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Comprehending User Satisfaction with Smoking-Cessation Online Health Communities: A Social Support Perspective

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Abstract. This study aims to unravel the user satisfaction in smoking-cessation online health communities (OHCs). In the proposed research model, users' knowledge sharing and recommendation behavior are motivated by user satisfaction. User satisfaction, in turn, is determined by users' confirmation of their expectations and perceived usefulness (PU) of smoking-cessation OHCs. In addition, informational support, emotional support, and esteem support are conceptualized as the determinants of PU from a social support perspective. The research model is tested by analyzing online survey data (N = 173) among users of two smoking-cessation OHCs. The empirical results indicate that satisfaction affects users' knowledge sharing and recommendation behavior positively, and both PU and confirmation determine satisfaction. PU of smoking-cessation OHCs is motivated by emotional support and esteem support. The findings extend the understanding of user satisfaction in the particular context of smoking-cessation OHCs and provide administration of smoking-cessation OHCs with practical implications.

Keywords: social support, smoking-cessation, confirmation, online health community, knowledge sharing, recommendation, satisfaction, perceived usefulness.

1 Introduction

Smoking-cessation online health communities (OHCs) like Stumppi.fi, QuitNet, and BecomeAnEx, have been increasingly utilized as a mechanism for smoking behavior change (Cobb, Graham, & Abrams, 2010; Cobb et al., 2011; Graham, Papandonatos, Erar, & Stanton, 2015). Unlike general Social Network Sites (SNS), such as Facebook and Twitter, smoking-cessation OHCs are intentionally designed with internet-based smoking-cessation interventions, and often consist of strangers united by a shared goal on achieving abstinence (Cobb et al., 2010; Cobb et al., 2011; Graham et al., 2015). In such OHCs, users can ask questions about quitting, share experiences, and provide others with emotional support and companionship (Cobb et al., 2010; Cobb et al., 2011;

Graham et al., 2015). Past studies have suggested that participation in smoking-cessation OHCs might lead to positive smoking-cessation outcomes, for instance, a short-term abstinence (Graham et al., 2015).

Previous research has demonstrated that user satisfaction with Information Systems (IS) is crucial for implementing such IS successfully (Au, Ngai, & Cheng, 2008; Bhattacherjee, 2001). Numerous studies have uncovered several factors that influence user satisfaction in the IS field, such as information quality and system quality (DeLone & McLean, 1992; Wixom & Todd, 2005). In addition, some studies have found several positive outcomes of user satisfaction with IS, for instance, continuance intention (Bhattacherjee, 2001). Although these studies have offered important insights into user satisfaction with IS, there are two issues that require further research. First, there is a lack of research examining determinants of satisfaction in the particular context of smoking-cessation OHCs. Different from users of other IS, users of smoking-cessation OHCs have special needs. They are in need of social support (e.g., informational and emotional support) to help them achieve abstinence (Mermelstein, Cohen, Lichtenstein, Baer, & Kamarck, 1986). Social support is closely related to the context of smoking-cessation OHCs, and might affect user satisfaction, but largely ignored by prior research. Thus, it is necessary to investigate the antecedents of satisfaction in smoking-cessation OHCs from a social support perspective. Second, research on the consequences of satisfaction in the IS field is still limited (Vaezi, Mills, Chin, & Zafar, 2016). Although user satisfaction has been found to affect users' continuance intention (Bhattacherjee, 2001), the relationships between user satisfaction and other outcomes, such as knowledge sharing and recommendation, are not clear. Thus, further investigation is required to explore various consequences of user satisfaction with smoking-cessation OHCs.

To address above research gaps, this study purposes to investigate the antecedents and consequences of user satisfaction with smoking-cessation OHCs. Drawing upon expectation confirmation theory (ECT) (Bhattacherjee, 2001) and social support theory (Cohen & Wills, 1985; Cutrona & Suhr, 1992), this study advances a research model that posits: (1) users' feelings of satisfaction is determined by their confirmation of expectations and perceived usefulness (PU). (2) PU is influenced by social support obtained from smoking-cessation OHCs. (3) Satisfaction leads to users' knowledge sharing and recommendation behavior.

The remainder of the paper is structured as follows. In Section 2, I review extant literature on satisfaction and social support theory. Then, I present the proposed research model and hypotheses in Section 3. The methodology and the results from data analysis are introduced in Section 4. Finally, I conclude with a discussion on the implications of my empirical findings for both theory and practice in Section 5.

