

Article

Social Capital on Consumer Knowledge-Sharing in Virtual Brand Communities: The Mediating Effect of Pan-Family Consciousness

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Abstract: Literature investigating social capital theory and Chinese family culture suggests that social capital exists in virtual brand communities, bringing convenience to members, contributing to the cultivation of pan-family consciousness, and affecting consumer knowledge-sharing. In this study, we considered members of virtual brand communities as the research subjects, then analyzed the data using SPSS19.0 and AMOS21.0. We showed that network density, shared language, and shared vision of social capital have a positive impact on pan-family consciousness. This, in turn, had a positive influence on knowledge-sharing, thus playing an intermediary role between cognitive capital and consumer knowledge-sharing.

Keywords: social capital; virtual brand communities; pan-family consciousness; knowledge-sharing

1. Introduction

Modern societies are highly information developed, where the Internet affects every aspect of daily life. The 42nd development statistics report of China's Internet network, issued by the China Internet Network Information Center (CNNIC), record that the number of internet users reached 0.802 billion as of June of 2018, with an Internet popularity rate of 57.7%. The statistics also showed that the number of cellphone netizens amounted to 0.788 billion, accounting for 98.3% of total netizens [1]. Rapid developments in network communication technology have resulted in brand communities abounding in the virtual world. In the cellphone industry, such communities include, the Mi community, the Meizu community, and the Huafans club. Many people who log onto virtual brand communities do so mainly to issue personal comments, and share or acquire resources through those networks. This has become an increasingly popular way to communicate and share knowledge [2]. Furthermore, an increasing number of enterprises are establishing virtual communities to strengthen their customer relationships [3].

Nowadays, enterprises by majority operate virtual communities, developed in the form of official online forums, weblogs, WeChat public accounts, post bars, QQ groups, WeChat groups, cellphone applications, and so on. These communities, together with material stimulus methods, facilitate building a certain degree of user loyalty. Enterprises view these virtual communities solely as a means for marketing and information distribution, and therefore, have not developed the technology any further. Hence, neglecting information quality development within communities, their influence in inspiring creativity among community members, or the establishment and maintenance of sustainable relationships with their consumers.

In communities, certain relationships exist where consumers are individuals, each being a node within the network. Each individual possesses multiple social identities, allowing them to relate

to members either in their own or other brand communities. Thus, any input of information into a certain community creates certain substantial relationships among different nodes in a variety of networks. Only through the maintenance of communication among the nodes created by consumers, products, enterprises, and brands can marketing and value growth be achieved. In essence, virtual brand communities are social networks involving complex relationships, such as consumer–consumer, consumer–brand, consumer–product, and consumer–enterprise. Extensive research indicates that social capital exists in social networks, bringing benefits to individuals in the networks thereby affecting their attitudes and behaviors.

Performing an online search of brand communities shows that many Chinese enterprises are named after “Jiayuan”—a Chinese phrase meaning family or homeland—such as Shengcheng Jiayuan (translates into the English phrase “Holy city family”), the family of Nanchang University, the Lenovo family, and the Vivofans family. This is to reflect that a brand community resembles a family to its consumers, which is in line with traditional Chinese cultural values, where family is the culture’s core. Family consciousness is so deeply rooted in Chinese minds that logging onto a family-named brand community creates a sense of family for community members. This enhances their sentimental belonging to virtual brand communities, and affects their knowledge-sharing behaviors.

Reviewing the literature on knowledge-sharing behaviors in virtual communities indicates that scholars are more focused on studying antecedent variables than backwash effects. In addition, the majority of relevant research only explores the direct influence of antecedent variables on knowledge-sharing, neglecting potential intermediary functions. Consumers’ behaviors are linked to their psychologies; however, its intermediary function in knowledge-sharing has not attracted sufficient attention. Psychological behaviors of virtual brand community members have been studied using management theories rather than traditional Chinese cultural influences. In this paper, we explore the intermediary functions of pan-family consciousness between social capital and knowledge-sharing, by combining Chinese family culture and social capital. Our research innovation lies in the following aspects: (1) we combine the social capital theory and traditional Chinese family culture, to construct a framework for studying how social capital affects consumer knowledge-sharing, together with the intermediation of pan-family consciousness, and provide solid evidence for support; and (2) we introduce pan-family culture into the psychological study of community members. This paper suggests that community members, affected by Chinese family culture, develop a family sensibility for the intimate organizations with which they are involved, and will discipline themselves with family codes. This shows a generalized family sense while attending virtual brand community activities, thereby expanding research into the psychological activities of community members.

Constructing an interactive link between brands and consumers through developing and operating virtual brand communities has been undertaken by many enterprises. However, they do not view this as an important strategy for retaining their competitive edge, nor do they regard the application of virtual brand communities as an important aspect of brand maintenance. Thus, the information offered in many virtual communities is far from sufficient or attractive to customers. In this context, we conducted research into virtual brand communities by applying Chinese family cultural values, to explore the distinctive characteristics of the Chinese population’s psyche towards these communities; namely, the pan-family consciousness. The paper also analyzes the intermediary role of this consciousness between social capital and knowledge-sharing based on empirical studies. It is important for enterprise managers to accurately understand the implications of virtual brand communities and grasp the psychological behaviors of community members. The effective management of such knowledge would help business managers realize the sustainable development of these communities, allowing them to build and manage virtual brand communities.

2. Literature Review

2.1. The Social Capital Theory

Social capital is the most influential theoretical concept that evolved from neo-economic sociology, which has been researched by many scholars since the 1970s. Many disciplines have focused on social capital, including sociology, economics, the behavioral organization theory, and politics.

