

# Unlocking health participation: enhancing customer experiences in public health social media communities

Journal of Service  
Theory and  
Practice

1

Mohammed Saeed J. Alzahrani  
*College of Business, Al-Baha University, Al Baha, Saudi Arabia*

Jessica Wyllie and Jamie Carlson  
*Newcastle Business School, The University of Newcastle,  
Callaghan, Australia, and*

Syed Mahmudur Rahman  
*Department of Marketing, Macquarie University, North Ryde, Australia*

Received 17 July 2024  
Revised 6 December 2024  
29 April 2025  
1 August 2025  
18 September 2025  
Accepted 19 September 2025

## Abstract

**Purpose** – This study develops and validates a novel framework for understanding customer experience (CX) in public health social media communities (PHSMCs). This paper conceptualises PHSM-CX as a multidimensional construct reflecting both individual and socially embedded experiential benefits and investigates its influence on health outcomes such as quality of life, advocacy and compliance.

**Design/methodology/approach** – A three-phase, multi-method design was used. Study One used data from 24 interviews to develop the research framework, which Study Two validated through 268 online survey responses from Saudi Arabia. Study Three replicated the findings with 304 responses from Australia. Both samples were analysed using PLS-SEM, and Necessary Condition Analysis (NCA).

**Findings** – Results confirm that PHSM-CX is a multidimensional construct that significantly predicts health-related outcomes, including quality of life, compliance and advocacy. NCA reveals that learning benefit is a necessary condition for all three outcomes, and shared vision plays an influential role.

**Practical implications** – Findings provide actionable insights for practitioners by identifying high-impact experiential dimensions – particularly learning benefit and shared vision – that should be prioritised in PHSMC design to enhance user engagement, health compliance and advocacy.

**Originality/value** – This study is the first to conceptualise and test CX in PHSMCs using a multi-method, cross-national approach.

**Keywords** Public health services, Digital services, Customer experience, Customer well-being, Social media, Necessary condition analysis

**Paper type** Research article

## 1. Introduction

Over the past decade, social media has become increasingly integral to public health communication and consumer engagement. Public health organisations, such as government health departments and non-profit agencies, are leveraging digital platforms – here conceptualised as public health social media communities (PHSMCs) – to improve population well-being through the dissemination of health information, the facilitation of peer support, and the cultivation of proactive health behaviours (Bocking *et al.*, 2022; Ghahramani *et al.*, 2022; Zheng *et al.*, 2016). These communities are distinct from commercial social media

© Mohammed Saeed J. Alzahrani, Jessica Wyllie, Jamie Carlson and Syed Mahmudur Rahman. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at [Link to the terms of the CC BY 4.0 licence](#)

**Funding:** Newcastle Business School, University of Newcastle, (Australia) funded the data collection for this study.



Journal of Service Theory and Practice  
Vol. 36 No. 7, 2026  
pp. 1-23  
Emerald Publishing Limited  
e-ISSN: 2055-6233  
p-ISSN: 2055-6225  
DOI 10.1108/JSTP-07-2024-0238

communities because they operate within health service ecosystems that prioritise prevention, social equity, and collective well-being over transactional exchange or brand loyalty. As global investment in digital public health infrastructure accelerates – with the market expected to reach USD\$21.61 billion by 2029 ([The Business Report, 2025](#)) – there is growing scholarly and policy interest in understanding how individuals experience and engage with PHSMCs in ways that advance positive health outcomes.

Within marketing and service research, the concept of customer experience (CX) has emerged as a central construct, typically defined as the holistic perception formed by customers through cognitive, emotional and social responses to service encounters ([Lemon and Verhoef, 2016](#)). However, CX scholarship has largely evolved within commercial, firm-managed contexts, where the focus is on guiding individual behaviour through touchpoint design to optimise brand satisfaction, loyalty or purchase intention ([Becker and Jaakkola, 2020](#); [Sahhar et al., 2023](#)). In contrast, PHSMCs are communal, peer-driven and mission-oriented, and their success depends not on transactions but on fostering sustained engagement, health literacy, trust and behavioural compliance with public health guidance. As such, existing CX models – which emphasise the customer–firm dyad and treat experience as an individualised, often episodic phenomenon – are insufficient for explaining how CX emerges and operates in socially co-managed, digitally mediated public health ecosystems.

