The Influence of Virtual Brand Community Characteristics on Customer Value co-creation Intention

GENG LAN[1,2], SIWARIT PONGSAKORNRUNGSILP[3], PIMLAPAS PONGSAKORNRUNGSILP[4], MINJUN QIN[5]
[1]College of Graduate Studies,
Walailak University,
THAILAND

[2]Guangxi University of Finance and Economics,
CHINA

[3]Department of Digital Marketing, School of Management,
Walailak University,
THAILAND

[4]Department of Tourism and ProChef,
Center of Excellence for Tourism Business Management and Creative Economy,
School of Management,
Walailak University,
THAILAND

[5]Taoohuayuan Primary School,
CHINA

Abstract: - The creation of online brand communities has become crucial in the current digital era. This study investigates the impact of the characteristics of virtual brand communities on customers' intentions for value co-creation, focusing on the mediating role of self-determination. Drawing from a sample of 502 responses to an online survey, the research explores key community features, such as system quality, information quality, virtual interaction, rewards, and trust climate. The findings reveal that reward mechanisms most significantly influence the intention to co-create, followed by trust climate, information quality, virtual interaction, and system quality. The study also highlights the importance of creating a trustworthy and engaging environment that fosters customer autonomy, competence, and relevance, thereby increasing participation in co-creation activities. Theoretical and practical implications suggest that virtual brand communities, for example, the Xiaomi brand community, should prioritize reward systems and trust-building initiatives to enhance user engagement. This research provides valuable insights into enhancing brand competitiveness by optimizing those features of virtual communities that encourage collaborative value creation.

Key-Words: - Virtual brand community characteristics, Self-determination, Value co-creation intention, Customer Value, Collaboration.

Received: November 22, 2024. Revised: April 29, 2025. Accepted: May 16, 2025. Published: June 5, 2025.

1 Introduction

The creation of online brand communities has become significant in the current digital era. It enables consumers not only to obtain goods or services but also to produce additional value through sharing and interaction, [1]. Many businesses build and preserve relationships with clients on social media platforms by utilizing mobile Internet technologies to create diverse online virtual brand communities, [2]. Customers can engage with businesses, exchange stories, and participate in the brand-building process via virtual brand communities, which offer an online social environment. Consumer involvement and co-creation can boost brand value and promote brand loyalty, [3]. Consequently, current academic circles

are focusing on the impact of the characteristics of virtual brand communities, based on consumers' intention for value co-creation.

Recently, many brands have established online communities, aiming to create virtual communities and strong relationships with consumers. Multiple industries, such as electronic products, fast-moving consumer goods, education, and tourism, have formed virtual communities. This article selects Xiaomi Community as the research object because it successfully demonstrates the study dimensions of the characteristics of virtual brand communities. We aim to provide users with a community space where they can share, communicate and interact.

Customer value co-creation has gained attention as a marketing study topic with the emergence of service-oriented reasoning, [4], [5]. Recognizing the significance of value co-creation, businesses are attempting to engage more customers, [6]. The value co-creation hypothesis highlights how customers and brands may work together to create value in a synergistic and mutually beneficial manner, [3]. Customers can interact with the brand, co-create and obtain value, and participate virtually in the creative and decision-making process of the brand community. They can experience the brand's concern and attention through this co-creation process, strengthening their emotional bond with it and, ultimately, increasing brand loyalty, [7]. Furthermore, the self-determination theory plays a significant role in virtual brand communities, where consumers experience self-autonomy, self-competence, and self-relevance. This enhances their motivation and intention to engage in related activities, [8], [9]. Generally speaking, the study of marketing and virtual brand communities relies significantly on the principles of co-creation value and self-determination. The value co-creation theory emphasizes that customers and enterprises participate in the process of value creation and realize the value goals of both sides through interaction and cooperation. This theory validates the furthering of enterprise-customer interaction, promoting customer loyalty, and enhancing brand competitiveness. The self-determination theory focuses on individual needs in autonomy, background knowledge, and intrinsic motivation, and its application to virtual brand communities can promote users' active participation, enhance their satisfaction, and effectively promote community collaboration and innovation.

One pressing current issue is to improve the characteristics of the virtual brand community to meet customers' needs and further promote their co-creation intention. Therefore, based on the background and the status of research reviewed earlier, it is significant to investigate the effects of the characteristics of virtual brand communities on customers' intentions for value co-creation, which this study aims to undertake. Theoretically, this study will deepen the understanding of the value co-creation theory, and enrich, and expand the customer value co-creation intention model, thereby filling the research gap on the characteristics of virtual brand communities, value co-creation theory and self-determination theory. Practically, this study will guide enterprises in brand communities to help them improve the quality and efficiency of virtual brand communities, attract, and retain fans, and promote the occurrence of value co-creation through fan communication, to further enhance brand competitiveness and user satisfaction.