2 Theoretical foundation

2.1 User satisfaction in Information Systems

User satisfaction is a dominant research stream within previous literature, and has attracted scholarly attention across multiple disciplines. In the IS field, expectation confirmation theory (ECT) is widely used to explain user satisfaction as a function of a cognitive comparison between expectations of prior IS use and its actual performance. (Bhattacherjee, 2001). ECT was proposed by Oliver (1980), and holds that expectations and product/service performance determine customer satisfaction together. If performance exceeds users' expectations, a confirmation will manifest, and then individuals would be more satisfied with produce/service. However, if performance is below their prior expectation they would be less satisfied or even dissatisfied with product/service. ECT was then adopted in the IS field by Bhattacherjee (2001). According to Bhattacherjee (2001), users' postadoption expectation is more credible because it is founded on actual IS usage. He demonstrated that confirmation of expectations from prior IS use, together with PU, determine user satisfaction. User satisfaction, in turn, affects users' continuance intention.

Beyond continuance intention, satisfaction has been found to affect other user behaviors, such as retention and word of mouth (Morgeson, 2011). However, as Vaezi et al. (2016) reported, understanding about outcomes of satisfaction is still fragmented. Thus, user satisfaction's impact on postadoption behaviors requires further investigation. In addition, previous studies have stated that user satisfaction is determined by different factors. For instance, Wixom and Todd (2005) found that information quality and systems quality affect user satisfaction with data warehousing software. However, due to the uniqueness of smoking-cessation OHCs, the context-related factors has not been emphasized in prior literature. Thus, future research is needed.

2.2 Social support theory

Cobb (1976, p. 300) defined social support as information and actions that make people believe that they are "cared for and loved, esteemed and valued, as well as belong to a network of communication and mutual obligation". Social support has been found to promote many addiction treatments such as alcohol withdrawal (Peirce, Frone, Russell, Cooper, & Mudar, 2000) and smoking-cessation (Wagner, Burg, & Sirois, 2004; Westmaas, Bontemps-Jones, & Bauer, 2010). Particularly, social support from strong social ties, such as partners, family members, and close friends, can enhance a smoker's cessation performance (Wagner et al., 2004; Westmaas et al., 2010). In addition, prior studies have suggested that social support from weak social ties, for instance, smoking-cessation OHCs, might also lead to abstinence (Graham et al., 2015). In other words, social support obtained from smoking-cessation OHCs might meet smokers' expectations. Such support can enhance users' perception of usefulness of OHCs, and then make them feel satisfied with such OHCs. Therefore, social support theory is appropriate to investigate the satisfaction of smoking-cessation OHCs.

Cutrona and Suhr (1992) classified social support into five different types: (1) informational support, i.e., providing information on how to solve problems through suggestions or teaching. (2) Emotional support, i.e., providing comfort to reduce emotion-

related stress by expressing caring or concern. (3) Esteem support, i.e., providing praise or compliment to enhance other's self-esteem. (4) Network support, i.e., providing a sense of belonging to a group. (5) Tangible support, i.e., providing goods or financial support. Previous studies have found that informational and emotional are two major types of social support shared in OHCs, followed by esteem and network support, such as OHCs related to cancer (Wang, Zhao, & Street, 2017), and smoking-cessation (Zhang & Yang, 2015). However, tangible support has been reported to be rare. This might because tangible support is restricted by time and space limitations (Wang et al., 2017).

In this research, I consider three types of social support as the antecedents of the PU of smoking-cessation OHCs: informational, emotional, and esteem support. Tangible support is removed due to its rarity in OHCs (Huang, Chengalur-Smith, & Pinsonneault, 2019; Wang et al., 2017). Network support is also be deleted in this study because it seems difficult to clearly distinguish it from companionship activities, as they are often intertwined in OHCs (Huang et al., 2019).

3 Research model and hypotheses

3.1 Research model

Drawing on prior literature on satisfaction, I assume that users' knowledge sharing and recommendation behavior are determined by their satisfaction with smoking-cessation OHCs. User satisfaction, in turn, is influenced by their confirmation of expectations from prior use and PU. Further, based on social support theory, I argue that three types of social support (i.e., informational support, emotional support, and esteem support) have impacts on the PU of smoking-cessation OHCs. Table 1 presents the definitions of the constructs included in the proposed research model. Figure 1 summarizes my research model.