To address this gap, this study conceptualises and empirically validates a new framework of public health social media community customer experience (PHSM-CX). We define PHSM-CX as a multidimensional, socially embedded experience construct that reflects how individuals interact and derive value from PHSMCs. Drawing on qualitative and quantitative evidence across two national contexts (Saudi Arabia and Australia), we identify five constitutive dimensions of PHSM-CX: learning benefit (functional), social presence (emotional), and three socially embedded dimensions – shared language, shared vision and community volunteerism. Together, these dimensions represent the experiential mechanisms through which PHSMCs influence positive public health outcomes, including perceived quality of life, compliance and health advocacy.

Theoretically, this study contributes to the CX literature by reconceptualising CX as a socially embedded phenomenon, situated not solely within the mind of the consumer but also within the shared structures and practices of a digitally enabled health community. To support this reframing, we employ activity theory ([Engeström, 1999](#); [Vygotsky, 1978](#)) as a sensitising theoretical lens. Activity Theory shifts the unit of analysis from the isolated user to the activity system – a socio-cultural structure in which individual action is mediated by tools (e.g. the PHSMC platform), community norms (e.g. shared language), rules (e.g. posting etiquette) and collective goals (e.g. supporting recovery). By integrating Activity Theory with CX, we move beyond a view of CX as a sequence of firm-designed touchpoints to one that recognises experience as co-created through communal, goal-directed, and tool-mediated activity.

This combination advances earlier CX research in several ways. First, it enables a multi-level analysis of experience that accounts for both personal benefits (e.g. learning and emotional support) and communal participation (e.g. shared purpose and helping behaviours). Second, it surfaces experiential dimensions that are often underexplored in conventional CX frameworks – such as shared vision or community volunteerism – but which are essential to understanding value and well-being in health-focused digital environments. Third, this approach contributes to the growing literature on transformative service by providing empirical insight into how CX in public health influences individual and collective health outcomes ([Ostrom et al., 2021](#)). Rather than treating experience as merely hedonic or utilitarian, we demonstrate how socially constructed experiences within PHSMCs can have lasting impacts on well-being, compliance and advocacy.

In doing so, we respond to recent calls in services marketing to expand CX theory into underrepresented contexts (e.g. non-profit, health, or government settings) and to develop more inclusive models that reflect the realities of digital and cultural diversity in service ecosystems ([Becker and Jaakkola, 2020](#); [Sahhar et al., 2023](#)). Our model is not only

structurally validated across two national contexts but also highlights the necessary and sufficient experiential conditions for positive health outcomes to occur, thereby offering actionable insights for public health service designers, social media managers and policymakers. Accordingly, our research questions are:

- RQ1. What are the constituting dimensions of the PHSM-CX construct?
- RQ2. How does PHSM-CX contribute to important outcomes, such as quality of life, patient compliance and health advocacy?
- RQ3. Are specific PHSM-CX dimensions necessary conditions for achieving these key outcomes?

The remainder of this paper is structured as follows. Section Two presents a literature review that assesses the role of CX in social media, particularly for PHSMCs. Section Three outlines the mixed-method research design. Sections Four and Five detail our empirical studies, including a cross-national assessment. The paper concludes with a discussion of theoretical contributions, implications for health marketing researchers and PHSM managers and directions for future research.

## 2. Theoretical foundation

This study draws on two complementary theoretical lenses – CX theory and activity theory – to conceptualise how individuals experience and derive value from participation PHSMCs. We position PHSM-CX as a socially embedded, multidimensional construct shaped not only by users' personal evaluations but also by their participation in goal-oriented, digitally mediated community settings. The combination of CX and activity theory enables a nuanced understanding of how experiences in PHSMCs are formed, shared and translated into health-related outcomes such as well-being.

### 2.1 Conceptualising CX in digitally mediated public health services

CX is a pivotal concept in service marketing, defined by [Lemon and Verhoef \(2016\)](#) as the holistic perceptions customers form through functional, emotional and social dimensions of interactions with a service provider or platform. In social media, these dimensions shape user perceptions and outcomes ([Becker and Jaakkola, 2020](#); [Rahman et al., 2022](#)). In public health settings, particularly PHSMCs, these experiences are shaped not only by direct organisational interactions but also through peer engagement, emotional support, and collaborative participation in community-driven health activities ([Wyllie et al., 2022](#); [Watkins et al., 2023](#)).

