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KNOWLEDGE SHARING IN A SMOKING CESSATION ONLINE COMMUNITY: A PRIVACY CALCULUS PERSPECTIVE

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Abstract

The paper presents a study design intended to disentangle the various components of social support and privacy concerns related to knowledge-sharing in a smoking cessation online health community from a privacy calculus perspective. In the research model, social support confers benefits of informational support, emotional support, esteem support, and network support, all of which have a positive effect on knowledge-sharing behaviour therein. The privacy concerns, articulated in terms of risks, entail threat appraisals (perceived severity and perceived vulnerability) and coping appraisals (response efficacy and self-efficacy). Threat appraisals negatively affect knowledge-sharing in the smoking cessation OHC, whereas coping appraisals have a positive effect on the sharing. Under privacy calculus theory, the risk–benefit analysis determines individual users' knowledge-sharing behaviour in a smoking cessation OHC. The individual user's smoking cessation OHC usage experience and the stage of smoking cessation are set as moderators in the proposed research model to explore user differences in knowledge sharing behaviour in the smoking cessation OHC. This study may contribute to a comprehensive understanding of the core antecedents to knowledge-sharing in smoking cessation OHCs.

Keywords: online health community, knowledge-sharing, social support, privacy, smoking cessation.

1   Introduction

Smoking has long been an important public-health problem on the world stage, killing more than seven million people each year (World Health Organisation, 2017). While various interventions have been applied to assist smokers in achieving long-term abstinence, such as one-on-one behavioural counselling conducted in person, group behaviour therapy, and telephone-based counselling, they have remained underused, suffering from limited interest, low attendance, and time constraints (Stead et al., 2013; Lancaster and Stead, 2017; Stead et al., 2017). One substantial barrier to enrolling in these smoking-cessation efforts is stigma (e.g., discrimination, shame, and blame) that renders smokers reluctant to seek aid (Graham, 2011; Brown-Johnson and Popova, 2016). For instance, with smoking becoming less accepted in society, some non-smokers may stigmatise smokers (Peretti-Watel et al., 2014) as 'weak-willed', 'irresponsible', or 'dirty'. These labels can isolate smokers and lead them to shy away from seeking out the above-mentioned interventions (Graham, 2011). As a peer-focused alternative, online health communities (OHCs) might be a good approach for providing smoking-cessation-related services and for lowering the barriers created by stigma among smokers. Where an OHC is 'a collective of individuals who communicate with each other on health-related matters through dedicated sites in [*sic*] the Internet' (Mpinganjira, 2018), a smoking cessation OHC is an online health community designed specifically to support quitting smoking and to afford convenient online access to interaction with people who are going through similar struggles and facing the same stigma. In a smoking cessation OHC, users can read posts and share experience-based knowledge without disclosing their identity, since anonymity is available. Previous studies have suggested that engagement with OHCs for smoking cessation shows

great promise, with a higher probability of quitting and with some degree of relapse prevention (e.g. Schwarzer and Satow, 2012; Richardson et al., 2013; Graham et al., 2015; Ramo et al., 2015).

Notwithstanding such evidence that these OHCs affect smokers' quitting behaviour, little is known about what motivates users to share smoking-cessation-related knowledge in them, even though Chiu et al. (2006) have made a strong case that knowledge-sharing on users' part is vital for the success of an online community. Smoking cessation OHCs differ from many other sorts of online communities in the importance of user privacy, particularly with regard to personal health information (PHI) such as smoking history and relevant medical records. Privacy has been highlighted as a major concern connected with OHC use (Li, 2013) and knowledge-sharing in OHCs (Bansal et al., 2010; Zhang et al., 2018). For members of smoking cessation OHCs to obtain strong support, they must share PHI, at least selectively, with others (Lawlor and Kirakowski, 2014), and they face a risk of invasions of privacy in so doing. For instance, their PHI could get used for marketing of health products without their permission. Also, stigma could arise even though all members are anonymous. This may occur even in the absence of breaches of trust. For example, by sharing their smoking history, users may remind themselves of setbacks in their efforts to quit smoking and thereby experience negative feelings such as regret, self-blame, and shame. Because such factors and privacy concerns may lead users to refuse to share knowledge in OHCs, it is crucial to investigate the phenomena associated with privacy worries in smoking cessation OHCs. Thus, we can help address users' privacy concerns and enhance their knowledge-sharing by reducing worries about invasion of privacy and privacy-related risks and by increasing user self-efficacy in privacy protection.