Bourdieu was the first scholar to analyze the sociological perspective of social capital. He showed that, from the holistic social systems level, social capital is the sum of actual or potential resources, which are inseparable from the possession of certain durable networks. Bourdieu also established that the existing form of social capital is network of relations [4]. Coleman conducted more systematic analysis, viewing social capital as a kind of social structure resource that can bring convenience to personal behaviors, with individuals communicating via information exchange and shared expectations [5]. Lin defined social capital as the resources imbedded in social networks, which can be acquired and utilized for benefits. However, this does not imply that social network behaviors—reciprocity and collaboration—are social capital [6]. All research of the same period as Bourdieu and Coleman addressed problems in economics with social capital, and thus sociology became a major research field, a situation that did not change until Putnam, whose research has drawn great attention. He researched social capital from a simple individual level to a collective level, in an attempt to study politics with social capital [7]. Social organizations are strengthened in various ways in order to punish individuals or behaviors that destroy the attributes of social organizations. These attributes (including rules, trust, etc.) are called social capital.

Nahapiet and Ghoshal [8] propose three dimensions of social capital: structural, relational, and cognitive, which have been used as a base for continued research by scholars attempting to analyze different variables.

(1) Structural capital refers to the overall pattern of individual connections in a social network, which make it possible for individuals to acquire resources. The major facets of structural capital include network centralization [9–11], network links, and network structure.

(2) Relational capital denotes the particular relationships that people have in a social network, which offers convenience to individuals. The major facets of relational capital include trust [10,11], commitment [9], reciprocity [9,11], social identification [11], and obligations [10].

(3) Cognitive capital refers to shared cognition, perspectives, and notions of people upon certain resources, valuing shared interpretations and meanings within a collective. The major facets of cognitive capital include shared language [11], shared vision [10,11], expertise, and tenure [9].

From the perspective of social capital, together with the theory of personal motivation, Wasko and Faraj [9] conducted research on individual knowledge-sharing. They discovered that the cognitive (level of expertise and tenure) and structural dimensions (network centrality) exert a significant influence on knowledge-sharing, while the relational dimension (commitment and reciprocity) made no difference. Hsu [12] and others proposed a social-cognitive-theory-based model to address the possible influence of social capital on knowledge-sharing, through perspectives of trust and outcome expectations. Chiu, Hsu, and Wang [11] carried out holistic research on the relationships between knowledge-sharing and the three social capital dimensions by integrating social capital and social cognitive theories. Wiertz and Ruyter [13] considered commercial virtual communities sponsored by enterprises as the research subjects, and analyzed the influence of relational capital—the commitment and reciprocity facets—on the quantity and quality of knowledge-sharing. Chen [2] explored consumer' knowledge-sharing behaviors (quantity and quality of issued information) through defined facets of social capital dimensions, namely, social network—trust, commitment, and reciprocity—and community consciousness. Zhang [14] studied the influence of social capital and personal motivations, from the perspective of what motivates community members towards sharing knowledge, and he proposes positive influences through empirical studies. Zhou [15] analyzed functions mediating network centrality and codes of reciprocity between personal characteristics and

knowledge-sharing, based on the “Embeddedness Theory”. Liu [16] used the structural equation model, highlighted the influence of the different social capital dimensions on individual contributions to knowledge-sharing. To conclude, there is a consensus among scholars regarding the impact of social capital on knowledge-sharing.

2.2. Family Culture

Homeland and family are the places where a person was born and grew up. People’s understanding of homeland changes with time. Researchers have proposed various, complicated definitions of family. Bai and Fu [17] suggest that family holds the functions of living and socializing, financing and emotional exchange, giving birth and child rearing. Olson and De Frain [18] suggest that family is a place consisting of two or more individuals, who can share an intimate relationship, exchange resources, and make decisions. Lewin [19] proposes that family can be simply referred to as a group of individuals who interact with each other. In conclusion, it appears that definitions of family expand from kinships or adoption relationships, to any intimate relationships, and that personal interaction coincides with family consciousness.

Chinese family culture boasts a long history and is deeply rooted in people’s minds, which exerts a significant influence on Chinese psychology and behavior [20]. Family culture has been continuously consummated by followers of Confucius, and was established as a code-of-conduct for the entire society, affecting not only individuals’ mindsets, but also the organizations, and daily enterprise operations [21]. Enterprises and the nation are also viewed as an extension of family [22].

Family and pan-family cultures tend to exist in all kinds of Chinese organizations, even in state-owned enterprises [23]. These have been studied by a large number of scholars, including Yang, G.S.—a Professor of psychology at Taiwan University. Professor Yang proposes that the life experiences and habits cultivated within families are the sole experiences and habits held by Chinese individuals from a certain community or organization. By having pan-family consciousness, Chinese individuals involved in non-family organization-related activities will think and behave in the same manners they conduct within their family-context.

Yang established the theory of pan-family based on theoretical research and empirical analysis, shedding light on the influence the traditional Chinese culture has on Chinese family-enterprise management. In later studies, Yang found that Chinese individuals tend to project familial structure, behaviors, and inter-personal relations. Other scholars also believe that there is a generalization system of family culture in Chinese societies, and that family and pan-family cultures also in various Chinese organizations [21,23].

Members of virtual brand communities assemble to worship the same brand and present pan-family consciousness [24]. Weigel, when studying the family consciousness in average people, asserted that the structure of brand communities resembled that of family; that community members hold similar attitudes towards their communities as to their own families. Thus, generating family-like community consciousness that enables community members to organize their brand community like a family, and apply their family experiences to these communities [25]. Algesheimer [26] suggests that after putting his or her personal feelings into a given brand community, an individual develops a sense of intimacy towards other members, basically viewing others as their own family members. A brand community exists like a family, and community members have a generalized pan-family consciousness. Jing [24] also believes that pan-family consciousness is a kind of family-like feeling, thought, and psychological cognition of virtual brand community members, which is developed during community activities.

2.3. Social Cognition Theory

The social cognition theory is an important theoretical module of social psychology, proposed by American psychologist Bandura after long-term observation and research of social behaviors. He adds cognition to the behavior theory, and points out that in human beings’ cognition precedes

their behaviors, which are determined by their inner thoughts, activates, and external environmental factors altogether.