While existing literature has examined CX in commercial digital environments, such as omnichannel retail ([Rahman et al., 2022](#)) and branded social media communities ([Carlson et al., 2019a, b](#); [Sorensen et al., 2017](#)), limited research has explored how CX unfolds in non-commercial, peer-supported and socially purposive environments. Related service research demonstrates that two-way social support in online health communities enhances well-being ([Zheng et al., 2016](#)) and that consumers actively seek supportive digital tools to manage health needs ([Bocking et al., 2022](#)). Building on this, we argue that such support is one dimension within a broader experiential system that includes functional, emotional and communal elements. In PHSMCs, users will engage with the community to seek health knowledge, share experiences, seek support and learn from their peers, and advocate for health equity. Therefore, this participatory context demands a rethinking of CX – not as an isolated, firm-orchestrated journey, but as a collective, relational and contextual phenomenon ([Becker and Jaakkola, 2020](#); [Sahhar et al., 2023](#)).

### 2.2 Activity theory as a lens on socio-technical mediation

To explain how PHSM-CX is socially constructed, we draw on activity theory ([Vygotsky, 1978](#); [Engeström, 1999](#)), a socio-cultural lens that foregrounds the role of tools, rules and

community in shaping human activity. According to Engeström (1999), activity theory posits that individuals (subjects) pursue goals (objects) using mediating tools within an activity system governed by shared norms and social division of labour. In PHSMCs, users participate in an activity system where the digital platform functions as a mediating tool, health knowledge or behaviour change serves as the objective, and peers, moderators and shared norms coalesce to shape experience (Wyllie *et al.*, 2022; Zhao *et al.*, 2015).

This lens allows us to conceptualise PHSM-CX as an emergent property of user participation in a collectively structured, culturally mediated and goal-directed digital environment. It shifts the analytical focus from isolated user interactions to the interdependent dynamics of community engagement, where individual and communal experiences are intertwined (Piyathananan *et al.*, 2015). Constructs such as shared language and vision represent not just contextual features but constitutive experiential elements that mediate user sense-making and social cohesion within the community (Josefsson, 2005; Meek *et al.*, 2019). Further, social presence – the perceived warmth and interpersonal connection felt during interactions – is central to emotional participation in PHSMCs (Liu *et al.*, 2020). Through activity theory, such emotional responses are understood as emergent from interactions that are shaped by community norms, platform affordances and shared goals.

### 3. Methodology

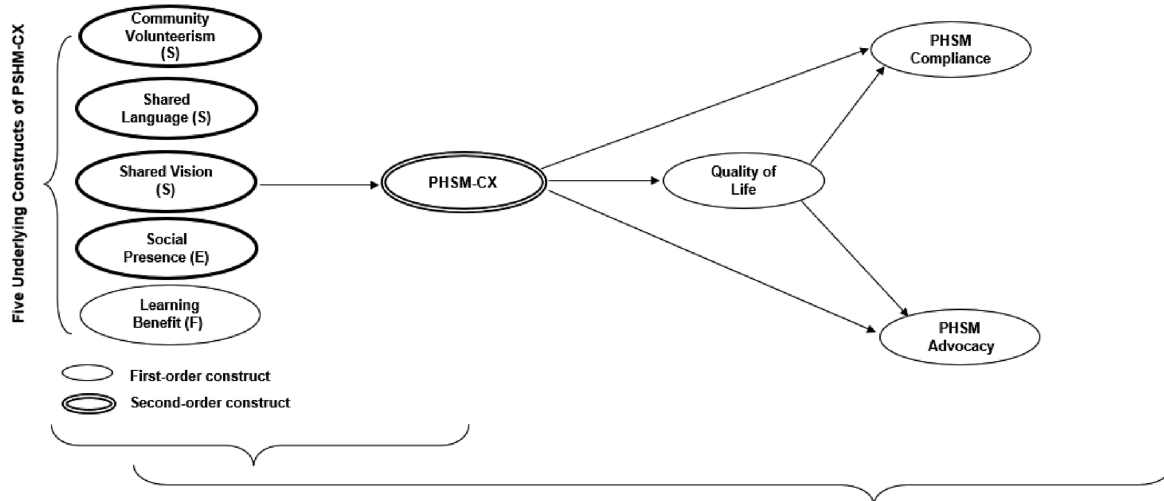
To address the research questions, an exploratory sequential mixed-methods research design was adopted, as illustrated in Figure 1. This approach enables a comprehensive examination of both exploratory and confirmatory research inquiries of the phenomenon under investigation (Creswell and Plano Clark, 2017; Venkatesh *et al.*, 2016). Study One was conducted to identify key dimensions underpinning the PHSM-CX construct, which then informed the development of a theoretical model and hypotheses tested in Study Two. Saudi Arabia was chosen as a context for this research because of its ongoing healthcare system transformation under Vision 2030 blueprint, which addresses public health challenges such as cardiovascular diseases, cancer, diabetes and obesity (Economist Impact, 2023).

