

Impact of Social Support and Reciprocity on Consumer Well-Being in Virtual Medical Communities

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Abstract

This study pursues a better understanding of consumer well-being in online medical cosmetics communities by investigating the antecedents of well-being and moderating influence of community norms. A total valid sample of 484 respondents was collected from 2 popular medical cosmetics discussion platforms. A partial least squares analysis was used to validate the research model. Emotional support, informational support, and sense of belonging were important predictors of well-being. Among these 3 antecedents, emotional support showed the strongest influence on consumer well-being. Sense of belonging was significantly and positively influenced by emotional support and reciprocity, and hence plays a pivotal role in mediating the effects of emotional support and reciprocity on well-being. However, informational support does not appear to significantly influence sense of belonging. Members' compliance with community norms positively moderates the influence of sense of belonging on well-being. This study contributes to the literature on realizing members' social behaviors specifically in virtual medical cosmetics communities and provides insights for the management of online communities.

Keywords

social support, reciprocity, sense of belonging, life satisfaction, well-being

What do we already know about this topic?

People seek for social support from members in virtual medical communities for various needs. Various factors have been investigated to influence consumers' feeling in these online spaces.

How does your research contribute to the field?

This study proposes an integrated model to examine the sense of belonging as a mediating factor and members' compliance with community norms as a moderator to untangle their interrelated relationships and the ultimate impact on consumer well-being.

What are your research's implications toward theory, practice, or policy?

The role of sense of belonging in mediating the effects of emotional support and reciprocity on well-being has been identified. Furthermore, members' compliance with community norms positively moderates the influence of sense of belonging on well-being. Marketers of online communities should design the virtual space to facilitate the exchange of social support and the establishment of community norms.

Introduction

Physical appearance is an important component of an individual's self-concept.¹ Cosmetic surgery is attractive for beauty-loving individuals who experience body dissatisfaction and wish to correct imperfections and improve their appearance.^{2,3} Cosmetic surgery is viewed as an effective approach to boosting individual self-esteem.^{4,5} As suggested by Baumeister et al⁶ self-esteem is highly related to happiness with life, which represents a state of well-being.⁷

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Well-being is usually measured by life satisfaction,^{7,8} which comprises cognitive and affective components.

Yoon and Kim⁵ found that the overall quality of life of those who underwent cosmetic surgery was improved. Concerning the potential risks and information asymmetry involved in medical decisions, consumers tend to engage more in information-seeking behavior.⁹ Prior literature indicates that external opinions acquired from reference groups are the primary socio-cultural influences on people's beauty perceptions.^{1,10} Therefore, they tend to seek more information, advice, and encouragement from their peers or communities.¹¹ Virtual communities are easy and convenient to access, and hence, are great platforms for information seeking, sharing, and receiving support from other people. A virtual medical community refers to an online social network consisting of individuals with shared interests in medical cosmetics. It provides a means for members to learn about medical cosmetics, seek and offer social support, and connect with others in similar circumstances.¹² Consumers interacting with other consumers in a virtual community generate and share information about their consumption experiences.¹³

Previous research suggests that social support and a sense of belonging are important antecedents of online social networking users' life satisfaction.¹⁴ However, little quantitative or empirical research has examined the impact of social support and a sense of belonging on virtual medical community members' well-being, which suggests a line of further research.

Reciprocity, which reflects embedded obligations¹⁵, has been identified as an important determinant of human behavior¹⁶ and has been reported to influence virtual community users' emotional well-being.¹³ Virtual community members respond to the favor they receive by sharing and returning the favor.¹³ Reciprocity has been demonstrated to facilitate knowledge sharing in online communities.¹⁷ However, research on reciprocity and a sense of belonging, as well as on well-being in an online context, appears very limited. In addition, the mediating role of a sense of belonging has not been fully explored and justified between social support, reciprocity, and well-being in an online context. To bridge this gap, this study proposes an integrated model that investigates the direct and indirect influences of social support, reciprocity, and a sense of belonging on well-being, specifically in virtual medical cosmetic communities. The present study contributes to the literature by increasing our knowledge and understanding of the critical forces that enhance users' well-being in the virtual medical community. Furthermore, the moderating role of community norms was investigated to examine the boundary conditions of the proposed dynamic relationships.