Self-efficacy, one of the core concepts of the social cognition theory, was developed by Bandura. This was based on the hypothesis that when determining people's behaviors, the inner thinking activities play a stronger role than exterior environmental factors. Self-efficacy reflects self-assessment or confidence after an individual completes an assignment. With a strong sense of self-efficacy, a person shows more self-confidence and active thinking when addressing new problems. The process of problem-solving, in turn, boosts the person's self-efficacy. In contrast, individuals with low self-efficacy always escape from problems, belittle themselves, and finally tend to give up on an assignment.

At the moment, based on the social cognition theory, research into community members' behavior has focused on the influence of self-efficacy on the knowledge-sharing behaviors in online communities. Hsu [12] demonstrated that self-efficacy has a direct influence on knowledge-sharing behaviors in practical online communities. Members of individual and community-related results are expected to have an indirect impact on knowledge-sharing behaviors. Confirmation of self-efficacy as a positive indicator for knowledge-sharing in virtual communities has been also provided by other researchers [27–29].

2.4. Virtual Community Knowledge-sharing

Knowledge-sharing is the main part of knowledge management, and an important link point in knowledge management activities. In recent years, development of the knowledge management theory has boosted research on knowledge-sharing.

Realizing knowledge-sharing in a virtual community usually depends on activities such as posting, reply, and so on. Two main types of knowledge-sharing exist in a virtual community: (1) knowledge transfer and experience sharing, caused by posting and responding behaviors among virtual community members; and (2) the suggestions or opinions put forward by some virtual community members are sorted out by the community platform, and stored in the community database available to other members [30]. The former represents the interaction between virtual community members, and the latter describes knowledge-sharing between virtual community members and the community platform, in which the former is more important [31].

A virtual community can improve the interaction efficiency by breaking the constraints of time and space. Many organizations regard virtual communities as the key to knowledge management, and as such, pay more attention to the operation and development of a virtual community [32]. At the same time, users continue to seek knowledge in virtual communities [33].

A virtual brand community is professional and vertical. As the community manager, the host enterprise is directly involved in community interactions and knowledge-sharing activities, in order to guide and manage the behaviors of community users. Community users are mostly enterprise customers or potential customers. Before participating in community interaction, the customers establish certain social relations with enterprises. The key to virtual brand community success is the active participation of community users in community activities of knowledge creation and sharing. Knowledge-sharing is crucial for virtual brand community development, in addition to the dynamic and sustainable development of virtual communities [34].

Creating a conducive environment can promote the generation of knowledge-sharing, and ultimately achieve mutual benefit. Personal profit, though invisible, can bring tangible benefits. Reasonable profits and sustainable development are the ultimate goals of virtual community development. It can be predicted that the prospects of virtual communities lie in full exploration of the communities' economic benefits, the development towards the market, provision of commercial services, and sustainable development of the community [35].

3. Research Hypotheses

When studying social capital, most scholars will adopt the classic three-dimensional categories of social capital proposed by Nahapiet and Ghoshal [8], namely, structural capital, relational capital, and cognitive capital. The intermediation variable “pan-family consciousness” belongs to the relational capital, which we discuss in this paper from the perspectives of structural (including network density and network centrality) and cognitive capitals (including shared language and shared vision). With regard to pan-family consciousness, we considered the work done by Jing [24], which includes sense of security and emotional affiliation.

The concept of network density develops from, and embodies, the network intensity and scope. It reflects the extent, quantity, and intensity of correlation in multiple interactions between members of virtual brand communities. Brand communities serve as gathering places for worshippers of a given brands, thus individuals gain acceptance from other members through constant interaction, to slowly classify and compare those from other brand communities. Hence, a group’s sense of belonging revolves around a certain brand. Closer member relationships within a community are reflected by an increase in a group’s sense of individuals. Georgi and Mink [36] believe that customer–customer interaction (CCI) behavior leads to an increase in the recognition and reputation of individuals within social networks. Koerner and Fitzpatrick [37] claim that a familial relationship lies in the interaction of family members. Indicating that the degree of family consciousness that expanded into communities is assessed by the closeness of its members. The closer the members are to each other, the stronger their family consciousness. Hence, this paper proposes the following hypotheses:

Hypothesis 1.(H1) *The network density of virtual brand community members has a positive impact on individuals’ pan-family consciousness.*

Hypothesis 1a.(H1a) *The network density of virtual brand community members has a positive impact on individuals’ sense of security.*

Hypothesis 1b.(H1b) *The network density of virtual brand community members has a positive impact on individuals’ emotional affiliation.*

Network centrality denotes whether an individual is at the center of a social network. According to *The Countryside of China* by Fei [38], Chinese family centers around oneself, with the family being closest to the core of a social network. An individual with this kind of subjectivity tends to identify himself with a given network more than others, and may manifest family consciousness. Feeley and Moon [39] point out that those at the center of social networks are more likely to identify themselves with other members of the same community, possess more emotional inclination and affiliation to their community, and will communicate these feelings to other members. Mc Namara and Stevenson [40] suggest that a community could compensate its members for prejudices they have experienced, enabling them to feel the love and warmth from the community, whereas, those at the far ends of a community will feel homeless. It can be seen that the members’ sense of certainty and affiliation increases as they get closer to the center of the community, and so members at the center of the virtual community have a stronger sense of security and affiliation than those who are at the far ends.

Hypothesis 2.(H2) *The network centrality held by members of virtual brand communities has a positive impact on the cultivation of pan-family consciousness.*

Hypothesis 2a.(H2a) *The network centrality held by members of virtual brand communities has a positive impact on the sense of security felt by members.*

Hypothesis 2b.(H2b) *The network centrality held by members of virtual brand communities has a positive impact on the emotional affiliation felt by members.*

A shared language refers to the ways in which community members discuss topics, ask questions, and communicate with each other. It guarantees the smooth communication and interaction among community members, contributing to the collective cognition, which makes it easier for members to understand each other's intentions and accelerates resource sharing. Besides, it enables community members to yield the same anticipation for different actions, and helps in the fulfillment of shared objectives. Chan, while studying how members of Yahoo's community participate in their community activities, noticed that a shared language renders it easier for members to identify with others [41]. Luo stated that shared cognition has five essential functions: self-cognition; mutual effect; mutual sharing; sentiment-communication; and team culture, and that individual cognition among members guarantees the quality of their social connection [42].