2 Literature Review

2.1 Virtual Brand Community Characteristics

Numerous scholars have categorized the characteristics of virtual brand communities. In studies conducted by foreign scholars, the perception characteristics of virtual brand communities encompass their members' subjective feelings towards participation, including their sense of membership, satisfaction with demands, emotional connection, and more, [10]. The antecedents of virtual brand communities have been identified; these include information quality, system quality, communication interaction, and reward feedback to establish their effects on brand loyalty and commitment. However, it should be noted that communication interaction and reward feedback pertain to intentions within the community rather than objective environmental factors, [11]. The key dimensions characterizing virtual brand communities primarily include brand positioning, platform interaction, community reward, and community governance. Consumer motivations for participating in these communities are related to the brands as well as to social needs and functional satisfaction, [12]. A study, conducted on 430 participants using Facebook, found that qualitative factors, such as information quality, perceived system quality, online communication and interaction, and perceived online reward, impact engagement, leading to brand loyalty, [13]. Domestic scholarly research has demonstrated that the four feature dimensions of a virtual brand community - information quality, service equality,

participation return, and community response to consumers' sense of control - positively affect consumers' loyalty by mediating their sense of participation, [14]. The characteristics can be categorized into two aspects: the community system (including interface quality and incentive mechanism) and community content (encompassing integration, interaction, and reciprocity norms within the community), [15], [16].

In recent years, this research area of value co-creation intention has not only developed significantly but has also received considerable attention. Value co-creation has gradually evolved from a production-centered concept to a consumption-centered strategy, with enterprises seeking active consumer engagement, [17]. Findings indicate that customer personalization, as an additional variable in the context of value co-creation intention, directly predicts the intention to engage in online shopping co-creation, [18]. Furthermore, incentives have emerged as a key factor influencing consumers' willingness to participate in value co-creation activities; consumers anticipate actively engaging in such activities through certain returns or rewards, [19]. Additionally, consumer motivation and demands also impact their intentions toward value co-creation, [20]. It is noteworthy that trust is established on optimistic expectations regarding others' intentions and requires our willingness to embrace vulnerability, [21]. Trust fosters open communication and cooperation while enhancing job satisfaction and values. Building this climate of trust relies on others' trustworthiness and strengthening cooperative relationships among team members, [22]. A trustworthy environment instills a sense of security among individuals leading to work satisfaction, [23]. Therefore, cultivating a trusting climate is one of the ways to manifest customers' perceived intent for value co-creation.

Considering a review of the current literature on virtual brand community characteristics, this study combines the scholars' view and utilizes the framework provided by Ul Islam & Rahman (2017), concluding that it provides robust, comprehensive, logical, and theoretical support for understanding the features of virtual brand communities (Figure 1, Appendix). By considering virtual brand communities as an intrinsic attribute of social network organizations, this study extends the perception dimensions related to system quality, information quality, communication and interaction, incentive mechanisms, and trust climate. The following hypotheses are proposed based on the aforementioned analysis.

H1a: Value co-creation intention is positively impacted by the virtual brand community's system quality.
H1b: The intention to co-create value is positively impacted by the quality of information within the virtual brand community.
H1c: The aim to co-create value is positively impacted by virtual brand community contact.
H1d: Incentives within online brand communities positively influence the intention to co-create value.
H1e: An environment of trust within virtual brand communities positively impacts value co-creation.

2.2 A Sense of Self-Determination

The self-determination theory has been applied extensively in psychology, education, social science, and marketing in recent years, emerging as an important area of research, [24]. The sense of self-determination significantly influences an individual's motivational intentions. Research indicates that the behavioural logic of users' participation in value co-creation among virtual brand communities is rooted in the satisfaction of three basic psychological needs: autonomy, competence and relevance. Moreover, meeting the autonomy needs of individuals is positively associated with intrinsic motivation and emotional well-being. When individuals perceive a sen se of choice and control, they are more inclined to engage in activities that are both, interesting and conducive to their personal development, resulting in positive emotional experiences, [25]. Furthermore, the study of self-determination also explores the impact of external incentives on individual motivation.

Findings suggest that consistent external stimuli can enhance levels of motivation and performance, whereas inconsistent external incentives may reduce them, [26]. These findings have important implications for incentive policies within educational institutions, workplaces, and other social contexts. In recent years, the concept of self-determination has also been applied to investigate health intentions and outcomes. Fulfilling an individual's need for autonomy and perceived competence is strongly linked to more favorable health intentions as well as improved health outcomes, [27].

In summary, when customers sense the system quality, information quality, virtual interaction, reward and trust climate that meet basic psychological needs in a virtual brand community, they are likely to experience more of a positive sense of self-determination. The enhancement of

these characteristics positively impacts users' willingness to create shared value, mediated by a sense of self-determination, [28].

Based on the above analysis, the following hypotheses are proposed:

H2: The sense of self-determination partially mediates the influence of virtual brand community characteristics on the intention to co-create value.

H2a-1: When considering the impact of the system quality of the features of virtual brand communities on co-creation intention, autonomy is a mediating factor.

H2a-2: Information quality of the features of virtual brand communities influences value co-creation intention, although autonomy acts as a moderating factor.

H2a-3: In the context of virtual brand communities, autonomy mediates the impact of virtual contact on the desire to co-create value in the community.