Literature Review and Hypothesis Development

Social Support and Reciprocity in Virtual Medical Communities

Social support refers to the perception and actuality that one is cared for, responded to, and assisted by other people in

one's social group.^{18,19} Social support resources include tangible support such as financial or material aid²⁰ and intangible support such as care, listening, and advice.²¹ Social support is a multidimensional construct.^{22,23} Although the components of social support vary across contexts,^{8,23,24} tangible, informational, and emotional support are the 3 main types of social support.^{18,25,26} Considering that online social support is intangible in nature,^{8,18,27} we omitted tangible support. Therefore, this study measured 2 types of social support: emotional and informational. In our research, emotional support refers to receiving messages from other online community members expressing their care, empathy, and compassion. Informational support refers to receiving advice, guidance, or knowledge of medical cosmetics from other online community members.

Reciprocity is the process of exchange with other people for mutual benefit.²⁸⁻³⁰ In this study, reciprocity refers to the degree to which virtual medical community members repay each other. Reciprocity plays an important role in the development of continuing relationships and exchanges.³¹ In Chinese culture, reciprocity is considered a standard of daily behavior and the foundation for developing *guanxi*.³² The norm of reciprocity is a social norm in which exchanging parties repay one another,²⁹ which reflects embedded obligations created by exchanges of benefits or favors.¹⁵ If someone does a favor for you, you feel obligated to return it, and someone breaking the principle of reciprocity feels guilt.³² This study draws on social exchange theory to explore exchange relationships among virtual medical community members. Social exchange theory states that social behavior is the outcome of an exchange process.¹⁶ Chiu et al¹⁷ showed that to maintain the relationship, participants in virtual communities expect a degree of mutual reciprocity that justifies their costs in terms of time and effort spent on sharing their knowledge. The purpose of social exchange is to maximize benefits and minimize costs.¹⁷ As everyone hopes to obtain the greatest benefits after an exchange, when a person finds that it is not possible to receive anything in return from others in the future, he/she is likely to end the exchange relationship and impose a punishment. Thus, reciprocity emphasizes the fairness of exchange, which helps maintain long-term relationships among the exchanging parties and forms a virtuous cycle of resource exchange.³¹

Sense of Belonging and Well-Being

A sense of belonging is derived from psychology³³ and is considered a significant affective reaction.³⁴ A sense of belonging is a human emotional need.³⁵ To belong or not is a subjective experience.²² Feeling that one belongs to a group can imbue life with meaning in different ways, such as by providing stability and helping members create a shared group identity.³⁶ A high level of meaning in life is associated with good well-being.³⁶ A sense of belonging has been identified as a vital component of the sense of a virtual

community^{37,38} as well as a sense of community.^{39,40} This study draws upon Lin et al³⁴ and Chu et al⁴¹ who defined a sense of belonging as a member's feeling of cohesion or attachment to a virtual medical community. A sense of belonging depicts the experience of personal involvement in a virtual community so that members feel themselves to be an integral part of that community.

In this study, well-being refers to an individual's affective and cognitive evaluations of her life.^{7,8} The affective evaluation of life represents positive or negative feelings about life, and the feelings vary depending on the situation.⁴² Compared with affective evaluation, cognitive evaluation is relatively stable over time.⁴³ Well-being reflects quality of life and life satisfaction, and service researchers have suggested that it is the ultimate outcome for customers.⁴³ Research on well-being proliferated in the field of psychology in the 1980s and more recently in service research.⁴³ Although there are different types of well-being, such as physical, life, and mental health,⁴⁴ life satisfaction has been widely used to measure well-being,^{7,8} such that higher level of life satisfaction indicates a higher level of wellbeing. Diener et al⁴² measured life satisfaction as personal contentment. Life satisfaction is usually determined by social connections and happiness. People who actively participate in online communities are more likely to experience connectedness and feel happier.⁴⁵