3.2 Research hypotheses

Emotional support has been viewed as important to facilitate people's emotional stability through the communication of empathy, sympathy, caring, and even love (Huang et al., 2019). For smoking quitters, they often feel distressed because of the negative emotions caused by unpleasant withdrawal symptoms, such as headache, coughing, and sore throat. They need an environment for them to release their negative energy freely and safely, and ask for emotional support from others (Creswell, Cheng, & Levine, 2015). Smoking-cessation OHCs offer such an environment. First, due to anonymity, smokers can disclose their feelings without privacy worries. Second, the majority of users are ex-smokers or current smokers who experience a similar situation and can empathize with emotional support seekers. Third, the sense of being cared from others can help users to reduce their distress, and change their personal emotions from negative to positive (Huang et al., 2019; Zhang & Yang, 2015). In other words, emotional support from smoking-cessation OHCs can assist smokers to restore their emotional stability, which might help them to quit smoking habit. Hence, I assume that the more emotional support

users obtain from a smoking-cessation OHC, the more useful it is perceived to be. Thus, I suggest the following hypothesis:

H1: Emotional support is positively associated with the PU of a smoking-cessation OHC.

Table 1. List of definitions of the constructs

Construct	Definition
Emotional support (EMS)	Communicating care, empathy, encouragement, or even love in a smoking-cessation OHC (Cutrona & Suhr, 1992)
Informational support (INS)	Communicating information on smoking-cessation —such as advice, success stories—in a smoking-cessation OHC (Cutrona & Suhr, 1992)
Esteem support (ESS)	Communicating compliments or relief from blame in a smoking-cessation OHC (Cutrona & Suhr, 1992)
Perceived usefulness (PU)	The degree to which a user believes that using a smoking-cessation OHC would enhance his or her smoking-cessation performance (Davis, 1989)
Knowledge sharing (KS)	The behavior of exchanging information, experience, and skills related to smoking-cessation in a smoking-cessation OHC (Hsu, Ju, Yen, & Chang, 2007)
Recommendation (REC)	The behavior to recommending the smoking-cessation OHC to others (Kim & Son, 2009)
Confirmation (CON)	A user's perception of the congruence between expectations of smoking-cessation OHC use and its actual performance (Bhattacherjee, 2001)
Satisfaction (SAT)	The degree to which a user affect with prior use of a smoking-cessation OHC (Bhattacherjee, 2001)

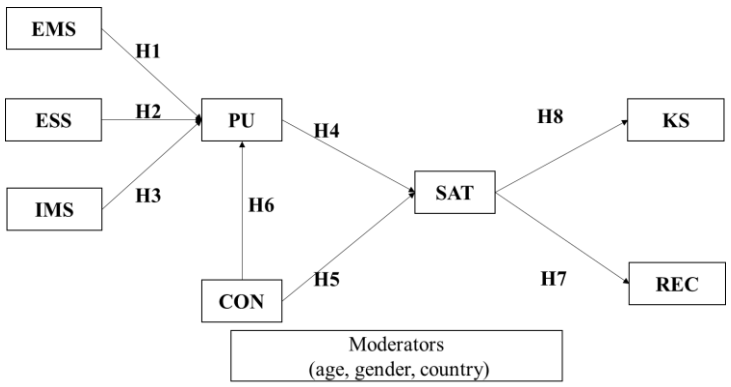


Figure 1. The proposed research model

Esteem support can help smokers to enhance their self-esteem through offering compliments and relief from blame (Deng & Liu, 2017; Huang, Chengalur-Smith, & Ran, 2014). Specifically, in smoking-cessation OHCs, others' expressions of forgiveness

might mitigate their self-blame with regard to relapse. In addition, others' praise or congratulations about their achievements (e.g., a week smoke-free), can help users enhance their self-belief regarding their capabilities to stop smoking. Prior literature has reported that high self-esteem is an important predictor of success in smoking-cessation (Kowalski, 1997). In other words, esteem support from a smoking-cessation OHC can help quitters to enhance their self-esteem, which might eventually lead to abstinence. Therefore, I assume that more esteem support gained from a smoking-cessation OHC, the more useful the smoking-cessation OHC is perceived to be. The following hypothesis is suggested:
H2: Esteem support is positively associated with the PU of a smoking-cessation OHC.