Hypothesis 3.(H3) *The shared language of virtual brand communities has a positive impact on the cultivation of pan-family consciousness.*

Hypothesis 3a.(H3a) *The shared language of virtual brand communities has a positive impact on the sense of security felt by members.*

Hypothesis 3b.(H3b) *The shared language of virtual brand communities has a positive impact on the emotional affiliation felt by members.*

A shared vision means the mutual understanding and agreement of the interaction mode among members of a given group. Active community members, as well as silent ones, hold similar notions of the common objectives and expectations of their community, which lays a solid foundation for the exchange and integration of resources into the community. In addition, these members present a strong sense of belonging, ready to value the objectives of their community over their personal ones [43], driving community members to harbor certain intimate feelings to their community, and willingness to have heart-felt communications with other members, and thus building a unique environment. All members understand that the community's shared vision cannot only help boost the formation of a shared philosophy and exchange of resources, but also enhances members' mutual affirmation.

Hypothesis 4.(H4) *The shared vision of virtual brand communities has a positive impact on the cultivation of pan-family consciousness.*

Hypothesis 4a.(H4a) *The shared vision of virtual brand communities has a positive impact on the sense of security felt by members.*

Hypothesis 4b.(H4b) *The shared vision of virtual brand communities has a positive impact on the emotional affiliation felt by members.*

In most cases, an individual will be motivated to spend time and effort participating in community activities if they feel as if they are part of the brand community. Individuals will try to contribute more by sharing knowledge, information, and experiences. It is the sense of belonging that affects community involvement to a great extent, which, in turn, boosts the sense of belonging. Chiu suggest that how community members identify each other explicitly affects the quality and quantity of knowledge-sharing [11]. With a strong sense of affiliation, members will follow and abide by the brand community's codes and rules, take others' opinions seriously, and acquire more knowledge.

The sense of security within pan-family consciousness denotes that all members of the community are treated equally, with support and respect, generating trust in the community and its members. At this point, even two strangers within the same community would aid each other [11]. Meanwhile, mutual trust among members effectively adds to their willingness for knowledge acquisition, which is

supported by large amount of research [44]. This paper proposes that pan-family consciousness in virtual brand communities is beneficial to knowledge-sharing among members.

Hypothesis 5.(H5) *The pan-family consciousness in virtual brand communities has a positive impact on knowledge-sharing of consumers.*

Hypothesis 5a.(H5a) *The sense of security in virtual brand communities has a positive impact on knowledge-sharing of consumers.*

Hypothesis 5b.(H5b) *The emotional affiliation in virtual brand communities has a positive impact on knowledge-sharing of consumers.*

Social capital of virtual brand communities comes from a comparatively secluded network. It creates a psychological environment that helps community members support and respect each other, generating an impact on the subjective behaviors of knowledge-sharing. In China, a family-based society, the concept of family has extended beyond its original reference established according to people's social codes. Thus, when community members participate in virtual activities, they treat the community as a family. Jing [24] views this family-like sentiment as pan-family consciousness, which can promote people's loyalty to their communities. It also facilitates people's participation in community activities and knowledge-sharing in more active ways. The above analysis indicates that members' assessment of two dimensions of social capital (one being the structural dimension, which includes network density and centrality; and the other being the cognitive dimension, which includes shared language and vision) in their community, has a positive impact on their pan-family consciousness that positively correlates with knowledge-sharing. Therefore, this paper supports the notion that it is through pan-family consciousness that the two dimensions of social capital in virtual brand communities exert their impact on consumer knowledge-sharing. Hence, the following hypotheses:

Hypothesis 6.(H6) *The pan-family consciousness in virtual brand communities plays an intermediate role in consumer knowledge-sharing.*

Hypothesis 6a.(H6a) *The sense of security in virtual brand communities plays an intermediate role in consumer knowledge-sharing.*

Hypothesis 6b.(H6b) *The emotional affiliation in virtual brand communities plays an intermediate role in consumer knowledge-sharing.*

Self-efficacy is a core concept of the social cognition theory developed by Bandura. It refers to an individual's self-assessment of competence during task accomplishment. Hsu and Chiu [45] define "internet self-efficacy" as one's competence to organize and perform a series of virtual operations to fulfill specific aims. In other words, it refers to one's judgment for, and confidence in, finishing an Internet assignment (for example, to search for some information). Hsu and others propose that self-efficacy is a knowledge-sharing decisive factor for virtual brand community members [12]. The empirical studies by Zhang, Zhou [46], and Li [27] also prove the direct correlation between the two. Research by Zhao [28], and Liao [29] show that self-efficacy has a positive effect on knowledge-sharing. By contrast, Bandura stresses the regulatory effect of cognition on individuals' behaviors disapproving direct influence. Hence the following hypotheses:

Hypothesis 7.(H7) *Self-efficacy plays a regulatory role in the course of the pan-family consciousness affecting consumer knowledge-sharing.*

Hypothesis 7a.(H7a) *Self-efficacy plays a regulatory role in the course of the sense of security affecting consumer knowledge-sharing.*

Hypothesis 7b.(H7b) *Self-efficacy plays a regulating role in the course of emotional affiliation affecting consumer knowledge-sharing.*

In conclusion, this paper proposes a conceptual model as shown in Figure 1, describing the influencing mechanism of social capital on consumers' knowledge-sharing in virtual brand communities, and the intermediate role played by pan-family consciousness during the process.