Another important aspect of knowledge-sharing to consider is social support. Users of OHCs have been found to share knowledge to obtain benefits (Yan et al., 2016), which are defined as perceived value derived through sharing personal information in information privacy literature (Wilson and Valacich, 2012), and the perceived benefits in smoking cessation OHCs take the form of social support such as advice, encouragement, and empathy (Zhang and Yang, 2015; Cheung et al., 2017). Since user-perceived social support may create strong motivation for users to contribute knowledge to an OHC of this nature, examining the elements of social support may contribute greatly to the understanding of the benefits of such knowledge-sharing in smoking cessation OHCs from a user perspective.

In thematic analysis of a Facebook discussion group centred on smoking cessation, Ploderer et al. (2013) found a relationship between the social support and users' stage in the process of giving-up smoking: the supportive responses and leadership came mainly from those just embarking on the journey rather than people who had quit in the end. However, the moderating effect of one's stage in smoking cessation on knowledge-sharing behaviour in the context of smoking cessation OHCs has been rarely studied. Therefore, there is a need also for research into how a user's stage in quitting moderates the impact of privacy concerns and of social support on knowledge-sharing behaviour in smoking cessation OHCs (Johnston et al., 2013).

To address the above-mentioned research gaps revealed by the literature, we adopt a research framework utilising privacy calculus theory (Culnan and Armstrong, 1999) to explain knowledge-sharing in a smoking cessation OHC by means of risk–benefit analysis for sharing knowledge in the smoking cessation OHC. Here, the facets of social support together represent the benefits, while the risks consist of a composite of privacy concerns. For comprehensive understanding of the risks and benefits and of how they influence users' knowledge-sharing behaviour in smoking cessation OHCs, we seek to tease out the various components of perceived social support and perceived privacy concerns in this context. To form a nuanced picture of user perceptions of both the privacy matters and the social support connected with these OHCs, our design also takes into consideration the user-specific factor of one's stage in quitting but also the possible moderating influence of experience, such as duration of using the smoking cessation OHC.

We begin the discussion with a review of the literature that informs our work, after which we detail the proposed model and our hypotheses. We then present the research methods applied in our study and discuss the expected outcomes and contributions.

2 Literature review

2.1 Smoking cessation OHCs

In the literature on smoking cessation OHCs, the primary emphasis is on the OHCs' impacts on health outcomes. For instance, Pechmann et al. (2017) found that participating in smoking cessation OHCs led to higher rates of seven-day point prevalence abstinence at two months, and Graham et al. (2015) discovered that OHC engagement was correlated with higher rates of 30-day abstinence at three months than was non-use of OHCs. In a longer-term study, 12 months of participation in OHCs was associated with a decrease in tobacco consumption and a larger number of attempts to quit smoking (Ramo et al., 2015).

In another stream of research, researchers apply content analysis to users' sharing activities in smoking cessation OHCs. For example, Rocheleau et al. (2015) found that 62% of the posts in a smoking cessation-focused Twitter group were principally informational support, 24% offered primarily socio-emotional support, and 14% mainly gave encouragement. In corresponding WhatsApp and Facebook OHCs, 55.5% of the messages conveyed views and experiences, 28.7% offered encouragement, and 15.8% consisted of informational support (Cheung et al., 2017). These studies focus on what gets shared in smoking cessation OHCs, but **why** users share is seldom studied in this context.