H2a-4: In the context of virtual brand communities, autonomy moderates the relationship between reward and value co-creation intention.

H2a-5: The trust-building environment of virtual brand communities impacts co-creation intention, and autonomy moderates this relationship.

H2b-1: Competence moderates the relationship between value co-creation intention and the virtual brand community's system quality.

H2b-2: Competency mediates the relationship between the aim to co-create value and the information quality among virtual brand communities.

H2b-3: Competency moderates the relationship between the purpose of value co-creation of virtual brand community characteristics and interaction.

H2b-4: One mediating factor in the relationship between incentives and the ambition to co-create value in virtual brand communities is competence.

H2b-5: An ability to mediate between the effect of the virtual brand community's trust climate and readiness to co-create value is a feature of competence.

H2c-1: Relevance moderates the relationship between value co-creation intention and the virtual brand community's system quality.

H2c-2: Relationship relatedness moderates the relationship between value co-creation intention and the virtual brand community's information quality.

H2c-3: Relatedness moderates the relationship between the purpose of value co-creation and virtual interaction among a virtual brand community.

H2c-4: Relatedness moderates the relationship between incentives and the ambition to co-create value in virtual brand communities.

H2c-5: Relatedness mediates the effect of the trust-based environment observed in virtual brand communities on the inclination to co-create value.

3 Research Method

3.1 Research Participants

The study's object range includes users, customers, and community members engaged in millet community interactions across numerous Chinese cities and regions. The sample encompasses both males and females, predominantly in the teenager, young adult, middle-aged, and elderly age groups within the Xiaomi brand community. Regarding educational background, the Xiaomi brand's customer base includes people with both primary and post-primary school educations, representing a range of educational backgrounds.

This investigation, employing a questionnaire to collect precise data, surveyed from June 8, 2022, to December 10, 2022. About 547 responses were collected in all; after sorting and cleansing, based on predetermined standards, 45 surveys, including incorrect ones and those that took less than 59 seconds to complete, were excluded. Therefore, 502 valid surveys were used, indicating a recovery rate of 91.7%.

3.2 Reliability Analysis

This study used Internal Consistency Reliability analysis to determine whether the items used could measure similar constructs in scores, [29]. In previous exploratory studies of composite reliability (CR), $0.6<CR<0.7$ might be considered acceptable; for further studies, $0.7<CR<0.9$ may be considered satisfactory, [30]. CR values need to exceed 0.7 to demonstrate inter-item internal consistency that can be considered adequate or sufficient, [29]. Cronbach's alpha is an index to estimate the reliability of questionnaires and is commonly used in analyzing empirical data. In general, a

Cronbach's alpha value<0.7 for the scale design questionnaire indicates low internal consistency of the scale's variables, suggesting reconstruction of the scale. A Cronbach's alpha value>0.7 indicates that the internal reliability of several variables of the scale construction is acceptable. If the Cronbach's alpha of the scale>0.9, it indicates that the internal consistency of the variables designed for the scale is excellent, [30]. The values of Cronbach's alpha and CR for the constructs in this study are presented in Table 1 (Appendix).

The findings established that the internal consistency reliability indices for the variables of system quality, information quality and virtual interaction were 0.872, 0.871, and 0.845, respectively. The Cronbach's alpha coefficients of the reward, trust climate, and sense of autonomy variables were 0.845, 0.843, and 0.825, respectively. The Cronbach's alpha coefficients for the variables of sense of competence, sense of relevance, and value co-creation intention were 0.802, 0.805 and 0.905, respectively. The value of the Cronbach's alpha coefficient of each variable was over 0.7, thereby meeting the research requirements and indicating a relatively high stability of each variable in the questionnaire.

3.3 Discriminant Validity

In this study, exploratory factor analysis was employed to investigate the structural validity of the questionnaires. The maximum variance rotation method conducts an orthogonal rotation to generate a rotation component matrix that contains the loading values of factors of each item, which is used to name common factors (Table 1, Appendix). The value of Outer Loading> 0.5, [31], [32], was also able to be considered as the item was regarded as a good consonant. Exploratory factor analysis was conducted on the questionnaire data, and the results are shown in Table 2 (Appendix).

It can be observed from Table 2 (Appendix) that the correlation coefficients between each variable and other variables are all less than the square root of AVE, which is greater than 0.7 for each variable, according to the standards of [29]. Table 2 (Appendix) shows Factor Loading >0.7., indicating high convergence and differential validity of each variable in the same pre-survey.

4 Results

4.1 Structural Equation Model Testing

The scales of system quality, information quality, virtual interaction, reward, trust climate, sense of autonomy, sense of competence, relevance, and value co-creation willingness were included in the structural equation model, as per the research findings above. There were 20 observed variables for every nine possible variables. The program SmartPLS 4 (SEM) was used to import the questionnaire data, and the model fitting parameters that resulted from using the maximum likelihood approach are displayed in the Figure 2 (Appendix).