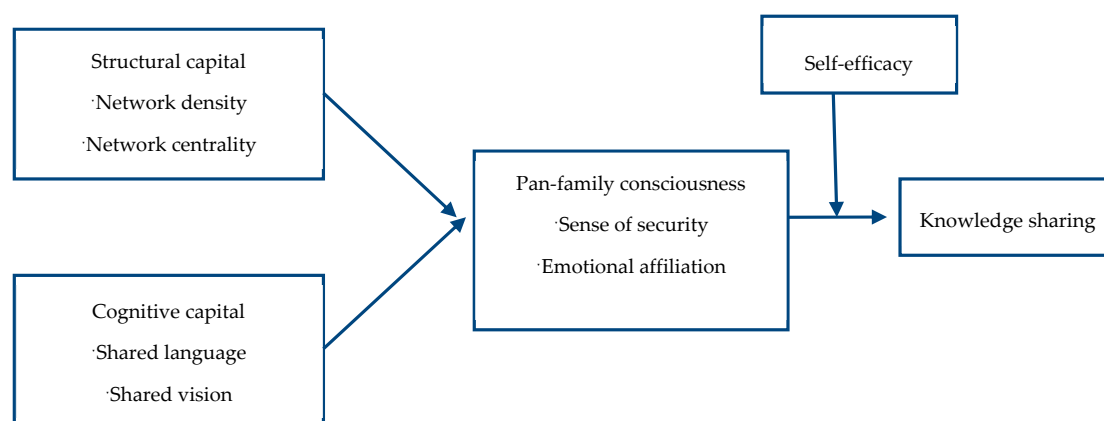


Figure 1. Research Model.

4. Research Methodology

4.1. Data Resources

The questionnaire subjects were mainly members of virtual brand communities. The questionnaire started with an introduction to virtual brand communities and knowledge-sharing, and offered three big popular categories of virtual brand communities for choices in the first section, including cell phones, vehicles, and cosmetics. The surveys were conducted through Wenjuanxing, an online survey service website. Wenjuaxing automatically recommends the questionnaire to over 500,000 visitors, with a quick retrieval speed. We received 401 copies of the questionnaire, with 60 invalid copies. Resulting in 341 valid copies, accounting for 85.04% of the total. The statistical data are shown in Table 1.

Table 1. Basic information of survey samples (n = 341).

Sample Feature	Number of Persons (Percentage)	Sample Feature	Number of Persons (Percentage)
Male	168(49.3)	13–18years old	1(0.3)
Female	173(50.7)	19–24 years old	43(12.6)
Junior Middle School	2(0.6)	25–30 years old	125(36.7)
Senior Middle School	19(5.6)	31–40 years old	125(36.7)
Undergraduate	289(84.8)	>40 years old	47(13.8)
Postgraduate	31(9.1)	Communities of mobile phones	229(67.2)
0 RMB	13(3.8)	Communities of vehicles	62(18.2)

Table 1. Cont.

Sample Feature	Number of Persons (Percentage)	Sample Feature	Number of Persons (Percentage)
<¥3000 RMB	23(6.7)	Communities of cosmetics	50(14.7)
¥3001–¥5000 RMB	106(31.1)	To share knowledge	68(19.9)
¥5001–¥8000 RMB	124(36.4)	To acquire information	264(77.4)
>¥8000 RMB	75(22.0)	To chat	9(2.6)
Frequencies of visits		<6 months in the community	34(10.0)
Everyday	58(17.0)	6–12 months in the community	113(33.1)
2–3 days	133(39.0)	1–2 years in the community	104(30.5)
4–5 days	98(28.7)	2–3 years in the community	54(15.8)
6–7 days	23(6.7)	3–5 years in the community	29(8.5)
>7 days	29(8.5)	>5 years in the community	7(2.1)

4.2. Measurement of Variables

The questionnaire items included two parts: one comprised of basic information; and the other being the influence of social capital on consumers' knowledge-sharing in virtual brand communities. The social capital scale was mainly based on the well-developed scales by Nahapiet and Ghoshal [8], Tsai and Ghoshal [10], Xue [47], and Chiu [11]. The scale for pan-family consciousness utilized the main scale items designed by Cong and An [48], Albanesi [49], Lin [50], and Jing [24]. The self-efficacy scale was based on those by Hsu [12], Cui [51], and Zhang [3]. The knowledge-sharing scale was mainly from Van den Hooff [52] and Hsu [53]. Measurement items are shown in Table 2.

Table 2. Measurement Items.

Variables		Number of Items	Sample Items
Structural capital	ND	4	"I maintain a solid relationship with some members of the community"
	NC	4	"I am an influential figure in the community"
Cognitive capital	SL	3	"There is a set of shared language used only in the community"
	SV	3	"Community members share this vision: be ready to help others"
Pan-family consciousness	SOS	5	"The members of the community are trustworthy"
	EA	6	"I feel like at home in the community"
Self-efficacy	SE	4	"I have confidence in using the community"
Knowledge-sharing	KS	3	"Community members are ready to share their knowledge and experiences"

Note: "ND" = network density; "NC" = network centrality; "SL" = shared language; "SV" = shared vision; "SOS" = sense of security; "EA" = emotional affiliation.

The questionnaire took the frequently used Likert Scale with five levels ranging from strongly disagree, disagree, neutral, agree, and strongly agree for subjects to choose from according to the real situation in their brand communities.

4.3. Formatting of Mathematical Components

Reliability in essence refers to whether the results of the questionnaire were reliable, or whether the subjects seriously answered the sample questions. Cronbach's α quotient was employed to verify whether the results truly reflected the constant and consistent characteristics. Table 3 shows that Cronbach's α quotients of the variables were relatively high, showing sound inner consistency.

Validity refers to the consistency between test scores and desired scores. In other words, it shows whether test scores truly reflect the desired features. Prior to factorial analysis, a set common and simple validity tests—namely Kaiser-Meyer-Olkin (KMO) value and Bartlett sphericity test—were conducted, which showed that the KMO coefficients of structural capital, cognitive capital, pan-family consciousness, self-efficacy, and knowledge-sharing were 0.930(>0.70), 0.821(>0.70), 0.926 (>0.70), 0.705(>0.70), and 0.631(>0.60), respectively. Furthermore, the corresponding p values in the Bartlett sphericity tests of all the variables were smaller than 0.01. These data prove that the Bartlett sphericity test is of great significance, and that the holistic measurement scales were appropriate for factorial analysis, with a sound validity structure.