Informational support can help users in solving problems by providing suggestions or teaching (Huang et al., 2019). Smoking-cessation OHCs are an ideal information resource platform for smoking quitters. First, they can access to self-help materials, which are helpful to teach them about the benefits of quitting and enhance their intention to quit. Second, they can get other's advice on how to quit, which are useful for them to make better decisions and quitting plans (Granado-Font et al., 2018; Rocheleau et al., 2015; Zhang & Yang, 2015). Third, users can learn from success stories posted by others. The personal tips and experience offered by peers are suitable for meeting practical needs and enhancing quitting skills. In short, informational support from smoking-cessation OHCs may help users to prepare, plan, and act to quit their smoking habit. Thus, I assume that the informational support that from a smoking-cessation OHC will make users perceive smoking-cessation OHCs as useful. The following hypothesis is proposed:
H3: Informational support is positively associated with the PU of a smoking-cessation OHC.

According to Bhattacherjee (2001), in the context of an online bank system, user satisfaction is determined by confirmation and PU together. In addition, confirmation has been found to affect PU positively. Thus, based on his findings, the following hypotheses are suggested:
H4: A user's perception of usefulness of a smoking-cessation OHC is positively related to their satisfaction with the OHC.
H5: A user's confirmation with a smoking-cessation OHC is positively related to their satisfaction with the OHC.
H6: A users' confirmation with a smoking-cessation OHC is positively associated with their perception of usefulness of the OHC.

Several studies have found that user satisfaction leads to postadoption behaviors. For instance, Morgeson (2011) discovered that there is a strong relationship between user satisfaction with websites and re-use intention. Satisfaction also has been found to affect word-of-mouth recommendation directly and indirectly (through re-use intention). Based on his findings, I suppose that user satisfaction with smoking-cessation OHCs affects their recommendation behavior. The more satisfied the users are, the higher the

likelihood that they will recommend such OHCs to others beyond the OHCs. Thus, I posit:
H7: A user's satisfaction with a smoking-cessation OHC is positively associated with their recommendation behavior.

Only a handful of studies have investigated the knowledge sharing behavior as an outcome of user satisfaction. In the work of Cheung, Lee, and Lee (2013), user satisfaction affects users' continuance intention of knowledge sharing in an online community of practice. Based on their finding, it is reasonable to assume that in smoking-cessation OHCs, the more satisfied the users are, the higher the likelihood that they will contribute their knowledge in the OHCs. Thus, I provide the following hypothesis:
H8: A user's satisfaction with a smoking-cessation OHC is positively associated with their knowledge sharing behavior in them.

Prior studies have suggested to take age and gender in consideration when investigating impacts of social support on smoking cessation behavior (Westmaas et al., 2010). In addition, this study collected data from both Finland and China. Thus, in this research, age, gender, and country are considered as moderators.

4 Methodology

4.1 Development of survey measurements

Measurement items for constructs in the proposed theoretical model are adapted from extant literature and then reworded to fit the smoking-cessation OHC context. A five-point scale, ranging from "1 = strongly disagree" to "5 = strongly agree," is used to measure all the construct items. Specifically, the items of informational support and emotional support come from research by Liang, Ho, Li, and Turban (2011). The measurements for esteem support are adopted from Oh, Lauckner, Boehmer, Fewins-Bliss, and Li (2013). Perceived usefulness, confirmation, and satisfaction are measured with items taken from Bhattacherjee (2001). Items for knowledge sharing were adopted from the work of Hsu et al. (2007). The complete list of measurement items for constructs in the theoretical model is summarized in the Appendix.

4.2 Data collection

This study adopts the online survey methodology for data collection. Data are gathered in two nonprofit smoking-cessation OHCs (one is Stumppi.fi in Finland; the other is smoking-cessation bar in China). I recruited participants by releasing the online questionnaire on these two smoking-cessation OHCs. Each respondent is asked to offer their background information, and to report their perception and experience of using smoking-cessation OHCs in their smoking-cessation process. Respondents received a gift for their participation. A total of 185 users agreed to join and completed the online survey (139 in China, and 46 in Finland). After deleting 12 untrustworthy responses (12 in China), I finally obtained 173 answers as a valid sample for data analysis. Table 2 presents the background information of the respondents and their smoking-cessation stage.