4.2 Model Fit

Based on the SmartPLS4 calculation results in Table 3 (Appendix), the SRMR results for the reflective research model were 0.043. Because they were below 0.05, the research model is included in the good fit category.

According to the path analysis results, SQ is positively related to CVI, and the standardized path coefficient equals 0.117, which is significantly larger than the critical value of 1.96. Let us assume that H1a holds, i.e., IQ has a positive direct impact on CVI while the standardized path coefficient is 0.136 for T > 1.96. If H1b is supported, VI has a significant and positive impact on C VI, The standardized path coefficient = 0.121, T > 1.96. If H1c is supported, REW has a significant positive impact on CVI, then path coefficient = 0. 152, T > 1.96 if H1d is supported. Given that H1e is supported, based on T > 1.96, T C's impact is positive and its standardized path coefficient is 0.142 on CVI. Therefore, the atmosphere of rewards and trust climate promotes value co-creation. Through diverse incentives and timely feedback, user participation and trust are enhanced, thereby strengthening customer loyalty and ultimately achieving stable community development.

4.3 Path Coefficients of Mediating Effects

The mediating effects were assessed by Specific indirect effects using SmartPLS4, while those of the sense of autonomy, competence, and relevance were assessed through VAF values. VAF<20% implies no intermediation impact, 20% < VAF < 80% indicates a partial mediating role, while VAF > 80% signals full mediation. As mention in Table 5 (Appendix), virtual brand community characteristics have a partial mediating effect through the feeling of self-determination, comprising autonomy, competence, and relatedness in the context of the intention to co-create value. Concerning the hypothesis regarding partial mediation, it is possible to support H2a-1, H2a-2 H2a-3, H2a-4, H2a-5, H2b-1, H2b-2, H2b-3, H2c-2 and H2c-5. However, H2b-4, H2b-5, H2c-1, H2c-3 and H2c-4 are rejected.

Therefore, consumers' cognition of the characteristics of virtual brand communities will be transformed into community perception; additionally, the perception of different consumers about communities also varies.

5 Discussion

This paper elucidates the influence of virtual brand community characteristics on the intention to co-create value. According to the research results in Table 4 (Appendix), the system quality, information quality, virtual interaction, reward and trust climate of virtual brand community features positively impact the value co-creation intention of customers. Among the five dimensions, reward has the greatest influence on customer value co-creation intention.

The findings of the current study validate those of prior research. For instance, factors of online brand communities (information quality, system quality, virtual interaction and reward) positively impact customer engagement and brand loyalty, [13]. Furthermore, the inclusion of a trust climate among the features of virtual brand communities demonstrates that it positively impacts the value co-creation intentions of customers. Hence, fostering a climate of trust is crucial for stimulating favourable customer behaviour, facilitating enhanced communication and interaction among customers, and playing a pivotal role in promoting customer-driven value co-creation. This study serves as a valuable complement to the study conducted by Ul Islam & Rahman (2017), while also expanding upon the theory of value co-creation.

Additionally, this study also demonstrates the mediating role of self-determination. The research findings show that self-determination plays a significant partial mediator within the characteristics of the virtual brand communities and the customer intention to co-create value. The research results show that hypothesis H2a is supported, while H2b and H2c are only partially verified. However, this finding differs somewhat from the existing research conclusions, [28]. This study suggests that the reason for partial support of a sense of competence and relevance could be attributed to the focus on virtual brand communities as r esearch subjects. In communities centred around products and knowledge, customers' sense of autonomy precedes their sense of competence and relevance when it comes to community satisfaction. Consequently, this weakens their feeling of helping others utilize services or products, providing feedback, or engaging in other voluntary behaviours. These findings imply that virtual brand communities do not passively drive customer participation in value co-creation; instead, customers actively internalize external stimuli by transforming them into a sense of self-determination within the virtual brand community context. Subsequently, they respond by participating further in value co-creation intentions. Through active interaction with other members within the community interface experience offered by virtual brand communities, customers perceive external stimuli that influence their information reserve and psychological state. This ultimately enhances their sense of self-determination, encouraging more proactive engagement in value co-creation activities with fellow consumers.

A limitation of this study is that it does not consider different consumer groups.

6 Conclusion

The results show that system quality, information quality, virtual interaction, reward, and trust climate of the virtual brand community positively affect customers' intentions for value co-creation. High-quality system design, high-quality information dissemination, positive interaction, reasonable reward mechanism, and suitable trust climate can promote customers' co-creation intentions.

The aim of value co-creation and features of the virtual brand community are mediated by the sense of self-determination, supporting the notion that H2 is fully transmitted. Customers can be encouraged to participate more actively in co-creation activities and improve their experience by increasing their sense of autonomy, competence, and relevance.

When creating virtual brand communities, brand businesses should focus on building the aforementioned traits to increase customers' readiness to co-create and foster a closer, longer-lasting relationship between the brand and its patrons. To provide more thorough theoretical support and useful advice for brand management and marketing strategies, future research can also investigate the impact of various virtual brand community characteristics on different customer groups, as well as the mediating and moderating effects between virtual brand community characteristics and customers' intention to co-create.