Knowledge-sharing is critical to every OHC's development and sustainability. Researchers have identified the perceived benefits of sharing knowledge as the main driver of knowledge-sharing behaviour in other OHC types. For instance, Yan et al. (2016) found a sense of self-worth, reputation, and social support to be the main benefits that motivated users to share both general and specific knowledge there. Examining health Q&A communities in particular, Zhang et al. (2017) found that intrinsic rewards of altruism, knowledge-linked self-efficacy, and empathy and extrinsic rewards of reciprocity and reputation accrued with sharing of knowledge. Looking at the other side of the coin, some scholars have addressed the costs or risks of individuals' knowledge-sharing in OHCs. For example, Yan et al. (2016) found that cognitive and executional costs negatively influence knowledge-sharing behaviour, and Zhang et al. (2018) suggested that privacy issues related to one's health information were seen as a risk, negatively affecting intention to share PHI-associated knowledge.

Although a link has been posited between perceived benefits/risks and levels of knowledge-sharing in OHCs of other types, little is known with regard to the factors in users' perceptions of benefits and risks in the context of smoking cessation OHCs in particular, let alone how these determine the knowledge-sharing in said OHCs. Hence, we designed a study to consider the above research question.

2.2 Privacy concerns

When discussing privacy concerns, we refer to 'consumers' concerns about possible loss of privacy as a result of information disclosure to a specific external agent (e.g., a given website)' (Xu et al., 2011, p 800). Users of OHCs remain concerned about their private information to some extent even if most OHCs offer assurances of anonymity. They fear privacy infringements related to data collection by OHC platform providers and inappropriate access or misuse by individual OHC members, yet they must share private information if they want to obtain solutions or support from other OHC members, whatever the potential risks they may recognise (Welbourne et al., 2013; Kordzadeh et al., 2016). For instance, in a smoking cessation OHC, a user may disclose his/her personal smoking history to certain members and thereby gain concrete advice on giving-up smoking from those community members, or one might supply some personal treatment records in response to questions about particular treatments (efficacy, how long they may take, etc.). Hence, users have to weigh their privacy concerns against the value of knowledge-sharing. Accordingly, privacy issues can be regarded as a perceived risk bundled with sharing knowledge in a smoking cessation OHC.

The literature recommends that those studying privacy issues investigate what lies behind privacy concerns (Phelps et al., 2001), with the level of privacy risks and of privacy control having been argued to be the two antecedents to privacy worries (Xu et al., 2011; Li, 2012). To explain concerns surrounding privacy, some researchers have applied protection motivation theory (PMT) (Rogers, 1975), which proposes that people's intention to protect themselves from potential threats stems from two kinds of

factors: 1) threat appraisal, which encompasses evaluating the perceived severity of a threat and perceived vulnerability to it, and 2) coping appraisal, which involves response efficacy and self-efficacy related to carrying out preventive actions. The PMT framework offers conceptual underpinnings for studying people's privacy concerns in the context of smoking cessation OHCs and could serve as a tool for users' evaluation of the privacy threats and their ability to protect against such threats.

According to privacy calculus theory, individuals facing a privacy threat perform risk–benefit analysis before deciding whether to share personal information (Culnan and Armstrong, 1999). This approach has been applied in numerous research domains to examine individuals' behaviour related to privacy, such as e-commerce (e.g., Dinev et al., 2006; Dinev and Hart, 2006), wearable devices (e.g., Li et al., 2016), and OHCs in general (e.g., Kordzadeh et al., 2016; Zhang et al., 2018). It should constitute a solid theoretical foundation for explaining knowledge-sharing behaviour in smoking cessation OHCs. Users may choose to share some private information in order to make the communications more meaningful and derive greater benefit from the OHCs (Kordzadeh et al., 2016). Individuals' knowledge-sharing behaviour in this sort of OHC might well be influenced by the perceived balance between the benefits and risks of sharing personal information. This is why we set out to investigate said knowledge-sharing behaviour from a privacy calculus perspective.

2.3 Social support

Social support can be characterised as 'exchange of resources between at least two individuals perceived by the provider or the recipient to be intended to enhance the well-being of the recipient' (Shumaker and Brownell, 1984, p 13). Social support brings individuals a sense of caring, understanding, and warmth, which can help them cope with stress (Cohen and Wills, 1985), encourage change in health behaviour, and aid in maintaining the new health behaviour (House et al., 1988; Zhou et al., 2017). As social support can help smokers resist tobacco and relapses (Burns et al., 2014; Creswell et al., 2015), smokers are commonly advised to seek social support from family, friends, and other social networks for assistance in dealing with the psychosocial and physical difficulties associated with smoking cessation (Baker et al., 2011; Meijer et al., 2016).