Table 3. Validity analysis results of holistic measurement scales (N = number).

Survey Scales	Cronbach's Alpha	N of Items
Structural capital	0.919	8
Cognitive capital	0.759	6
Pan-family consciousness	0.886	11
Self-efficacy	0.653	4
Knowledge-sharing	0.636	3

4.4. Model Hypothesis Test

To explore the relationships between social capital, pan-family consciousness, and knowledge-sharing, the path analysis method was used to analyze the influence of network density, network centrality, shared language, and shared vision on pan-family consciousness, in addition to studying the influence of pan-family consciousness on knowledge-sharing. The regression analysis was used to analyze the intermediary effect of pan-family consciousness, and the regulatory function of self-efficacy between pan-family consciousness and knowledge-sharing.

4.4.1. Path Analysis

Based on research methods employed in current literature, a structural equation model has been used to verify the theoretical model proposed in this paper. Firstly, the influence of network density, network centrality, shared language, shared vision on pan-family consciousness, and the influence of pan-family consciousness on knowledge-sharing were tested, as shown in Figure 2.

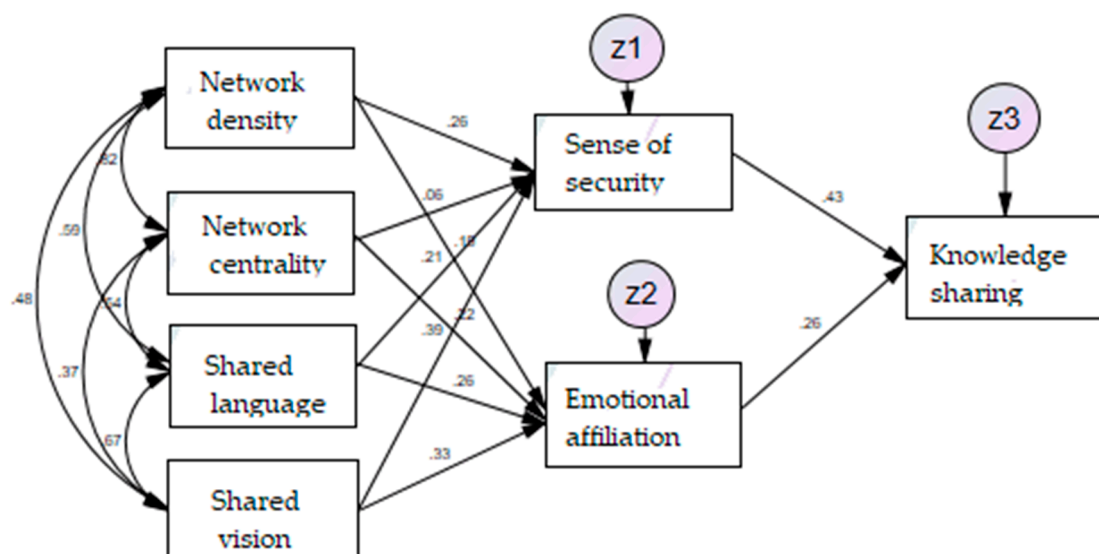


Figure 2. Structural equation model analysis.

Secondly, a test for significance was conducted on the path coefficients of the research model. The estimated and *p* values of standardized path coefficients of the structural relations between latent variables are shown in Table 4. Network density had a significantly positive effect on sense of security and emotional affiliation, with the standardized path coefficients being 0.255 and 0.191, respectively. In contrast, network centrality had no significant effect on the sense of security, with the coefficient being 0.05. However, it had a positive impact on the emotional affiliation. Shared knowledge and shared vision had a significant influence on pan-family consciousness, with the standardized path coefficients for sense of security being 0.214 and 0.395, respectively, whereas the standardized path coefficients for emotional affiliation were 0.260 and 0.326, respectively. Finally, we found that the knowledge-sharing behaviors of virtual brand communities increased as community members' pan-family consciousness (sense of security and emotional affiliation) increased, with the standardized path coefficients being 0.428 and 0.257, respectively. Therefore, some of our proposed hypotheses—H1a, H1b, H2b, H3a, H3b, H4a, H4b, H5a, and H5b—were verified, while H2a was not.

Table 4. Significance test of path coefficients.

	NSEPC	S.E.	C.R.	P	Label	SEPC
Sense of security ← Network density	0.181	0.046	3.963	***	par_1	0.255
Emotional affiliation ← Network density	0.147	0.045	3.241	0.001	par_2	0.191
Sense of security ← Network centrality	0.035	0.034	1.045	0.296	par_3	0.064
Emotional affiliation ← Network centrality	0.129	0.033	3.876	***	par_4	0.216
Sense of security ← Shared language	0.200	0.048	4.192	***	par_5	0.214
Emotional affiliation ← Shared language	0.264	0.047	5.588	***	par_6	0.260
Sense of security ← Shared vision	0.396	0.047	8.457	***	par_7	0.395
Emotional affiliation ← Shared vision	0.355	0.046	7.635	***	par_8	0.326
Knowledge-sharing ← Sense of security	0.412	0.053	7.831	***	par_9	0.428
Knowledge-sharing ← Emotional affiliation	0.228	0.049	4.699	***	par_10	0.257

Note: "NSEPC" = non-standardized estimated path coefficients; "SEPC" = standardized estimated path coefficients; *** = being significant at or above 0.01. Values inside brackets correspond to the C.R. value, i.e., *t* value.