Table 2. Respondents' demographic data and smoking-cessation stage

Measure	Items	Frequency	Percentage (%)
Country	Finland	46	26.6
	China	127	73.4
Gender	Male	103	59.5
	Female	64	37.0
	Unwilling to disclose	6	3.5
Age	15–24	17	9.8
	25–44	117	67.6
	45–65	35	20.2
	> 65	4	2.3
Smoking-cessation stage	Pre-contemplation	4	2.3
	Contemplation	45	26.0
	Preparation	19	11.0
	Action	40	23.1
	Maintenance	50	28.9
	Termination	15	8.7

4.3 Data analysis

In this study, collected data were analyzed by Partial Least Squares (PLS) 3.0 to validate the theoretical model.

The test of measurement model involved the assessment of convergent validity and discriminant validity. First, I used the factor loading for each item, composite reliability (CR), and average variance extracted (AVE) for each construct to evaluate convergent validity (Chin, 1998; Hulland, 1999; Tenenhaus, Vinzi, Chatelin, & Lauro, 2005). I deleted two items (EMS3 and INS1), as their factor loadings were lower than the minimum criterion. As presented in Table 3, each item's factor loadings exceeded 0.70. As shown in Table 4, the value of AVE and CR met the recommended threshold values of 0.5 and 0.7, respectively. Cronbach's alpha values also satisfied the threshold of 0.7, except informational support (0.68), suggesting acceptable convergent validity.

Second, calculated the square root of the AVE for all constructs in the research model to test discriminant validity. Then, I made a comparison between the loadings of items for an associated construct and their cross-loadings on other constructs. As shown in Table 5, the value of the square root of the AVE for each construct was higher than its correlation with other constructs. Overall, there is strong empirical support for the discriminant validity of all constructs in my proposed model (Chin, 1998).

The test of the structural model included estimates of the path coefficients and the R2 values. I applied the bootstrapping procedure in PLS 3.0 to test the structural model. The overall explanatory power and estimated path coefficients are shown in Figure 2. The model explains 59.1 percent of the variation in the PU of smoking-cessation OHCs, 20 percent of knowledge sharing, 27.3 percent of recommendation, and 38.3 percent of satisfaction. As postulated, emotional support (β=0.216, $p<0.05$) and esteem support (β=0.209, $p<0.05$) had significant positive influences on PU. Informational support was

not found to affect PU significantly. PU exerted significant positive effects on satisfaction (β=0.313, $p<0.01$). Confirmation positively affected both PU (β=0.431, $p<0.001$) and satisfaction (β=0.357, $p<0.001$). Satisfaction determined knowledge sharing (β=0.447, $p<0.001$) and recommendation (β=0.522, $p<0.001$). Thus, H1, H2, H4, H5, H6, H7, and H8 are supported.

To test the moderating effects of age, gender, and country, a multi-group analysis was conducted. No significant deference was found between Chinese and Finnish users, nor among different age groups. A significant difference was found between female and male users with regard to the path from emotional support to PU. Emotional support significantly affected PU for female users (β=0.493, $p<0.001$), but not for male users.

Table 3. Loadings and cross-loadings

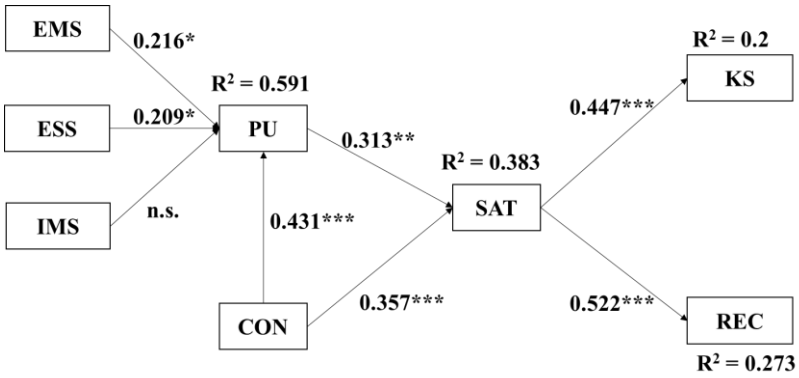
	EMS	ESS	IMS	KS	PU	REC	CON	SAT
EMS1	0.866							
EMS2	0.851							
EMS4	0.899							
ESS1		0.812						
ESS2		0.865						
ESS3		0.897						
IMS2			0.868					
IMS3			0.866					
KS1				0.924				
KS2				0.903				
KS3				0.923				
KS4				0.911				
PU1					0.826			
PU2					0.835			
PU3					0.796			
PU4					0.701			
REC1						0.824		
REC2						0.778		
REC3						0.838		
REC4						0.748		
CON1							0.898	
CON2							0.774	
CON3							0.881	
SAT1								0.807
SAT2								0.748
SAT3								0.809
SAT4								0.819