Cutrona and Suhr (1992) identified five categories of social support – informational, emotional, esteem, network, and tangible support, and scholars examining various OHCs have assessed the support types present in these terms, along with their relative proportions. Considering an OHC focused on Huntington's disease, Coulson et al. (2007) found that informational (56.2% of the content), emotional (51.9%), network (48.4%), and esteem support (21.7%) were fairly commonplace while tangible support (9.8%) was infrequent. Conducting similar analysis for a HIV-related OHC, Coursaris and Liu (2009) identified informational and emotional support as most frequently shared (at 41.6% and 16.0%, respectively), followed by network support (6.8%) and esteem support (6.4%). Here too, tangible support was extremely uncommon (0.8% of posts). Tangible support is rare in OHCs because of geographical barriers (Wang et al., 2017). Therefore, we consider the other four classes of social support (informational, emotional, network, and esteem support) to constitute the perceived benefits for users in sharing knowledge within smoking cessation OHCs.

3 The research model and hypotheses

3.1 The proposed model

In our study design, privacy calculus theory is the main framework for understanding knowledge-sharing in the context of smoking cessation OHCs, in terms of risk–benefit analysis. Following the literature on benefits of OHCs, we argue that social support is the key benefit for members of these OHCs and that it has four main components: informational support, emotional support, esteem support, and network support. As for privacy concerns, applying PMT, we would expect users' privacy concerns to be determined jointly by their appraisals of the threat (perceived severity and perceived vulnerability) and their appraisals of coping – carrying out preventive behaviour while using the smoking cessation OHC (response efficacy and self-efficacy). The users' analysis of the perceived risks (privacy issues) and the

perceived benefits (social support) should determine their knowledge-sharing behaviour in said OHC. Figure 1 summarises our research model, and the constructs shown are defined in Table 1.
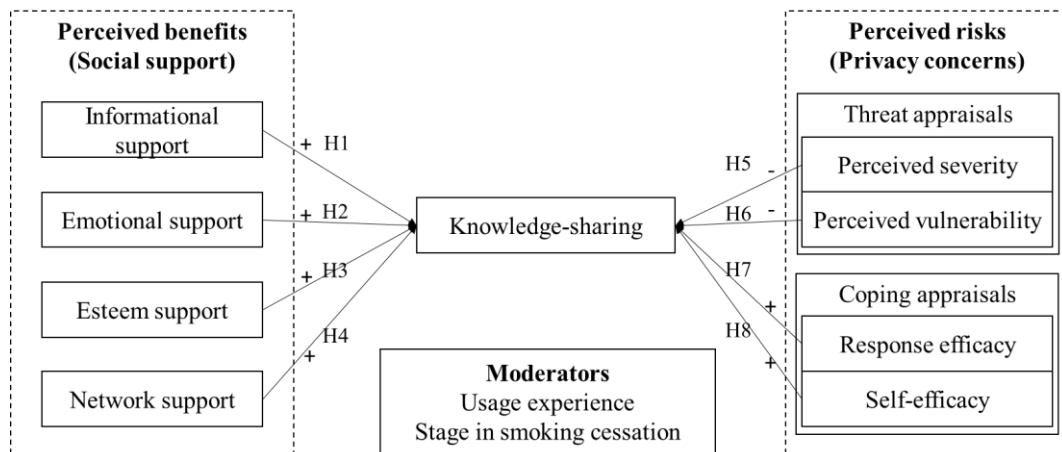