Declaration of Generative AI and AI-assisted Technologies in the Writing Process

The authors wrote, reviewed and edited the content as needed and they have not utilised artificial intelligence (AI) tools. The authors take full responsibility for the content of the publication.

References:

[1] Hajli, N., Shanmugam, M., Papagiannidis, S., Zahay, D., Richard, M., Branding co-creation with members of online brand communities, *Journal of Business Research*, Vol.70, 2017, pp.136-144.

[2] Wichmann, J.R.K., Wiegand, N., Reinartz, W.J., The Platformization of Brands, *Journal of Marketing*, Vol.86, No.1, 2022, pp.109-131.

[3] Etgar, M. A descriptive model of the consumer co-production process. *Journal of the Academy Marketing Science*, Vol.36, 2008, pp.97–108.

[4] W ang, K., Tai, J.C.F., Hu, H., Role of brand engagement and co-creation experience in online brand community continuance: A service-dominant logic perspective, *Information Processing & Management,* Vol.60, No.1, 2023, pp.103136.

[5] Pongsakornrungsilp, S., Schroeder, J.E., Understanding value co-creation in a co-consuming brand community, *Marketing Theory*, Vol.11(3), No.3, 2011, pp.303-324.

[6] Kamboj, S., Sarmah, B., Gupta, S., Dwivedi, Y., Examining branding co-creation in brand communities on social media: Applying the paradigm of Stimulus-Organism-Response, *International Journal of Information Management*, Vol.39, 2018, pp.169-185.

[7] Schau, H.J., Muñiz, A.M., Arnould, E.J., How Brand Community Practices Create Value, *Journal of Marketing*, Vol.73, No.5, 2009, pp.30-51.

[8] Bergdahl, J., Latikka, R., Celuch, M., Savolainen, I., Soares Mantere, E., Savela, N., Oksanen, A., Self-determination and attitudes toward artificial intelligence: Cross-national and longitudinal perspectives, *Telematics and Informatics*, Vol.82, 2023, pp.102013.

[9] Costello, J.P., Reczek, R.W., Providers Versus Platforms: Marketing Communications in the Sharing Economy, *Journal of Marketing*, Vol.84, No.6, 2020, pp.22-38.

[10] Blanchard, A.L., Markus, M.L., The Experienced "Sense" of a Virtual Community: Characteristics and Processes, *ACM Special Interest Group on Management Information Systems*, Vol. 35, No. 1, 2004, pp. 64 - 79.

[11] Jang, H., Olfman, L., Ko, I., Koh, J., Kim, K., The Influence of On-Line Brand Community Characteristics on Community Commitment and Brand Loyalty, *International Journal of Electronics and Communications*, Vol.12, No.3, 2008, pp.57-80.

[12] Wirtz, J., Den Ambtman, A., Bloemer, J., Horváth, C., Ramaseshan, B., Van De Klundert, J., Gurhan Canli, Z., Kandampully, J., Managing brands and customer engagement in online brand communities, *Journal of Service Management*, Vol.24, No.3, 2013, pp.22 3-244.

[13] UI Islam, J., Rahman, Z., The impact of online brand community characteristics on customer engagement: An application of Stimulus-Organism-Response paradigm, *Telematics and Informatics*, Vol.34, No.4, 2017, pp.96-109.

[14] Zhe, B., Bo, L., Yongbin, M., Research on the influence of virtual brand community characteristics on consumer loyalty: Mediating role based on sense of participation, *Consumption Economy,* Vol.31, No.04, 2015, pp.55-60.

[15] Xinsheng, Z., Xianguo, L., The influence of virtual brand community characteristics on consumers' willingness to co-create value based on satisfaction and trust explaination of any intermediary model, *China Circulation Economics,* Vol.31, No.07, 2017, pp.70-82.

[16] Yanxia, Z., Analysis on the influence mechanism of virtual brand community characteristics on customers' willingness to co-create value, *Commercial Economy Research*, No.9, 2019, pp.58-61.

[17] Jiang, X., Kim, A., Kim, K., Yang, Q., García-Fernández, J., Zhang, J.J., Motivational antecedents, value co-creation process, and behavioral consequences in participatory sport tourism, *Sustainability*, Vol.13, No.17, 2021, pp.9916.

[18] A limamy, S.,Juergen, G., I want it my way! The effect of perceptions of personalization through augmented reality and online shopping on customer intentions to co-create value, *Computers and Human Behavior*, Vol.128, 2022, pp.107105.

[19] Salgado, S., De Barnier, V., Encouraging and rewarding consumer creativity in new product development processes: How to motivate consumers involved in creative contests? *Recherche et Applications en Marketing* (English Edition), Vol.31, No.3, 2016, pp.88-110.

[20] Neghina, C., Bloemer, J., van Birgelen, M., Caniëls, M.C.J., Consumer motives and willingness to co-create in professional and generic services, *Journal of Service Management*, Vol.28, No.1, 2017, pp.15 7-181.