Given the cross-cultural nature of this research, both studies followed the five phases of the Translation, Review, Adjudication, Pretesting, and Documentation (TRAPD) model (Vujcich *et al.*, 2021) to ensure linguistic and cultural validity for Saudi Arabian participants (Sha and Lai, 2016). The moderator's guide (study one) and the survey instrument (study two) were first translated into Arabic by a bilingual expert. An independent bilingual expert then assessed the translations for clarity and accuracy (Carlson *et al.*, 2021; Harkness *et al.*, 2003). Final instruments were pretested with a small sample of PHSMC participants ( $n = 18$ ), and minor adjustments were made before data collection.

#### 3.1 Study One: semi-structured interviews

Study One employed in-depth semi-structured interviews to explore participants' perceptions of their PHSMC experiences. Participants – that is, PHSMC consumers and employees – were recruited from a major public health provider in Saudi Arabia, which supports and advocates for patients, carers, families and clinicians. This public health provider operates multiple PHSMCs across a variety of social media platforms (i.e. X, Facebook, YouTube), with these communities ranging from thousands to millions of users. With over 50'000 active monthly users, this public health provider posts on average two content pieces daily and ensures a responsive community for its users. Since the chosen public health provider specialises in offering cancer support and advocacy services via their PHSMC, it serves as a relevant setting for examining the PHSM-CX of its consumers.

Following the TRAPD model, the moderator's guide was pretested with three PHSMC consumers from Saudi Arabia to its cultural and linguistic appropriateness. Minor iterations were made to the idiomatic expressions in the question structure to suit cultural norms. Data



- Study 1: Qualitative Research**
1. Based on our research a comprehensive conceptual framework was built that illuminates a holistic view of PHSM-CX
  2. In-depth semi-structured interviews were conducted with consumers and employees of the PSHMC to identify how they assessed HCE and the possible consequences of HCE on attitude and behaviour
  3. Analysed the interview data and reviewed recent literature to build the framework

- Study 2 and Study 3: Quantitative Research**
1. In Study 2, we tested the PHSM-CX model and the hypotheses empirically using online survey data from Saudi Arabia ( $N = 268$ )
  2. In Study 3, we retested the model and the hypotheses using data from Australia ( $N = 304$ ), reconfirming the Study 2 findings
  3. We used the Content Consumption construct as the control variable in both studies
  4. We used the PLS-SEM analysis approach, including advanced model assessment techniques such as necessary condition analysis, to assess the proposed framework

**Figure 1.** The research model and process. Note: S= Social, E = Emotional and F= Functional. Source: Authors' own creation/work

collection commenced in March of 2023, with theoretical saturation reached after 24 interviews (12 each for employees and consumers; see [Supplementary Table S.I](#)).

Employee participants ( $n = 12$ ), averaged 4.5 years in their roles, and were included to provide a managerial perspective on PHSM-CX. In line with activity theory, employees represent the division of labour, shaping tools (e.g. content) and rules (e.g. norms), which influence CX dimensions like social presence and shared vision. Their inclusion complemented consumer perspectives and enhanced the richness of findings. Consumer participants ( $n = 12$ ) included 10 patients and two carers, reporting weekly engagement with the PHSMCs based on first-hand experiences. The sample size aligns with qualitative research on information power ([Malterud et al., 2016](#)), which supports smaller samples when the study focus is narrow and conceptually specific, as is the case with PHSM-CX.

Interviews were conducted in Arabic by one of the authors. Sessions lasted between 30 and 80 min (average 45 min), recorded via Zoom and transcribed verbatim in Arabic and translated into English. All translations were verified by a bilingual translator to ensure accuracy.