Figure 1   The model applied in the research

Concept	Description
Informational support	Offering of information about the relevant stress in smoking cessation and how one can deal with it (Cutrona and Suhr, 1992)
Emotional support	Communication of caring or love related to smoking cessation (Cutrona and Suhr, 1992)
Esteem support	Communication of respect and confidence in abilities related to giving up smoking (Cutrona and Suhr, 1992)
Network support	Communication of belonging to a group of people with similar concerns connected with smoking cessation (Cutrona and Suhr, 1992)
Perceived severity	The degree of significance of negative consequences following from a possible privacy threat (Rogers, 1975)
Perceived vulnerability	The degree of likelihood of a privacy threat materialising (Rogers, 1975)
Response efficacy	The belief that adaptive responses will be effective in alleviating a possible privacy threat (Rogers, 1975)
Self-efficacy	The belief that one is capable of responding effectively to a possible privacy threat and has the skills to do so (Rogers, 1975)
Knowledge-sharing	The act of exchanging knowledge, experiences, and skills related to smoking cessation between individuals and desired persons within an online health community (Zhang et al., 2017)

Table 1: The key concepts in the proposed model

3.2   The hypotheses

Informational support provides interpretation, suggestions, referrals, and solutions as to how users could solve their problems (Liang et al., 2011; Yan and Tan, 2014). In smoking cessation OHCs, users often seek and offer advice on coping with cravings, withdrawal symptoms, and relapse (Zhang et al., 2013; Rocheleau et al., 2015; Cheung et al., 2017). Any given user of a smoking cessation OHC can both receive and supply support: upon gaining useful information from others in the OHC, the recipient may feel an obligation to provide similar informational support to other members, and a person who provides information may well receive informational support too. This support is embedded in a process of building reciprocal relationships among smoking cessation OHC users by exchanging and sharing information. Members share their information to obtain further information-related benefits and meet the needs for the mutual benefit that is the OHC's *raison d'être*. Research into OHCs has found significant positive effects of informational support on willingness to offer support (Lin et al., 2015) and on user intention of community-internal PHI disclosure (Zhang et al., 2018). Accordingly, we posit that informational support has a positive impact on knowledge-sharing within smoking cessation OHCs, and we state the following hypothesis:

H1: Informational support is positively correlated with knowledge-sharing in a smoking cessation OHC.

Emotional support is oriented toward expressing care and concern (Liang et al., 2011; Yan and Tan, 2014). In smoking cessation OHCs, users often receive encouragement and empathy from other members, who are able to understand their struggles in attempting to quit smoking. The emotional support received in a smoking cessation OHC may reduce stress, increase one's motivation, and/or cultivate more positive attitudes to quitting (Zhang et al., 2013; Rocheleau et al., 2015; Cheung et al., 2017). Just as with sharing of informational support, the mutual motivation brought about via emotional support encourages users to share knowledge that helps others in return. Emotional support has long been considered an important driver of willingness to offer support (Lin et al., 2015) and of PHI disclosure intentions in an OHC context (Zhang et al., 2018). We see no reason to suppose that this pattern identified by the literature should not hold with regard to smoking cessation OHCs in particular. Arguing that emotional support, similarly to informational support, should have a positive effect on knowledge-sharing behaviour in a smoking cessation OHC, we hypothesize accordingly:

H2: Emotional support has a positive association with knowledge-sharing in a smoking cessation OHC.

Esteem support consists largely of compliments and indications of respect (Cutrona and Suhr, 1992). Members of a smoking cessation OHC appreciate positive feedback that helps them build confidence, such as expressions of admiration for their success and achievements on the road to quitting (Zhang et al., 2013; Cheung et al., 2017). Providers of esteem support often strengthen its receivers' strength in quitting and assist the recipients in believing in themselves more. With increased esteem from others, the resulting higher self-esteem may entail greater confidence in offering help, in turn, and satisfying others' needs for reciprocal support. Indeed, a connection has been found between esteem support and willingness to offer support in OHCs (Lin et al., 2015). Proceeding from the foregoing discussion, we argue that esteem support should affect users' knowledge-sharing behaviour in smoking cessation OHCs, in that the latter itself is part of reciprocal support for other members. We offer the following hypothesis:

H3: Esteem support correlates positively with knowledge-sharing in a smoking cessation OHC.