Table 4. Confirmatory factor analysis results

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
EMS	0.843	0.905	0.761
ESS	0.822	0.894	0.738
IMS	0.67	0.858	0.752
KS	0.935	0.954	0.838
PU	0.799	0.87	0.626
REC	0.812	0.875	0.636
CON	0.811	0.889	0.728
SAT	0.812	0.874	0.634

Table 5. Correlation matrix and discriminant validity

	EMS	ESS	IMS	KS	PU	REC	CON	SAT
EMS	0.872							
ESS	0.74	0.859						
IMS	0.743	0.766	0.867					
KS	0.578	0.565	0.611	0.915				
PU	0.63	0.66	0.606	0.573	0.791			
REC	0.548	0.616	0.564	0.433	0.642	0.798		
CON	0.572	0.646	0.614	0.502	0.703	0.647	0.853	
SAT	0.454	0.507	0.47	0.447	0.564	0.522	0.577	0.796



(Note: ***: p < 0.001; **: p <0.01; *: p <0.05; n.s.: not significant)

Figure 2. The structural model

5 Discussion and conclusions

5.1 Discussion

Building on the ECT and social support theory, this study constructs and tests a theoretical model to investigate user satisfaction in the particular context of smoking-cessation OHCs. Findings from the empirical validation of the model raise several points of interest.

First, emotional support and esteem support are found to affect the PU of smoking-cessation OHCs. This finding is consistent with prior research findings. For instance, in the research of Wu (2018), social support is reported to affect the PU of general OHCs. In smoking-cessation OHCs, when users obtain emotional support and esteem support that they expect from the OHCs, they perceive such OHC as useful for facilitating their smoking-cessation outcomes. In addition, emotional support is found to be a predictor of PU for female users, but not for male users. This might because female users value emotional support more than male users, particularly in the stressful situation. When female users obtain emotional support from the OHCs, they are more likely to perceive such OHCs are useful for them to cope with stress in the process of smoking cessation.

Second, contrary to the hypothesis, informational support is not an antecedent of the PU of smoking-cessation OHCs. This finding is at odds with the prior findings. For instance, Wu (2018) found that information support is a determinant of the PU of general OHCs. This might be explained by the context of smoking-cessation OHCs. According to Vaezi et al. (2016), some antecedents of satisfaction are more relevant to certain contexts than others are. For smokers who intend to quit, they may get similar information support from alternative information sources, such as professional counseling and group therapy. Further investigation is required to explore the context-related factors.

Third, consistent with prior findings of Bhattacherjee (2001), user satisfaction with smoking-cessation OHCs is determined by both PU and confirmation. When users confirm their expectations of using smoking-cessation OHCs in their smoking-cessation process, and perceive such OHCs are useful for helping them achieve abstinence, they are more likely to be satisfied with the OHCs.

Fourth, knowledge sharing and recommendation are found to be two important consequences of user satisfaction. These findings are consistent with prior research (Cheung et al., 2013; Morgeson, 2011). According to Morgeson (2011), user satisfaction positively affects users' intention to re-use IS and recommend it to others. In addition, the findings of Cheung et al. (2013) indicated that user satisfaction with an online community exerts on positive influence on users' continuance intention to share knowledge. The results of this study demonstrate that the more satisfied with smoking-cessation OHCs, the more likely users are to contribute their knowledge within such OHCs, and recommend the OHCs to others.

5.2 Conclusions

These research findings in this study have some theoretical implications.

First, this study extends the ECT by delineating user satisfaction of smoking-cessation OHCs into social support elements. The findings on emotional and esteem support as the two important determinants of PU of smoking cessation OHCs demonstrated that PU can be explained from the social support perspective, which is closely related to the smoking cessation OHCs context. In addition, PU is positively associated with satisfaction. The satisfaction might be influenced by social support factors indirectly via PU. With these new insights, this study offers possible explanations for understating the influences of context-related factors on user satisfaction.