Hypothesis Development

Previous research has shown that social support is an antecedent to a sense of belonging^{22,46} and well-being.^{14,47} One study that surveyed members of a particular virtual community⁴⁶ found that social support leads to members' attachment to online communities. Social support within virtual communities offers members a stronger feeling of belonging by assisting them in meeting their informational and emotional needs.⁴⁶ Another study that examined online health community members found that informational and emotional support positively influenced their belongingness to the community.²² Therefore, based on the foregoing discussions, we argue that when a member of an online medical cosmetics community receives social support, including emotional and information support, their sense of belonging to this community will increase.

The extant literature in psychology has generally reported a positive relationship between social support and well-being for children⁴⁸ and adults.⁴⁹ One study examined how people's online social networking leads to their life satisfaction,¹⁴ demonstrating that perceived available social support from other members was positively associated with life satisfaction. Obst and Stafurik⁴⁷ studied Internet-based support sites for people with physical disabilities and found that online social support had a positive effect on well-being. Thus, this study proposes the following hypothesis:

H1: Emotional support positively influences sense of belonging

H2: Emotional support positively influences well-being
H3: Informational support positively influences sense of belonging
H4: Informational support positively influences well-being

Reciprocity is the outcome of social exchange.⁵⁰ Previous research has indicated that reciprocity promotes members' involvement in and commitment to the community.⁵¹ Positive reciprocation shows the mutual and fair exchange of information and knowledge, which enhances members' involvement and participation,⁵² implying a positive sense of the community.³⁸ Members with strong belongingness are actively involved in online health communities.²² A study of online social services showed that norms of reciprocity positively improve members' perceived community support, reflecting their positive feelings of belonging to the virtual community.⁵³ Thus, this study proposes the following hypothesis:

H5: Reciprocity positively influences sense of belonging

A sense of belonging has been identified as a predictor of well-being.^{14,54,55} In the context of online communities, sense of community was found to be positively associated with life satisfaction.¹⁴ In the context of an offline community, people's positive feelings of belonging to this community would enhance their life satisfaction.⁵⁵ Research on internal migration in China has shown that migrants' sense of belonging in the host city positively improves their subjective well-being (ie, life satisfaction).⁵⁴ Therefore, this study tested the following hypothesis:

H6: Sense of belonging positively influences well-being

Hombrados-Mendieta et al⁵⁶ and Wang et al⁵⁷ confirmed the mediating role of a sense of community in the relationship between social support and well-being. Prior studies have demonstrated the positive impact of social support on sense of belonging^{22,46} as well as the positive effect of sense of belonging on well-being,^{14,54} which implies a possible mediating role of the sense of belonging between social support and well-being. In addition, previous empirical research has shown the positive influence of reciprocity on a sense of belonging^{38,53} and the positive impact of a sense of belonging on well-being.^{14,56} These findings jointly imply a possible mediating role of a sense of belonging in the relationship between reciprocity and well-being. Therefore, the following hypotheses were developed:

H7: Sense of belonging mediates the effect of emotional support on well-being
H8: Sense of belonging mediates the effect of informational support on well-being
H9: Sense of belonging mediates the effect of reciprocity on well-being

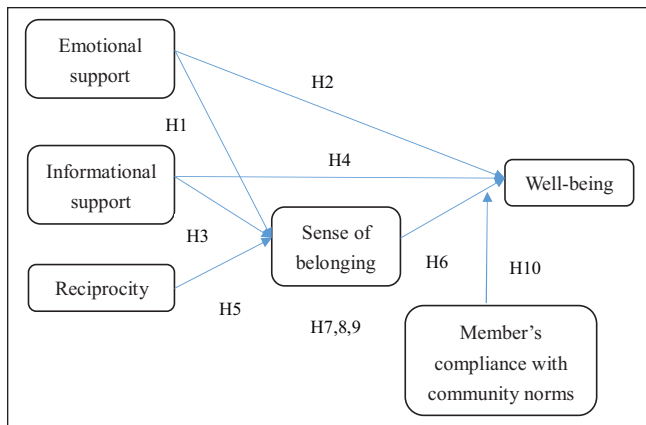


Figure 1. Research model.