[21] Aman, A., Rafiq, M., Dastane, O., A cross-cultural comparison of work engagement in the relationships between trust climate – Job performance and turnover intention: Focusing China and Pakistan, *HELIYON*, Vol.9, No.9, 2023, pp.e19534.

[22] Jiang, Z., Gollan, P.J., Brooks, G., Moderation of doing and mastery orientations in relationships among justice, commitment, and trust: A cross-cultural perspective, *Cross Cultural Management*, Vol.22, No.1, 2015, pp.42-67.

[23] O zturk, A., Karatepe, O.M., Frontline hotel employees' psychological capital, trust in organization, and their effects on nonattendance intentions, absenteeism, and creative performance, *Journal of Hospitality Marketing Management*, Vol.28, No.2, 2019, pp.217-239.

[24] Bergdahl, J., Latikka, R., Celuch, M., Savolainen, I., Soares Mantere, E., Savela, N., Oksanen, A., Self-determination and attitudes toward artificial intelligence: Cross-national and longitudinal perspectives, *Telematics and Informatics*, Vol.82, 2023, pp.102013.

[25] Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E.L., Van der Kaap-Deeder, J., Duriez, B., Lens, W., Matos, L., Mouratidis, A., Basic psychological need satisfaction, need frustration and need strength across four cultures, *Motivation and Emotion*, Vol.39, 2015, pp.216-236.

[26] Moller, A.C., Deci, E.L., Ryan, R.M., Choice and Ego-Depletion: The Moderating Role of Autonomy, *Personality & social psychology bulletin*, Vol.32, No.8, 2006, pp.1024-1036.

[27] Ng, J.Y., Ntoumanis, N., Thøgersen-Ntoumani, C., Deci, E.L., Ryan, R.M., Duda, J.L., Williams, G.C., Self-determination theory applied to health contexts: A meta-analysis, *Perspectives and Psychological Science*, Vol.7, No.4, 2012, pp.325-340.

[28] Zhang, L., Zhu, N., Wang, H., Influence of co-creation signals on observers' co-creation willingness: A self-determination theory perspective, *Frontiers in Psychology*, Vol.13, 2022, pp.943704.

[29] Hair Jr, J.F., Matthews, L.M., Matthews, R.L., Sarstedt, M., PLS-SEM or CB-SEM: updated guidelines on which method to use, International *Journal of Multivariate Data Analysis*, Vol.1, No.2, 2017, pp.107-123.

[30] Nunnally, J., Bernstein, I., *Psychometric Theory*, 3rd edition, New York: MacGraw-Hill,.

[31] Chin, W.W., The partial least squares approach to structural equation modeling, In Marcoulides, G.A. (Ed.), *Modern methods for business research*, (pp. 295–336). Lawrence Erlbaum Associates Publishers.

[32] Hulland, J., Use of partial least squares (PLS) in strategic management research: a review of four recent studies, *Strategic Management Journal*, Vol.20, No.2, 1999, pp.195-204.

Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)

- Geng Lan carried out the ideas, conceptualization, data collection, project management, formal analysis, methodology, resources and wrote the original draft.
- Siwarit Pongsakornrungsilp prepared the conceptualization, data curation, formal analysis, writing, proofreading, editing of the draft, and writing the revision.
- Pimlapas Pongsakornrungsilp prepared the conceptualization, data curation, formal analysis, writing, proofreading, editing of the draft, and writing the revision.
- Minjun Qi has prepared data curation, and draft editing.

Sources of Funding for Research Presented in a Scientific Article or Scientific Article Itself

No funding was received for conducting this study.

Conflict of Interest

The author has no conflicts of interest to declare.

