031	.003	Partial
AB -> MPB -> RC	.122	.000	Partial	CT -> MCB -> SC	.043	.003	Partial
EV -> MPB -> SC	.068	.001	Partial	AB -> MCB -> RC	.095	.000	Partial
CT -> MPB -> CC	.050	.000	Partial	EV -> MCB ->SC	.096	.000	Partial
CT -> MPB -> RC	.095	.000	Partial	CT -> MCB -> CC	.021	.006	Partial
EV -> MPB -> CC	.036	.002	Partial	CT -> MCB -> RC	.065	.001	Partial
EV -> MPB -> RC	.070	.000	Partial	EV -> MCB -> CC	.047	.001	Partial
AB -> MPB -> SC	.118	.000	Partial	EV -> MCB -> RC	.146	.000	Partial

4.4.4 Control variable

Regarding the control variables, both gender and age significantly influence structural capital and cognitive capital but do not have a notable impact on relational capital. Specifically, gender has a significant positive effect on structural and cognitive capital, with women more likely than men to develop social interaction ties, shared vision, and shared language. Similarly, age exhibits a significant positive impact on structural and cognitive capital. As people age, their social interaction ties tend to strengthen, as indicated in Table 7, with older individuals generally having more robust networks. Additionally, older individuals accumulate

knowledge over time and become more adept at using shared language and understanding shared vision, making them more proficient in these cognitive aspects.

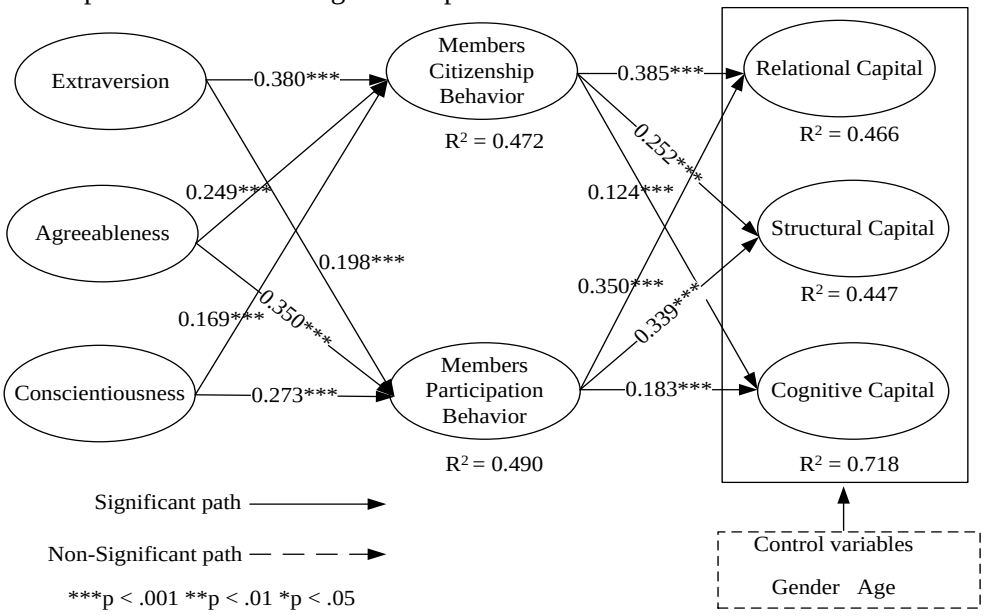

Figure 2. Results of structural model analysis

Table 7. The effect of control variable

	Path coefficient	T statistics	P values
age -> SC	.164	3.580	.000
age -> CC	.512	12.382	.000
age -> RC	.045	1.129	.259
gender -> SC	.191	2.161	.031
gender -> CC	.495	7.117	.000
gender -> RC	.070	.919	.358

5. DISCUSSION

Online knowledge sharing has become increasingly prevalent, yet previous studies have not examined how social capital is accumulated in OKSC. To address this gap, we consulted the current literature drawing on the big five personality traits and social capital theory to develop a comprehensive research model and identify the factors contributing to social capital accumulation.