The Moderating Effect of Members' Compliance With Community Norms

Community norms refer to the norms that members comply with during social exchanges in a community. Community norms represent a group prototype that optimally minimizes in-group differences and maximizes intergroup differences.⁵⁸ Community norms provide excellent legal standards that influence the operation and development of communities.⁵⁹ Once a person feels that he/she belongs to a certain group, the person will be unconsciously influenced by the norms of the group while also self-examining his/her behavior.⁵⁸ A person with a strong sense of belonging to a community complies with community norms.⁶⁰ However, when a person is feeling unassociated and as not belonging to a group, he/she will not think, feel, and behave in terms of group norms.⁶⁰ Thus, members who strongly comply with community norms have strong feelings of belonging to the community, which improves their life satisfaction. Members weakly complying with community norms have a weak feeling of belonging to the community; hence, the positive effect of a sense of belonging on well-being is reduced. Accordingly, this study hypothesizes the following.

H10: Members' compliance with community norms positively moderates the influence of sense of belonging on well-being.

Based on the foregoing discussion, this study proposes the research model illustrated in Figure 1.

Methods

Sample Description

The annual output value of medical cosmetics in Taiwan is approximately 1.3 billion US dollars, representing an important medical cosmetic market in Asia.⁶¹ The medical beauty care communication and discussion board is the main and

largest medical beauty care professional discussion and sharing virtual community on Facebook in Taiwan, with an approximate total of 140 000 members and 100 000 active monthly users. Facebook is a hidden community. The medical cosmetic discussion platform on D-card is another popular virtual medical community in Taiwan, with a total of 135 000 members. The D-card community is a hidden community as well. The invitation message containing a survey link to the questionnaire was posted on the Facebook and D-card virtual communities. Potential participants were informed of procedures that protected their privacy, anonymity, and voluntary participation. To ensure the quality of the questionnaire, a pre-test of the measurement items was conducted with 50 respondents. The questionnaire was adjusted and modified according to the results of reliability analysis. In total, 484 valid responses were obtained. Of the respondents, 71.3% were female. Individuals aged between 21 and 30 years made up 63.4% of the respondents, while those with less than 1 year of work experience in using online medical cosmetics communities accounted for 64.3% of the respondents. A total of 417 respondents (86.2%) had a college/university degree, accounting for 86.2% of the total responses. Overall, the sample was mainly female and tended to be young, well educated, and has limited working experience.

Measures

The initial questionnaire was developed and adapted from previous studies. The questionnaire was reviewed by 2 marketing professors with expertise in medical cosmetic-related fields to ensure the reliability of the research questions. This study established several constructs, including emotional support, informational support, reciprocity, sense of belonging, well-being, and members' compliance with community norms as a moderator. This study used measurement items from existing studies on emotional support and informational support,¹⁸ reciprocity,^{15,28} sense of belonging,^{22,38,50} community norms,^{58,62} and well-being.^{7,14} In this study, items were scored on a five-point Likert scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*. Table 1 presents all the measurement items used in this study.

Results

Reliability and Validity

This study employed partial least squares structural equation modeling (PLS-SEM) to validate the research model. Table 2 shows that the values of Cronbach's alpha and the composite reliability (CR) of each construct were greater than the suggested threshold value of 0.7, indicating the reliability of the constructs. The factor loadings for the measurement items were all above 0.7, and the average variance extracted (AVE) for all constructs was greater than 0.5, demonstrating that the scale has convergent validity. Moreover, the coefficients of

Table 1. Measurement Scales.