Finally, companionship is at the core of network support, which consists of group chatting, meetings, and other group interactions (Yan and Tan, 2014; Wang et al., 2017). Researchers have suggested that companionship is one reason for joining OHCs (Huang et al., 2014), and this may be particularly true of smoking cessation OHCs, whose users participate in group activities largely to reduce their feelings of loneliness and isolation (Zhang et al., 2013). In light of this and Lin et al. (2015)'s finding that the sense of companionship in an OHC is positively correlated with willingness to offer support, it is reasonable to assume that network support influences the knowledge-sharing in smoking cessation OHCs. Hence, our fourth hypothesis is as follows:

H4: Network support shows a positive association with knowledge-sharing in a smoking cessation OHC.

One's level of concern about one's privacy has been studied as a factor in various sorts of behaviour or express intentions, such as intentions to use personalised information systems (Chellappa and Sin, 2005), information disclosure behaviour (Buchanan et al., 2007), and PHI disclosure intentions (Zhang et al., 2018). A negative correlation has been identified between these and worries about privacy. Since members of smoking cessation OHCs often share private information, such as their smoking history, in pursuit of benefits, any concerns they may have about inappropriate use of such information become emphasised.

Users of smoking cessation OHCs often develop their perceptions of the associated threat after an assessment of potential harms and dangers, which includes considering severity and perceived vulnerability (Johnston et al., 2015; Zhang et al., 2018). In particular, with regard to the former, when users perceive a privacy threat to be grave, they are more likely to employ coping mechanisms to reduce or avoid the threat (Herath et al., 2014). As for the latter, when perceiving a privacy threat as likely to arise, people are more liable to act more cautiously than otherwise, to weaken the threat (Workman et al., 2008). Both perceived severity and perceived vulnerability heighten privacy concerns accordingly, which, in turn, has a negative impact on PHI disclosure intentions (Zhang et al., 2018). Hence, smoking cessation OHC users' sense of vulnerability or of there being a serious threat connected with losing control of their privacy/information might render them likely to not share knowledge, or at least to share less. We hypothesise thus:

H5: Perceived threat severity correlates negatively with knowledge-sharing in a smoking cessation OHC.

H6: Sense of vulnerability is negatively associated with sharing knowledge in a smoking cessation OHC.

When smoking cessation OHC users identify potential risks to privacy, they can develop coping responses to prevent or reduce the threat, cultivating greater response efficacy and self-efficacy both (Johnston et al., 2015; Zhang et al., 2018). According to PMT, when levels of efficacy factors rise, the likelihood of engaging in the relevant adaptive behaviour is greater (Lee and Larsen, 2009). Studies have shown that both response efficacy and self-efficacy are predictive of intending to adopt the information system in question (Lee and Larsen, 2009; Lee, 2011), of not neglecting information security in one's behaviour (Workman et al., 2008), and of privacy worries (Zhang et al., 2018). In the environment of a smoking cessation OHC, knowledge-sharing might be positively influenced by the user's sense of adaptive response for protecting private information. We hypothesis accordingly:

H7: Response efficacy is positively correlated with knowledge-sharing in a smoking cessation OHC.

H8: Self-efficacy with regard to privacy protection has a positive association with knowledge-sharing in a smoking cessation OHC.

Finally, the research design addresses potential moderating factors in the possible relationships considered above. Previous studies point to a possible role of experience with OHCs in predicting knowledge-sharing behaviour (e.g., Zhao et al., 2016) and of one's stage in smoking cessation on knowledge-sharing in an OHC setting (Ploderer et al., 2013). Therefore, the user's OHC experience and stage in smoking cessation are articulated as moderating constructs in the proposed framework, for greater understanding of user-specific differences in risk–benefit perceptions. Following the trans-theoretical model of behaviour change (or stages-of-change model) (Prochaska and Velicer, 1997), stage in smoking cessation refers to one's phase in the process of quitting smoking, including pre-contemplation, contemplation, preparation, action, maintenance, and termination.

4 Methodology

4.1 The study's context

Stumppi.fi is a Web-based portal for ceasing one's use of tobacco. Maintained by the Organisation for Respiratory Health in Finland, it was initially funded by Finland's government-supervised not-for-profit Slot Machine Association, from 2004, and since January 2017 its funding has come from the Ministry of Social Affairs and Health and the Funding Centre for Social Welfare and Health Organisations. Stummpi.fi provides information on tobacco use and terminating it, and the services also include running an online community for users who wish to quit smoking. The online community has been a major part of the Stummpi.fi Web site since January 2007, and it was visited by approximately 160,000 users in 2017. As of the end of October 2018, there were 8,418 registered members of the community.