Our findings reveal that personality traits not only directly influence member's citizenship behavior (MCB) and members participation behavior (MPB) but also indirectly impact social capital accumulation through value co-creation. Notably, agreeableness was found to positively influence both MCB and MPB, consistent with the work of Mustafa and Zhang (2024) in a similar study conducted in China. Extraversion had a significant positive impact on MCB, with a path coefficient of .380 ($p < .001$), aligning with Anwar (2017). However, this finding contrasts with the research by Uslu and Tosun (2024) in the tourism field, where extraversion was not found to significantly impact MCB. One possible explanation is that, in the context of OKSCs, extraverts are more likely to initiate discussions, provide assistance, and promote group cohesion. Conscientiousness, on the other hand, had a significant positive impact on BPM and CBM, confirming the findings of Obrenovic et al. (2022) and Hao et al. (2019). These results suggest that individuals with higher levels of conscientiousness are more likely to actively engage in knowledge-sharing and communication within

OKSCs.

The study also examined the influence of value co-creation on social capital, in particular on social trust, interaction ties, shared vision, and shared language. Consistent with previous research, Li et al. (2024) found that MCB contributes significantly to the accumulation of relational capital. Participants who demonstrated citizenship behaviors helped strengthen social network ties in the community and facilitate the exchange of resources and information. This finding is in line with that of Wong (2023).

Interestingly, MPB had an even greater effect on the accumulation of structural capital, especially in enhancing social interaction ties, with a path coefficient of .339 ($p < .001$). Additionally, MPB was more influential in building cognitive capital, as confirmed by Li et al. (2024). While MCB supports general information sharing, MPB fosters deeper, reciprocal knowledge exchanges and a shared understanding within the community.

6. CONCLUSIONS AND LIMITATIONS

6.1 Conclusions

The results of this study offer valuable insights into the mechanisms driving social capital accumulation in OKSCs. Specifically, the findings indicate that extraversion, agreeableness, and conscientiousness significantly influence members' participation and citizenship behaviors within OKSCs, which in turn contribute to the accumulation of relational, cognitive, and structural capital.

This research confirmed the mediating effect of value co-creation in connecting personality traits with social capital accumulation. Members who actively participated and demonstrated citizenship behaviors were found to significantly boost their relational, cognitive, and structural social capital within OKSC.

While personality traits were found to have a significant impact on the accumulation of all three forms of social capital, demographic factors, such as age and gender, also showed a substantial positive influence, particularly on cognitive capital. However, their effect on relational capital was found to be non-significant, suggesting that factors intrinsic to individual personality traits may be more decisive in building interpersonal trust and cooperation within the community.

6.2 Implications

This study examines the dynamic interplay between personality traits, value co-creation, and social capital accumulation in OKSCs, providing valuable insights for both academic research and practical platform management strategies. Primarily, it combines the Big Five Personality Traits with Social Capital Theory, providing a comprehensive view of how knowledge-sharing communities develop at both the individual and group levels. This interdisciplinary integration broadens the theoretical foundation of knowledge-sharing research, offering a more refined understanding of community dynamics.

Additionally, the study breaks new ground by empirically examining social capital accumulation in OKSC. By focusing on the role of personality traits, it offers fresh insights into the processes driving social capital growth in these environments.

Third, this research enriches the expanding body of empirical work on online members behavior, identifying personality traits as key drivers of social capital accumulation. These findings provide valuable insights for managing knowledge-sharing platforms, helping administrators foster more engaging and collaborative community environments.

6.3 Limitations and future research

This research is subject to several limitations. The data was gathered exclusively from the CSDN platform, thus limiting the generalization of our findings.Future research should explore this structural model in the context of the broader online community.

In addition, this study focused on Agreeableness, Extraversion, and Conscientiousness without considering

personality traits such as Neuroticism and Openness, which may influence the accumulation of social capital. Future research could consider the Dark Triad to better understand how less traditional traits influence the behavior in OKSCs. Furthermore, external factors such as platform design and reward systems may help explain how these factors interact with personality traits to influence the development of social capital.

Moreover, our research adopts a cross-sectional approach that captures user behavior at a specific point in time. Longitudinal studies could track how intentions to stay with a platform change over time and find out what causes these changes.

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