Constructs	Items
Emotional support	<ol style="list-style-type: none"> 1. When faced with difficulties, some people in my virtual community are on my side with me. 2. When faced with difficulties, some people in my virtual community encouraged me 3. When faced with difficulties, some people in my virtual community expressed care and concern in my well-being.
Informational support	<ol style="list-style-type: none"> 1. In my virtual community, some people offer me important medical cosmetic information 2. I receive much information from other community members answering my questions about medical cosmetics 3. When faced with difficulties, some people in my virtual community would provide me with suggestions.
Reciprocity	<ol style="list-style-type: none"> 1. I know other members will help me, so it's obligated and fair to help other members in my virtual community 2. When I share knowledge and information to other members, I believe that my queries for knowledge and information will be answered in my virtual community 3. When I receive help in my virtual community, I feel it is only right to give back and help other members.
Sense of belonging	<ol style="list-style-type: none"> 1. I see myself as a part of this virtual community. 2. I feel I belong to my virtual community 3. I fit in well in my virtual community
Well-being	<ol style="list-style-type: none"> 1. I am satisfied with my life 2. I am engaged and interested in my daily activities. 3. The conditions of my life are excellent. 4. In most things, my life is close to my ideal 5. So far, I have achieved the things that are important to me in life
Members' compliance with community norms	<ol style="list-style-type: none"> 1. I follow my virtual community's rules 2. It is important for me to conform to my virtual community regulations 3. I behave the norms set by my virtual community

Table 2. CR, AVE, Alpha, Correlations and Square Root of AVE.

	CR	AVE	Alpha	ES	IS	CN	RT	SOB	WB
Emotional Support (ES)	0.941	0.842	0.906	(0.918)					
Informational Support (IS)	0.920	0.794	0.870	0.743	(0.891)				
Community Norms (CN)	0.880	0.711	0.813	0.520	0.492	(0.843)			
Reciprocity (RT)	0.902	0.754	0.837	0.691	0.661	0.501	(0.868)		
Sense of Belonging (SOB)	0.921	0.796	0.872	0.583	0.493	0.625	0.588	(0.892)	
Well-being (WB)	0.912	0.673	0.879	0.385	0.381	0.240	0.341	0.339	(0.821)

Note. () = the square root of each construct's AVE.

correlation between the constructs were less than the square root of AVE, supporting discriminant validity.⁶³ The cross-loadings show that all indicators loaded well on their corresponding constructs. However, the Fornell-Larcker criterion has been criticized for being insufficiently sensitive to detect discriminant validity problems.⁶⁴ Therefore, the heterotrait-monotrait ratio (HTMT) was examined as an additional test for discriminant validity. The results showed that the maximum HTMT value was 0.83, below the conservative threshold of 0.85. Consequently, these constructs displayed acceptable discriminant validity.

Common Method Variance

Harman's single-factor test was conducted to assess the likelihood of common method variance (CMV). The results

showed that more than one factor was extracted, and none accounted for more than 50% of the variance. However, as there has recently been debate on the adequacy of Harman's single-factor test to detect CMV,⁶⁵ two additional approaches were employed to further examine CMV. Following Liang et al⁶⁶ we added a method variable to the research model and examined the significance level and magnitude of the coefficient between the method factor and each indicator. The results showed that most coefficients were insignificant, except for those between the method factor and es2, cn1, cn3, sob3, and wb5. However, the coefficients were substantially lower than those between the indicator and its corresponding constructs. Furthermore, none of the hypothetical relationships between the main constructs was influenced, and no path lost significance or changed signs. Therefore, the concern of potential CMV infection can be alleviated. As a

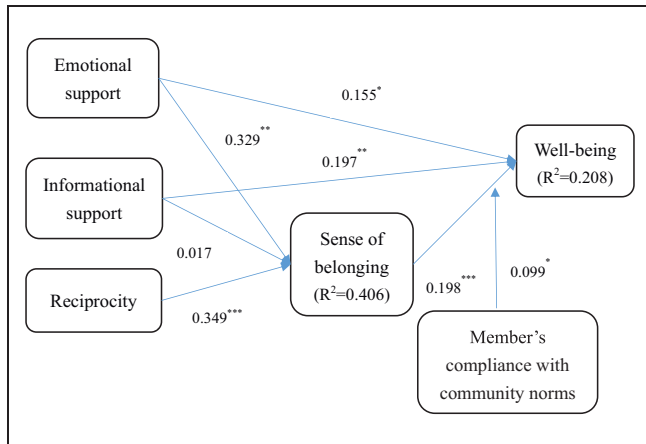


Figure 2. Path model results. * $P < .05$. ** $P < .01$. *** $P < .001$.