APPENDIX

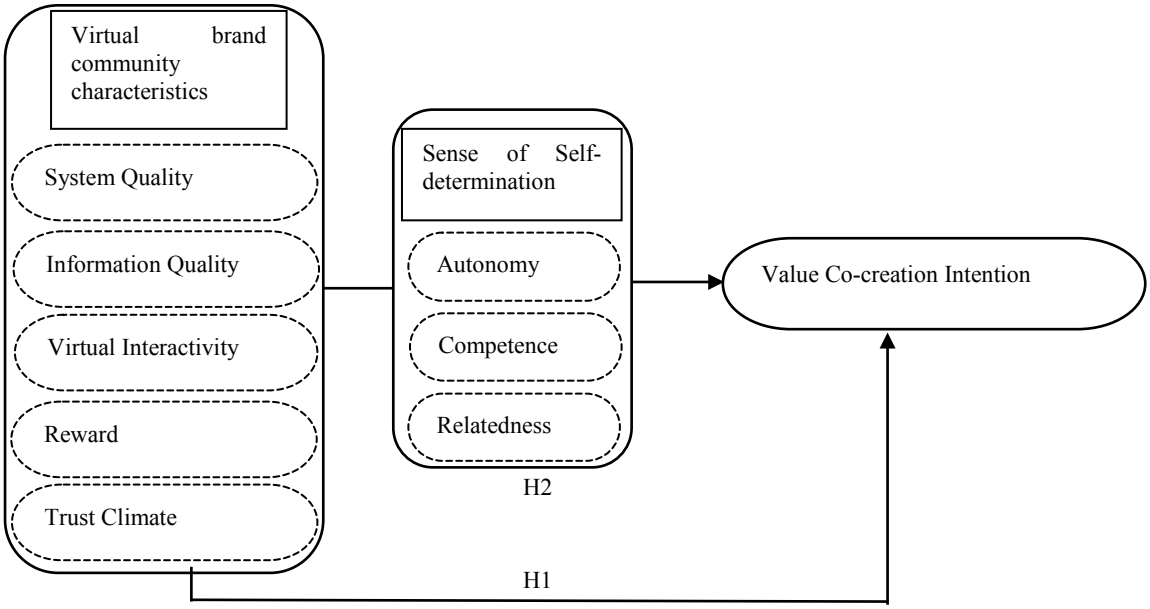

Fig. 1: The Research Framework

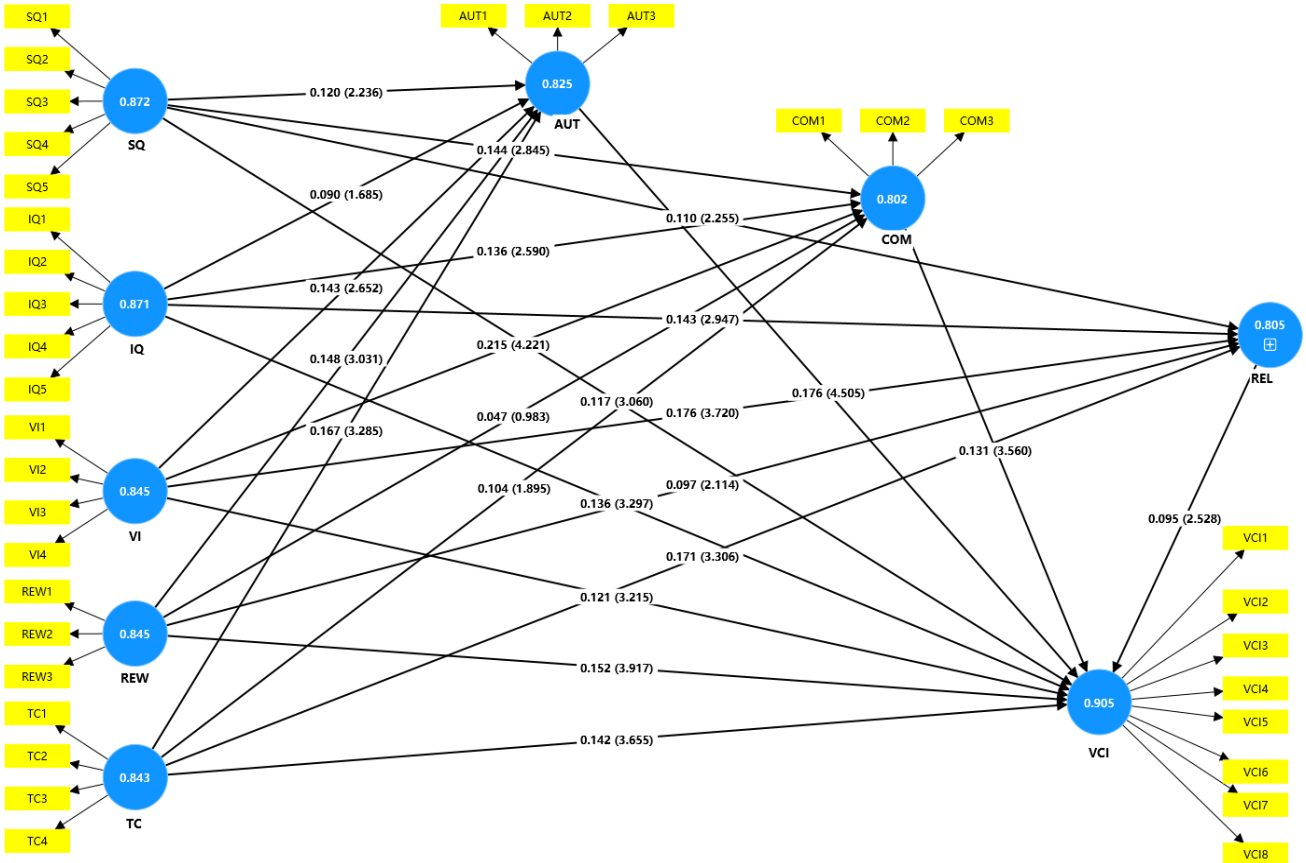

Fig. 2: Results of structural equation model

Table 1. Reliability test results and convergent validity (n=502)