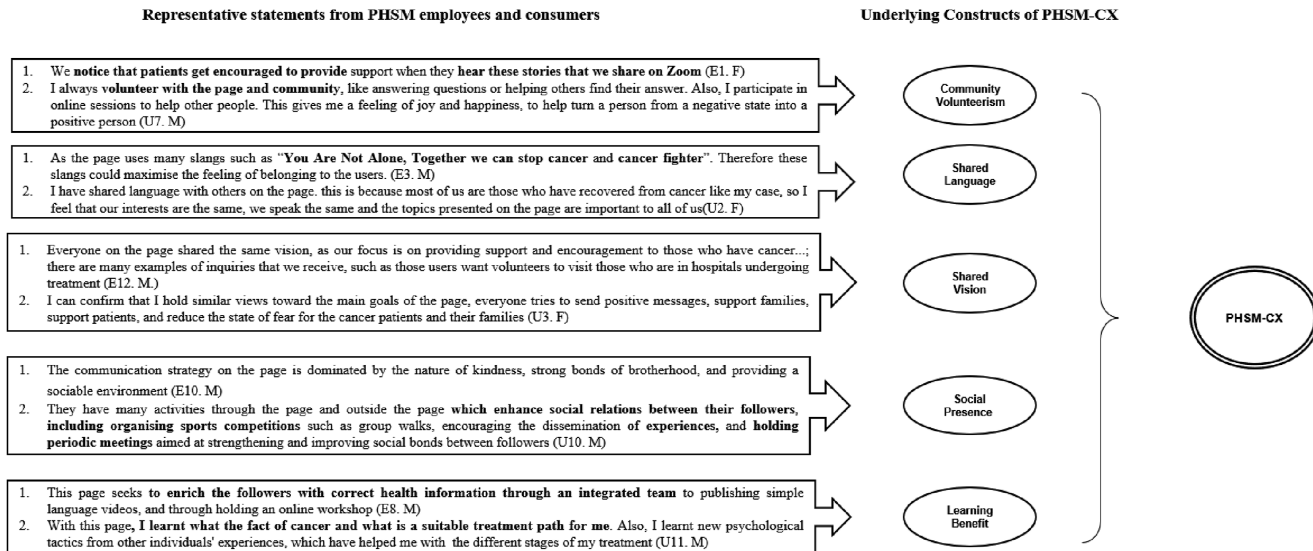
**3.1.1 Study One: data analysis.** Thematic analysis followed an inductive-deductive approach. Initially, an inductive strategy was used to explore how PHSMC participation shaped users' experiences ([Creswell and Plano Clark, 2017](#)). Transcripts were manually coded and analysed using NVivo12 Pro. Through axial coding, categories were developed based on shared characteristics. Codes were excluded if they lacked relevance to the research questions or insufficient support (less than 10 quotes in total). This process, combined with the researcher's observation notes, led to the identification of five constituent dimensions ([Thomas, 2006](#)). Subsequently, a deductive analysis was applied, using *a priori* theoretical insights to guide interpretation of the initial findings. As coding progressed, data reduction was undertaken to consolidate overlapping codes and themes, ensuring conceptual clarity and alignment with the research objectives ([Creswell and Creswell, 2018](#)). To ensure rigour, two researchers reviewed the coding and categorisation process. All authors engaged in reflective discussions to resolve discrepancies and confirm the theoretical coherence of emergent themes ([Krippendorff, 2018](#)).

**3.1.2 Study One: findings.** Study One aimed to identify the core dimensions influencing CX in PHSMCs, thereby addressing **RQ1**: what are the constituting dimensions of the PHSM-CX construct. The analysis revealed five experiential dimensions spanning functional, emotional, and social dimensions (see [Figure 2](#)). Participants described the ease of acquiring health knowledge (Learning Benefit: functional), felt a sense of sociability (Social Presence: emotional) and perceived a shared purpose (Community Volunteerism, Shared Language and Shared Vision: social). These insights suggest that users experience PHSMCs as community ecosystems, where value is derived not only from content, but also from social belonging and collective identity. A narrative illustration of one user's experience is provided in [Supplementary Figure 1s](#).

### 3.2 Hypotheses

Building on the findings from Study One and the literature on CX in social media and health contexts, we developed hypotheses to test the proposed framework ([Figure 1](#)), aligned with our three research questions. The qualitative insights support the multidimensional structure of PHSM-CX, comprising five experiential dimensions identified as central to users' participation within PHSMCs. We propose that positive experiences within PHSMCs – reflected in users' perceptions of learning benefit, emotional connection and shared community identity – contribute to both attitudinal outcomes (e.g. perceived quality of life) and behavioural outcomes (e.g. health compliance and advocacy). The hypotheses below examine the relationship between PHSM-CX and these key health outcomes.