third remedy, we applied the full collinearity test proposed by Kock⁶⁷ as an alternative approach to CMV. The results show that all collinearity (VIF) values ranged from 2.698 to 1.249, below the threshold of 3.3. Therefore, the results of these 3 tests suggest that this research was not pervasively affected by CMV.

Hypothesis Validation

The results indicated that the overall model fit was satisfactory. The standardized root mean square residual (SRMR) value as a quality criterion was 0.049, which is lower than the recommended threshold of 0.08. Figure 2 shows the results of the model. The examination indicated that emotional support had a positive and significant effect on the sense of belonging ($\beta = .329$, $P < .001$) and well-being ($\beta = .155$, $P < .05$). Thus, H1 and H2 are supported. The effect of informational support on the sense of belonging was not significant ($\beta = .017$, $P > .05$). Thus, H3 was not supported. However, the influence of informational support on well-being was significantly positive ($\beta = .197$, $P < .01$), lending support to H4. The effect of reciprocity on the sense of belonging was examined, and the results showed a significant positive coefficient ($\beta = .349$, $P < .001$), supporting H5. In addition, members' sense of belonging to a community has a significant impact on well-being ($\beta = .198$, $P < .001$), supporting H6.

In addition, the mediating role of sense of belonging was examined. As shown in Table 3, the indirect effect (0.065) was significant with a P -value of .003. Additionally, the bias-corrected confidence interval [0.026, 0.110] did not include 0, indicating the existence of a mediating effect. Therefore, sense of belonging partially mediated the effect of emotional support on well-being, and H7 was supported. Since informational support did not have an influence on sense of belonging, the mediating role of sense of belonging was not supported for the relationship between informational support and well-being. H8 was thus not supported. Table 3 shows a

Table 3. Mediating Effect of Sense of Belonging.

Paths	Indirect effect	P-value	Bias corrected 95% CI	
			Lower	Upper
ES → SOB → WB	0.065	.003*	0.026	0.110
IS → SOB → WB	0.003	.759	-0.02	0.025
RT → SOB → WB	0.069	.003*	0.026	0.116

* $P < .01$.

significant indirect effect of .069 with a P -value of .003. The bias-corrected confidence interval [0.026, 0.116] did not include 0, indicating a mediating effect. Therefore, sense of belonging partially mediated the effect of reciprocity on well-being and H9 was supported. Regarding the validation of the moderating effect of members' compliance with community norms, the outcome through PLS revealed a significant, positive moderation effect ($\beta = .099$, $P < .05$), which supported H10.

Conclusion

Discussion

The findings show that when members of a medical cosmetic community receive emotional support, such as care and concern, members become dependent on and form a sense of belonging to the community, reflecting that emotional support is an important antecedent of members' belongingness to their communities. The research outcomes also support the direct, positive effect of emotional support on well-being as well as the indirect, positive impact on well-being mediated through a sense of belonging, indicating the important role of emotional support in members' life satisfaction. When a member receives the attention, encouragement, and warm care of other community members, he/she tends to be satisfied with his/her life as well as feeling a sense of belonging to the community, which in turn further intensifies his/her life satisfaction.

Surprisingly, informational support failed to demonstrate a positive effect on the sense of belonging. One possible reason is that a sense of belonging is an affective construct that may not be directly influenced by a cognitive construct, such as informational support. Another reason is that general, less professional information related to medical esthetics could be accessed through web portals such as Google and Yahoo. Therefore, a member does not feel like part of the community simply based on suggestions and information from other community members.

Informational support has a direct, positive effect on well-being, indicating that informational support is a significant factor in well-being. When a member receives information and advice that he/she needs to clarify a particular problem of medical esthetics, his/her life condition improves.