Constructs	Items	Factor Loadings	Cronbach's alpha	Composite reliability (rho-a)	Average variance extracted (AVE)
SQ	SQ1	0.830	0.872	0.874	0.662
	SQ2	0.827			
	SQ3	0.799			
	SQ4	0.787			
	SQ5	0.823			
IQ	IQ1	0.814	0.871	0.880	0.660
	IQ2	0.861			
	IQ3	0.772			
	IQ4	0.799			
	IQ5	0.814			
VI	VI1	0.836	0.845	0.849	0.682
	VI2	0.820			
	VI3	0.843			
	VI4	0.803			
REW	REW1	0.842	0.845	0.849	0.764
	REW2	0.843			
	REW3	0.860			
TC	TC1	0.838	0.843	0.845	0.680
	TC2	0.826			
	TC3	0.829			
	TC4	0.805			
AUT	AUT1	0.862	0.825	0.827	0.740
	AUT2	0.852			
	AUT3	0.866			
COM	COM1	0.865	0.802	0.811	0.716
	COM2	0.815			
	COM3	0.858			
REL	REL1	0.842	0.805	0.806	0.720
	REL2	0.843			
	REL3	0.860			
VCI	VCI1	0.786	0.905	0.906	0.601
	VCI2	0.767			
	VCI3	0.754			
	VCI4	0.753			
	VCI5	0.782			
	VCI6	0.749			
	VCI7	0.820			
	VCI8	0.786			

Annotation: System Quality (SQ), Information Quality (IQ), Virtual Interaction (VI), Reward (REW), Trust Climate (TC), Autonomy (AUT), Competence (COM), Relatedness (REL), Value co-creation intention (VCI)

Table 2. Discriminant validity

	SQ	IQ	VI	REW	TC	AUT	COM	REL	VCI
SQ	0.813								
IQ	0.348	0.813							
VI	0.359	0.400	0.826						
REW	0.293	0.297	0.268	0.874					
TC	0.359	0.387	0.318	0.320	0.825				
AUT	0.306	0.297	0.314	0.301	0.338	0.860			
COM	0.32	0.326	0.367	0.220	0.292	0.338	0.846		
REL	0.313	0.346	0.353	0.274	0.353	0.248	0.259	0.848	
VCI	0.428	0.453	0.440	0.412	0.454	0.452	0.416	0.391	0.775

The diagonal bold font is the AVE root value, and the lower triangle is the Pearson correlation

Table 3. Model Fit

	Saturated Model	Estimated Model	Compliant
SRMR	0.041	0.043	Yes
d_ULS	1.252	1.347	Yes
d_G	0.477	0.482	Yes
Chi-square	1437.031	1445.757	Yes
NFI	0.853	0.852	Yes

Source: Data Processing result in Smart PLS4

Table 4. Path coefficients direct relationship

Hypothesis	Path	Path coefficient	T statistics (|O/STDEV|)	97.5%CI (LL)	97.5%CI (UL)	Result
H1a	SQ→CVI	0.117	3.060	0.045	0.194	Supported
H1b	IQ→CVI	0.136	3.297	0.055	0.216	Supported
H1c	VI→CVI	0.121	3.215	0.046	0.194	Supported
H1d	REW→CVI	0.152	3.917	0.075	0.227	Supported
H1e	TC→CVI	0.142	3.655	0.065	0.217	Supported

Table 5. Table of mediating effects

Hypothesis	Path	Path Coefficients (T)	Specific indirect effects (T)	Total effects	VAF	Mediating effect
H2a-1	SQ→AUT→ VCI	0.050 (3.307)	0.021 (1.941)	0.071	29.6%	Partial mediation
H2a-2	IQ →AUT→ VCI	0.047 (2.924)	0.016 (1.550)	0.063	25.4%	Partial mediation
H2a-3	VI →AUT→ VCI	0.070 (3.864)	0.025 (2.247)	0.095	26.3%	Partial mediation
H2a-4	REW→AUT→ VCI	0.041 (2.728)	0.026 (2.429)	0.067	38.8%	Partial mediation
H2a-5	TC→AUT→VCI	0.060 (3.483)	0.030 (2.634)	0.090	33.3%	Partial mediation
H2b-1	SQ→COM→ VCI	0.050 (3.307)	0.019 (2.197)	0.069	27.5%	Partial mediation
H2b-2	IQ →COM→ VCI	0.047 (2.924)	0.018 (2.121)	0.065	27.7%	Partial mediation
H2b-3	VI →COM→ VCI	0.070 (3.864)	0.028 (2.590)	0.098	28.6%	Partial mediation
H2b-4	REW→COM→ VCI	0.041 (2.728)	0.006 (0.941)	0.047	12.8%	unmediated
H2b-5	TC→COM→VCI	0.060 (3.483)	0.014 (1.525)	0.074	18.9%	unmediated
H2c-1	SQ→ REL→ VCI	0.050 (3.307)	0.010 (1.586)	0.060	16.7%	unmediated
H2c-2	IQ →REL→ VCI	0.047 (2.924)	0.014 (1.783)	0.061	23.0%	Partial mediation
H2c-3	VI →REL→ VCI	0.070 (3.864)	0.017 (2.067)	0.087	19.5%	unmediated
H2c-4	REW→REL→VCI	0.041 (2.728)	0.009 (1.540)	0.050	18.0%	unmediated
H2c-5	TC→REL→VCI	0.060 (3.483)	0.016 (1.947)	0.076	21.1%	Partial mediation