**3.2.1 Conceptualising overall perceived public health social media community customer experience (PHSM-CX).** In this study, PHSM-CX is conceptualised as a second-order formative construct composed of five inter-related dimensions: learning benefit, social presence, shared language, shared vision and community volunteerism. These dimensions



**Figure 2.** Study One first-order dimensions of PHSM-CX. Note: U = user of PHSMCs, E = employee, M = male, F = female. Source: Authors' own creation/work

reflect the range of perceived experiential benefits users derive through their participation in PHSMCs, grounded in established CX literature. Learning benefit captures users' perceived knowledge gains; social presence reflects emotional connection and empathy; and the remaining three dimensions – shared language, shared vision and community volunteerism – capture socially embedded experiences formed through collective norms, shared meaning and prosocial engagement.

This approach aligns with prior work that defines CX as the user's holistic and subjective response to functional, emotional and social aspects of service environments (Lemon and Verhoef, 2016; Becker and Jaakkola, 2020). While earlier studies have acknowledged perceived benefit as a component of value-in-use (e.g. Plewa *et al.*, 2015), our approach intentionally avoids positioning this construct within a value co-creation framework. Instead, we interpret these dimensions as evaluative components of an individual and communal experience, shaped through interaction and engagement in a digitally mediated health ecosystem.

The use of a second-order formative model is theoretically and empirically justified. Theoretically, PHSM-CX integrates both individual experience (e.g. learning benefit) and socially embedded experience (e.g. shared vision, social presence), which together constitute users' overall evaluation of their engagement. A second-order structure captures this holistic perspective while recognising the distinct nature of each dimension. Empirically, this modelling approach is consistent with prior work in CX and service marketing (Rahman *et al.*, 2022; Olivier *et al.*, 2023), particularly in digitally enabled contexts where user experience is shaped by multiple, interrelated touchpoints.

Building on Study One findings and theoretical integration, we classify learning benefit as an individual-based experiential dimension. This classification is grounded in activity theory, which highlights the role of individual agency and goal-directed action. In PHSMCs, users actively seek health information to enhance their self-management – motivations that are cognitively driven and individually experienced. Study One participants frequently described learning benefit as a personal gain, highlighting their role in enabling informed decision-making and greater control over one's health.

In contrast, the remaining four dimensions – community volunteerism, shared vision, shared language and social presence – are conceptualised as communal experiential benefits. These reflect users' interactions with others, shared health goals and the collective identity cultivated within PHSMCs. Consistent with activity theory, these dimensions arise from the community's rules, tools and shared purpose, which mediate the structure and quality of the user's experience. As revealed in Study One, participants frequently expressed a sense of mutual support, collective advocacy and purpose-driven engagement, underscoring the socially embedded nature of these experiences.

This hierarchical and socially embedded framing of PHSM-CX provides a theoretically robust and empirically grounded foundation for investigating how PHSMCs contribute to key health-related outcomes such as compliance, advocacy and quality of life.

**3.2.1.1 Community volunteerism.** Community volunteerism is conceptualised in this study as an experiential dimension of PHSM-CX. It reflects users' perceptions of proactively contributing time and effort to support others within PHSMCs (Vock *et al.*, 2013). In digital contexts, community volunteerism enhances engagement and strengthens interpersonal connections through the sharing of advice, encouragement and lived experiences (Chen and Wang, 2021; Davis *et al.*, 2014; Son *et al.*, 2016).

Within digital communities, active participation fosters community attachment and reciprocal support, enhancing the depth and meaning of users' experiences (Davis *et al.*, 2014). In PHSMCs, this is observed through users offering self-help tips, emotional support and health management advice – behaviours that benefit both individuals and the wider community (Chen and Wang, 2021). Prior research also links digital volunteerism to improved mental health, self-esteem and social capital (Liu *et al.*, 2020), as well as increased awareness of health issues (Ihm, 2017).

Informed by both the literature and qualitative findings from Study One, community volunteerism is conceptualised as a socially embedded experiential benefit within the PHSM-CX construct. It reflects not only behavioural engagement, but also a perceived sense of purpose and prosocial connection that enhances users' emotional and social experience. Thus:

*H1a.* Community volunteerism directly contributes to the overall perceived public health social media community customer experience (PHSM-CX).