The positive, significant effect of reciprocity on the sense of belonging shows the importance of fairness in exchanges

with other members, enhancing members' feelings of being part of the community. Notably, the significant positive indirect impact of reciprocity on well-being indicates that reciprocity contributes to improving members' life satisfaction through their belongingness to the community.

This study confirmed that a sense of belonging is a significant antecedent positively influencing well-being, which is compatible with previous studies.^{9,10} When members' feelings of relating to the community increase, their life satisfaction will be enhanced. In addition, a sense of belonging plays a pivotal role in mediating the positive effect of emotional support and reciprocity on members' life satisfaction, which is also compatible with previous research.^{9,53}

Members' compliance with community norms positively moderated the influence of a sense of belonging on well-being. This demonstrates that the higher the level of members' compliance with community norms, the greater the positive impact of a sense of belonging on well-being. In other words, for members with higher compliance with community norms, there is a higher positive effect of a sense of belonging on well-being. This effect is reduced for members who are less compliant with community norms.

Theoretical Implications

This study contributes to realizing members' social behaviors, specifically in virtual medical cosmetics communities, and confirms the integrated model of social support, reciprocity, sense of belonging, and well-being. By identifying emotional and informational support as important pillars, the findings demonstrate their positive influence on members' well-being through their active participation in the online medical cosmetics community. Moreover, the empirical data indicate that affective elements are more important in the virtual community, as the analysis showed that the total effect of emotional support on members' well-being is stronger than informational support and reciprocity. In addition, this study empirically verifies the significant mediating role of members' belongingness and the moderating role of members' compliance with community norms, which deepens our understanding of how the effects of social support and reciprocity on members' well-being can be enhanced and changed.

Managerial Implications

This study provides insight into the management of online communities. These findings suggest that affective bonds among members are critical to their sense of belonging and well-being. Therefore, community features that can enhance such bonding appear to be of the highest priority. Furthermore, to acknowledge the significant impact of reciprocity on the sense of belonging, the importance of care toward other members when receiving help from them should also be

emphasized in this virtual community to maintain fairness and increase members' willingness to stick with the community. To develop members' belongingness from the beginning, a virtual community can launch a new member buddy program to help new members find their way. In addition, given the large membership of medical cosmetic virtual communities, it is a challenge for members to find people with whom they would like to interact. Thus, offering a variety of small groups (eg, based on members' age and occupation) could help members build a smaller community within a larger one. During the COVID-19 pandemic, virtual meetings have become popular around the world as a convenient form of personal interaction. Hence, a virtual community could organize online meetings to provide members with the opportunity to meet others and make their acquaintance, which would develop members' belongingness. Considering the positive moderating effect of members' compliance with community norms, management teams should consider providing differentiated benefits as reinforcements to those who comply more with the norms. By differentiating high-compliance from low-compliance members, the differential effect on members' well-being can be more salient. Although information support does not show a significant influence on the sense of belonging, it does have an impact on the feelings of ultimate well-being. Therefore, providing medical cosmetic information can help satisfy the basic needs of members. Considering the relatively weak effect, secondary priority should be given to efforts in this area.

Limitations and Future Research Suggestions

This study had a few limitations. First, this study collected data from Taiwan; therefore, the results may not be generalizable to other countries. Future research could consider repeating the study by applying the research model to different cultures/countries and examining potential differences. Second, this study focused on medical services that generally involve greater considerations of personal privacy. Internet users' privacy concerns and the extent to which platforms hosting communities can protect confidentiality and anonymity may thus play important roles. Future research could also investigate the potential influences of these factors, in addition to those found by this research. Third, the dynamics and changes in interactions occurring in online communities might influence their longevity. The present study used a cross-sectional method, and hence was unable to explore this question. Therefore, future research should employ advanced approaches using longitudinal data to address this promising issue.

Declaration of Conflicting Interests

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Ethics and Consent Statements

Our study did not require an ethical board approval because our study protocol is qualified for exemption of IRB review and consent requirements according to the policy of the Ministry of Health and Welfare, Taiwan.

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