4.4.2. Analysis of Regression

To prove the immediate function of pan-family consciousness, four premises must be satisfied: first, social capital had a significant impact on knowledge-sharing; second, social capital had a significant impact on pan-family consciousness; third, pan-family consciousness had a significant impact on knowledge-sharing; and fourth, when the marketing impact of social capital and pan-family consciousness on knowledge-sharing was analyzed, social capital, under the interference from pan-family consciousness, had less or lost its impact on knowledge-sharing.

To prove the first premise, we took network density, network centrality, shared language, and shared vision as independent variables, with knowledge-sharing as a dependent variable. The test showed that the R value was 0.506, the dependent variable's explanation degree amounted to 50.6%, the F value tested in the regression analysis was 88.125, and the p value was smaller than 0.01. These data indicate that the established regression model had a high degree of fitting. The regression coefficients of shared language and vision were 0.231 and 0.518 respectively, T values were 4.398 and 10.042 respectively, and the corresponding p values were both smaller than 0.01. These findings prove that shared language and vision both exert a positive impact on knowledge-sharing, and that their impact was rather significant. Whereas, the regression coefficients of network density and network centrality were 0.027 and -0.026 respectively, and the corresponding p values were 0.587 and 0.479, indicating that network density and centrality have no significant positive impact on knowledge-sharing. Table 3 proves the second and third premises. Finally, the regression analysis was applied to the fourth premise. The test showed that when the sense of security and emotional affiliation served as mediating variables, the regression coefficients of shared language and vision (two dimensions of social capital) for knowledge-sharing declined, but the p value was smaller than 0.01. In conclusion, under the mediating impact, the influence of shared language and vision was significant. Pan-family consciousness still had a significant, positive impact on knowledge-sharing, and the absolute regression coefficients of the two dimensions of social capital under mediating function were smaller than those under direct influence. Indicating that pan-family consciousness plays an intermediate role, to some extent, between cognitive capital (shared language and vision) and knowledge-sharing. However, pan-family consciousness did not behave as an intermediate between structural capital (network density and network centrality) and knowledge-sharing. Therefore, H6 partially passed the test.

When regulating the effect model with self-efficacy, sense of security, and emotional affiliation still had a significant, positive impact on knowledge-sharing, with regression coefficients being respectively 0.686 and 0.497, and a p value <0.05 . However, the regression coefficients for knowledge-sharing of the product in terms of: sense of security and self-efficacy; and emotional affiliation and self-efficacy, were -0.093 and -0.065 respectively, with a p value >0.05 . This disapproved the significant, positive impact of self-efficacy between pan-family consciousness (sense of security and emotional affiliation) and knowledge-sharing, meaning that self-efficacy did not have a regulatory function between these two variables, and that hypothesis H7 was false.

5. Conclusions and Discussion

5.1. Research Conclusion

In this paper, we constructed research hypotheses based on theoretical reviews and literature analysis. We mainly explored correlations between social capital and consumer behaviors in virtual brand communities, with a special focus on the intermediary function of pan-family consciousness between the above two factors. In addition, a questionnaire survey, with subjects being members of virtual communities associated with mobile phones, vehicles, and cosmetics, was carried out to verify the hypotheses through empirical studies. The research conclusions are as follows.

The two dimensions (shared language and vision) of cognitive capital accelerate knowledge-sharing among members, while the two dimensions (network density and network

centrality) of structural capital do not have a significant effect. This could be due to community members who favor personal interaction, or those who are closer to the central positions. These account for only a small fraction of the total as shown by a survey in which 77.4% of the subjects reported the purpose of their visits as merely acquiring information, and only 22.6% visited for knowledge-sharing and interactive chatting.

H1a, H1b, H2b, H3a, H3b, H4a, and H4b have been verified, while H2a has not. All the dimensions of social capital contribute to the cultivation of pan-family consciousness in community members. Network density among members has a positive impact in this aspect; the more intimate the relations, the stronger the pan-family consciousness. Network centrality is positively related to emotional affiliation, but not with sense of security. This might be due to those who are closer to the central area, who are more likely to possess a strong sense of being a host or hostess, together with a stronger emotional affiliation. The shared language and vision is significantly and positively related to pan-family consciousness, in a sense that they could effectively unite members of communities, a boost to the acquiring a sense of security and emotional affiliation.

H5 has been verified. The cultivation of pan-family consciousness in community members is beneficial to their knowledge-sharing behaviors. With such consciousness, members of the community would support their communities, share more knowledge, and increase the value of their community.

H6 passes the test partially. Pan-family consciousness serves as an intermediary between cognitive capital and knowledge-sharing, but not between structural capital and knowledge-sharing. According to empirical studies, network density and the centrality of structural capital do not have a significant impact on knowledge-sharing, even under the influence of pan-family consciousness. Shared language and vision of cognitive capital have a significant impact on knowledge-sharing, and under the influence of pan-family consciousness, the impact remains significant. The absolute regression coefficients of the two dimensions of social capital under mediating function are both smaller than those under direct influence, indicating that pan-family consciousness plays an intermediate role to some extent between cognitive capital (shared language and vision) and knowledge-sharing.

H7 is a false hypothesis. Self-efficacy does not have a regulatory function between pan-family consciousness and knowledge-sharing. The empirical study supports the contention that sense of security, emotional affiliation, and self-efficacy all exert a direct and positive influence. However, the interactions between sense of security and self-efficacy, and emotional affiliation and self-efficacy do not have a significant impact on knowledge-sharing. However, the empirical study proves that self-efficacy exerts a direct and positive influence on knowledge-sharing, a conclusion in accordance with that from Zhang and Zhou [46], Li [27], Zhao [28], and Liao [29].

5.2. Research Discussion

Virtual brand communities provide a platform for users to create and exchange User Generated Content. This results in value creation not only between consumers and companies, but also between consumers and other consumers. In addition to the additional communication channel, brand communities also provide a possibility of establishing links with devoted users. They achieve social value by being socially connected with others, and satisfy their needs for belonging and cognition with others who share the same norms, values, and interests. Jiao [54] claims that Chinese consumers in brand communities show more social value than US consumers. Jamid [55] finds that both self-brand image and value congruities significantly affect consumer engagement.