3.2.1.2 Shared language. Shared language is conceptualised as a formative dimension of PHSM-CX construct, reflecting users' perceptions of linguistic alignment and ease of communication within PHSMCs (Zhao *et al.*, 2015). It captures the use of common terms, phrases and symbols – such as health-related terminology – that facilitate smoother and more meaningful interactions among community members and practitioners. Within the CX framework proposed by Lemon and Verhoef (2016), shared language contributes as a social dimension, enhancing users' sense of familiarity, belonging and community engagement. When users adopt a shared vocabulary, they experience more seamless interactions and are better able to express empathy, convey support and co-construct meaning (Meek *et al.*, 2019; Zhao *et al.*, 2015).

In this context, shared language simplifies the communication of complex health information and enables efficient knowledge exchange between members with similar health concerns (Zhou, 2022). It supports the co-construction of a supportive environment where individuals feel understood, empowered and connected (Akareem *et al.*, 2022). Interviews from Study One reinforced this perspective, highlighting how consistent linguistic conventions foster a shared identity and enhance the overall experience of participating in PHSMCs. Therefore:

*H1b.* Shared language directly contributes to the overall perceived public health social media community customer experience (PHSM-CX).

3.2.1.3 Shared vision. Shared vision is conceptualised as a formative dimension of PHSM-C, reflecting users' perceived alignment with the goals, values and collective purpose of the PHSMC (Meek *et al.*, 2019). It captures the extent to which individuals feel their personal health objectives resonate with the broader mission of the community – such as mutual support and informed health decision-making.

In digital health communities, shared vision helps unify users who may otherwise be isolated in their health journeys. It fosters cohesion, facilitates resource exchange, and reduces misunderstandings by establishing common expectations and collective intent (Josefsson, 2005; Zhao *et al.*, 2015). A clear shared vision, also contributes to group identity, enhances emotional connectedness and supports deeper interpersonal ties (Jeong *et al.*, 2021).

In PHSMCs, users often describe feeling motivated and valued when they perceive alignment with the community's purpose – whether through educational outreach or mutual caregiving. Study One findings reinforced this experiential view, with participants expressing that shared health goals enhanced their sense of belonging and emotional investment in the platform. Therefore, shared vision is understood here as a socially embedded experiential benefit that enhances CX by fostering meaningful connection and alignment with community purpose. Thus:

*H1c.* Shared vision directly contributes to the overall perceived public health social media community customer experience (PHSM-CX).

Importantly, while *shared language* and *shared vision* have traditionally been examined in relation to group cohesion and social networks, we conceptualise them here as experiential dimensions of CX within digitally mediated health platforms. In this context, these constructs contribute not only to community fluency and shared understanding, but also to how users interpret their interactions, construct meaning and feel a sense of community belonging – all of which are central to CX (Meek *et al.*, 2019; Sorensen *et al.*, 2017). By fostering mutual

understanding and alignment with community goals, shared language and shared vision enhance the social dimension of CX, supporting user engagement and satisfaction. We therefore position both constructs as core components of PHSM-CX, consistent with the perspective that health and brand-related digital communities generate experiential value through shared narratives, symbols and social norms.

3.2.1.4 Social presence. Social presence is defined as the extent to which users perceive others in a virtual environment as real, emotionally responsive and socially connected (Shi *et al.*, 2016). Within PHSMCs, social presence is critical in shaping users' perceptions of warmth, empathy and kindness during interactions. It goes beyond mere visibility online to the emotional quality of exchanges, where users feel seen, heard and valued by others. This relational quality is particularly significant in PHSMCs, where users often seek not just information but also emotional support, shared understanding and social connection with others in the community (Zhao *et al.*, 2015; Muniz and O'Guinn, 2001). Prior research has shown that higher levels of social presence in online communities are associated with greater emotional support, trust and community attachment – key elements in fostering meaningful CX (Park and Conway, 2017; Liu *et al.*, 2020). Therefore, social presence is conceptualised in this study as capturing the interpersonal warmth and empathy perceived in digital community interactions, which enhances emotional engagement and contributes to a more holistic and humanised experience in PHSMCs. As such, we posit:

*H1d.* Social presence directly contributes to the overall perceived public health social media community customer experience (PHSM-CX).