4.2 Data-collection procedures

The study we designed is to be conducted with Stumppi.fi staff helping recruit subjects. Each participant will receive a free cinema ticket for taking part. The collection of data is to take the form of online surveys, to which a link, accompanied by a brief introduction to our project, will be presented both on the Stumppi.fi Web site itself and on its main Facebook page. The pilot phase of the study is already in progress, having been launched on 9 November 2018. Before any data collection was carried out, permission for the research was obtained from the ethics committees of the authors' universities.

The questionnaire consists of two parts. At the beginning is an informed-consent form, which provides a brief introduction to the goal of the project, describes the voluntary nature of participation in the research, addresses the anonymity and confidentiality of the research data, and supplies the research team's contact information. If agreeing to take part, the respondent proceeds to the survey questions. Here, respondents should report on their demographic background, smoking habit, and use experience with regard to Stumppi.fi. The survey questionnaire takes approximately 20 minutes to complete.

4.3 Instrument development

All items for measurement of the constructs within the research model were adopted from validated instruments used for previous literature, with a five-point Likert scale presented ('strongly disagree' to 'strongly agree') for all items. Specifically, the items addressing informational and emotional support were adapted from the work of Liang et al. (2011), the measurement of network support applied in Lin et al. (2015)'s research was applied, and the items for the esteem support metric come from work by Oh et al. (2013). The items for the four constructs related to privacy concerns (perceived severity, perceived vulnerability, response efficacy, and self-efficacy) were obtained from Johnston et al. (2015) and Zhang et al. (2018). Finally, the items for measuring knowledge-sharing came from work by Davenport and Prusak (1998) and by Hsu et al. (2007). Some items were reworded for applicability to the context of smoking cessation OHCs.

5 Expected results and limitations

The study contributes to research into knowledge-sharing in smoking cessation OHCs on several fronts. Firstly, this attempt to investigate knowledge-sharing in smoking cessation OHCs employs a design aimed at disentangling the various components of privacy concerns and social support. A solid grounding in privacy calculus theory promises a rich, fuller understanding of important antecedents to knowledge-sharing in these OHCs. Secondly, it should refine the picture of the perceived benefits identified in the context of a smoking cessation OHC (informational, emotional, network, and esteem support). The design expands the use of social support theory in the knowledge-sharing literature by considering the role of each aspect of social support, and the findings can be expected to deepen our understanding of motivations for knowledge-sharing. Thirdly, the model affords examining mechanisms related to privacy concerns from the standpoint of threat appraisals (severity and vulnerability) and coping appraisals (response efficacy and self-efficacy), coupled with their balance. Accordingly, the results should yield new insights into privacy worries connected with knowledge-sharing from the angle of privacy risks but also with regard to user views of coping in response to the perceived risks. Finally, the analysis centred on the suggested moderating elements might provide evidence that the user's smoking cessation OHC use experience and stage in 'kicking the habit' are factors in how the user-perceived social support and privacy concerns, alongside the analysis of their balance, get reflected in the knowledge-sharing behaviour.

There are certain limitations to this study. Firstly, the data collected may not add great depth for explanations of the complex and nuanced matter of the worries about privacy connected with using a smoking cessation OHC, on account of the limits inherent to online surveys. Therefore, scholars taking the work further should consider additional methods to enrich the findings in this field (e.g., integrating qualitative and quantitative research). Secondly, our proposed model, which puts emphasis on risk–benefit analysis for investigating the knowledge-sharing, could be extended to include other factors – such as trust, which has been shown to affect knowledge-sharing in OHCs of other types (e.g., Fan and Lederman, 2018). Finally, since our work is set in the context of smoking cessation OHCs in Finland, caution should be exercised in generalisation to other OHC types or users with another cultural background, whether with regard to findings or in terms of emphases in the model.

Acknowledgements

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