Wasko [9] and Jiao [56] found that the cognitive and structural dimensions of social capital have an important impact on knowledge-sharing. Hsu [12] and Chiu [11] explored the impact of social capital on knowledge-sharing. Zhang's empirical study shows that social capital has a significant, positive impact on the knowledge-sharing behavior of virtual community members [14]. From the perspective of the social capital theory, Zhou [15] studied the important influence of network centrality and reciprocal norms on knowledge-sharing. This study empirically examines the positive impact of cognitive capital on knowledge-sharing, without verifying the positive effect of structural capital.

This could be due to the fact that in this study, virtual brand community members who liked to interact with others, and were close to the center of the network, were a minority. The results of this study show that self-efficacy does not play a regulatory role between pan-family consciousness and knowledge-sharing, but empirical results show that self-efficacy can have a direct positive impact on knowledge-sharing, which is consistent with the findings by Zhang [46], Li [27], Zhao [28], and Liao [29]. In addition, this study complements the intermediary effect test between social capital and knowledge-sharing. It also proves the partial intermediary role of pan-family consciousness in cognitive capital and knowledge-sharing, which links Chinese traditional family culture with social capital [57].

5.3. Contributions

The contribution of this study is not restricted to exploring the pre-dependent variables of consumer knowledge-sharing in a virtual brand community, but extends to systematically find the intermediates between pre-dependent variables and knowledge-sharing. In addition, we also creatively combined the theory of social capital—developed in the West—with the Chinese traditional home culture, to explore the impact on knowledge-sharing. The purpose of this study was to show that in the era of knowledge economy, if enterprises want to achieve long-term sustainable development, they must consider knowledge creation and consumer sharing in virtual brand communities. Enhancing social capital awareness of community members by introducing the home culture, thereby effectively increases knowledge, thus encouraging enterprises to manufacture products that satisfy consumer needs, and improving the relationship between enterprises and consumers.

This study combines the theory of social capital with the cultural thought of Chinese countries, constructs the main frame of social capital that influences consumer knowledge-sharing, and introduces the mediating role of pan-family consciousness. Social capital can obtain empirical support by mediating the role of pan-family consciousness and then influencing consumers' knowledge-sharing. Self-efficacy in the social cognitive theory is introduced to act as a regulatory variable, which enriches the existing theoretical system.

In a practical sense, the first approach provides a new way to strengthen positive knowledge-sharing among community members, and to build sustainable community relationships. Based on the relationship model among community, brand, enterprise, and product, this paper analyzes community members' participation in the community from the social capital angle, by grasping the core characteristic of the digital communication era "interaction". The internal motivation and result of the interaction provide a new perspective, and chain of thought for enterprises to shape, maintain, and strengthen community relations. The second approach is to study the psychological activities of the online brand community members based on the Chinese traditional home culture. Community members have pan-family awareness of the online brand community, which can promote its development. Their loyalty and willingness to participate in brand community activities suggest that domestic enterprise managers can develop online brand communities based on the content of their home culture. At the same time, for enterprise managers to promote members knowledge and creation of new ideas.

5.4. Implications

This paper introduces the traditional Chinese family culture into the study of psychological activities, and combines social capital with family culture. The research indicates that social capital lies in virtual brand communities, and brings benefits to the members who develop pan-family consciousness that influences knowledge-sharing behaviors of consumers. Therefore, it is suggested that enterprise management takes initiatives to strengthen social capital and family culture in their brand communities, which will accelerate consumers' knowledge-sharing and add value to communities.

Enterprise managers are expected to set the language used by community members, to facilitate better communication and contribution of more valuable knowledge. Besides, platform segmentation in communities should be performed. For example, in a mobile phone community, the communication platform can be divided into hardware platform, software platform, appearance design platform, and services, making it easier for consumers to locate their own interest where they have shared vision, a move that would enhance brand development.

Managers can introduce family culture into the construction of brand communities. They cannot only name their community after family, but also develop programs with family as the theme, such as specifying family rules, thus providing a family-feel for the members.

Since Chinese usually correlate family with house, managers must treat virtual brand community systems well, by improving and optimizing the community's operational system to guarantee the steady and smooth flow of all the relevant activities.

Community members would have the family-feel if close friends were nearby in the communities. Therefore, the cultivation of pan-family consciousness is closely related with network relations between community members. Managers could organize some welcome interaction activities to strengthen relations between members.

5.5. Limitations

Research on consumers' knowledge-sharing involves many factors, and this paper starts from the perspective of Chinese family culture, develops a theoretical analysis frame of social capital, and the conclusions are of certain reference value. However, owing to some conditions, this paper has its own limitations and drawbacks.

The sample subjects of the survey were from virtual brand community members, and the number of subjects was not small. However, as the survey was conducted by Wenjuanxing—a virtual survey service—there was no strict subject selection, or guarantee that they came from the desired communities. Consequently, the validity of the empirical study is influenced to some extent.

The pan-family consciousness used in this paper comes from work done by Jing [24], who only refers to content on the traditional concept of family. Whether the pan-family consciousness in virtual brand communities encompasses only the sense of security and emotional affiliation requires normalized research. Besides, the systemic scales for pan-family consciousness do not exist, the scales used in this paper were a modified version of those used for a traditional family. Though the results indicate that the validity and reliability of the measurements conducted by this paper are good, more suitable scales for pan-family consciousness should be developed.

Therefore, more effort is expected for strict control when selecting survey subjects, specifying the types of communities they visit, and their accounts for further tests. Grounded theory, case study or small-scale interview can be employed to analyze the activities influenced by pan-family consciousness in virtual brand communities, in order to achieve more reliable, accurate, and comprehensive conclusions, and to develop suitable scales for measuring pan-family consciousness. It remains to be seen whether there are other intermediary or regulatory variables that influence the correlation between social capital and consumers' knowledge-sharing in virtual brand communities.

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