Second, Vaezi et al. (2016) suggested to focus more on outcomes of satisfaction in IS, this study addresses this call by investigating two postadoption behaviors as consequences of satisfaction in the context of smoking-cessation OHCs. The findings indicate that users' satisfaction is a determinant for their knowledge sharing and recommendation behaviors. When users feel satisfied with smoking-cessation OHCs, the more likely they will share their own knowledge in such OHCs, as well as recommend the OHCs to others.

This study provides some practical implications for managing smoking cessation OHCs. The findings imply satisfaction determines users' knowledge sharing and recommendation behavior, thereby offering recommendations for OHC service providers to promote knowledge sharing and recommendation by enhancing users' satisfaction with smoking-cessation OHCs. Specifically, emotional and esteem support were found to indirectly influence satisfaction via PU, suggesting that OHC service providers should focus on the strategies to promote the sharing of emotional and esteem support among users.

5.3 Limitations and future directions

This study has certain limitations. Firstly, the theoretical model caters exclusively to smoking-cessation OHCs and does not consider other OHCs or IS. For this reason, I speculate that the findings may not be generalizable for explaining user satisfaction in different contexts. Future research may consider collecting data from OHCs related to different health concerns. Second, in terms of antecedents, I only focus on social support elements. Other factors (e.g., information and system quality) that may affect user satisfaction in smoking-cessation OHCs could be considered in future research, in order to get a comprehensive understanding of satisfaction (Vaezi et al., 2016).

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Appendix.

Construct	Measurement items	Resource
Emotional support	1. When faced with difficulties, some people in the smoking-cessation OHC were on my side.	(Liang et al., 2011)

	2. When faced with difficulties, some people in the smoking-cessation OHC comforted and encouraged me. 3. When faced with difficulties, some people in the smoking-cessation OHC listened to me talk about my private feelings. 4. When faced with difficulties, some people in the smoking-cessation OHC expressed interest in and concern for my well-being.	
Informational support	1. Some people in the smoking-cessation OHC would offer suggestions when I needed help. 2. When I encountered a problem, some people in the smoking-cessation OHC would give me information to help me overcome the problem. 3. When faced with difficulties, some people in the smoking-cessation OHC would help me discover the cause and offer suggestions.	
Esteem support	1. Some members of the smoking-cessation OHC showed confidence in my ability to deal with smoking. 2. Some members of the smoking-cessation OHC made me feel that I was good at making decisions regarding smoking cessation. 3. Some members of the smoking-cessation OHC made me feel that I was capable of handling my smoking cessation.	(Oh et al., 2013)
Perceived usefulness	1. Using the smoking-cessation OHC made my smoking cessation proceed faster (productivity). 2. Using the smoking-cessation OHC made my smoking cessation proceed better (performance). 3. Using the smoking-cessation OHC helped me make better decisions regarding smoking cessation (effectiveness). 4. Overall, using the smoking-cessation OHC was useful in smoking cessation.	(Bhattacherjee, 2001)
Confirmation	1. My experience with using stumppi.fi was better than what I expected. 2. The service provided by stumppi.fi was better than what I expected. 3. Overall, most of my positive expectation from using stumppi.fi were confirmed.	

Satisfaction	How do you feel about your overall experience of using this online community? 1. Very dissatisfied, dissatisfied, neutral, satisfied, very satisfied 2. Very displeased, displeased, neutral, pleased, very pleased 3. Very frustrated, frustrated, neutral, contented, very contented 4. Very terrible, terrible, neutral, delighted, very delighted	
Knowledge sharing	1. I participate frequently in knowledge-sharing activities in the smoking-cessation OHC. 2. I usually spend lots of time in knowledge-sharing activities in the smoking-cessation OHC. 3. I usually share information actively with others in the smoking-cessation OHC. 4. I usually involve myself in discussions of various topics in the smoking-cessation OHC.	(Hsu et al., 2007)
Recommendation	1. I would recommend stumppi.fi to other smokers. 2. I will say positive things about stumppi.fi to others. 3. I would recommend stumppi.fi when someone seeks my advice on smoking cessation. 4. I would recommend stumppi.fi to others via social media.	(Kim & Son, 2009)

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