3.2.1.5 Learning benefit. Learning benefit is conceptualised as the individual experiential dimension of PHSM-CX, capturing users' perceptions of acquiring relevant and actionable health knowledge through participation in PHSMCs (Liu *et al.*, 2020; Lu, 2023). These communities serve as accessible and convenient platforms where individuals seek advice, pose questions and learn from peers or experts in real time. As users exchange experiences and insights, they gain diverse perspectives that support deeper understanding and more effective self-management of health conditions (Akareem *et al.*, 2022).

This perceived experiential benefit enhances the user's experience by fulfilling a core functional need – health knowledge acquisition – through a socially supported process. As reflected in Study One, participants consistently described the learning aspect of PHSMCs as a personally meaningful and empowering part of their community engagement. Thus, learning benefit is positioned in this framework as a functional experiential benefit that contributes directly to overall CX in the PHSMC setting. Hence:

*H1e.* Learning benefit directly contributes to the overall perceived public health social media community customer experience (PHSM-CX).

3.2.2 Outcomes of PHSM-CX. This study posits that users' positive appraisal of their experiences within PHSMCs – conceptualised as PHSM-CX – enhances their perceived quality of life. Users who experience benefits across dimensions such as learning, social presence, shared purpose and community participation are more likely to perceive the community as supportive and personally valuable. These experiential benefits foster greater confidence in health management, leading users to feel more empowered, connected and informed in their daily lives.

Drawing on social exchange theory (Blau, 1964; Carlson *et al.*, 2019a,b), when individuals perceive value from their engagement, they are more likely to reciprocate through proactive health behaviours and community support. A heightened perception of quality of life, resulting from PHSM-CX, reinforces users' willingness to comply with health recommendations and their commitment to advocate for the platform's goals and resources. Prior research supports this pathway, showing that individuals who experience greater well-being through online health engagement are more likely to follow community guidelines, adopt recommended health behaviours (Lu, 2023; Lu and Zhang, 2021) and promote the community to others. This

---

model highlights the indirect influence of PHSM-CX on behavioural outcomes, mediated by perceived improvements in quality of life. Accordingly, we propose:

- H2. Customers' positive appraisal of PHSM-CX leads to a positive perception of quality of life (a), which, in turn, positively influences their (b) compliance with the health advice on public health social media communities and (c) advocacy of public health social media communities.

3.2.3 *Necessary dimensions hypotheses.* While all five dimensions of PHSM-CX contribute to user experience, certain dimensions may be necessary conditions for achieving positive health outcomes. A necessary condition is one that must be present – its absence cannot be compensated for by other factors, regardless of their strength (Richter and Hauff, 2022). However, to the best of our knowledge, to date, studies have not explicitly evaluated whether specific CX dimensions are necessary conditions for achieving health outcomes in PHSMCs.

Drawing on activity theory (Vygotsky, 1978), we argue that learning benefit – the perceived acquisition of relevant health knowledge – is a foundational experiential element in PHSMCs. Users often enter PHSMCs with the explicit intention of improving their health literacy, seeking practical knowledge and managing their illness more effectively (Lu and Zhang, 2021; Chen and Wang, 2021). When this expectation is unmet, the community is perceived as less relevant or impactful. Prior studies also show that health-related learning fosters a sense of empowerment, supports behavioural change and enhances individuals' confidence in managing their health (Benetoli et al., 2019). These findings are reinforced by work in brand community contexts, where learning-related value drives decision-making and engagement (Carlson et al., 2018). In line with this reasoning, we propose that learning benefit is not only a significant contributor to PHSM-CX but also a necessary condition for the outcomes examined in this study. Its absence likely inhibits users from perceiving improvement in quality of life or engaging in compliant or advocacy behaviours. Thus:

- H3. Learning benefit is a necessary condition for (a) quality of life perceptions, (b) compliance with the health advice provided on PHSM communities and (c) advocacy of PHSM communities.

## 4. Study Two: empirical assessment of the PHSM framework

To confirm the theoretical framework developed in Study One, in Study Two, we conducted an online survey. The results presented in this section enable us to address our three research questions.

### 4.1 Measures and data collection

All constructs were measured using items adapted from validated scales in literature (see Tables 1 and 2), modified to suit the PHSMC context. The PHSM-CX construct comprises five dimensions: Learning Benefit, Social Presence, Community Volunteerism, Shared Language and Shared Vision. These dimensions were selected to reflect the experiential nature of user engagement within PHSMCs, consistent with Lemon and Verhoef's (2016) CX framework as a holistic response to functional, emotional and socially embedded experiential benefits. While some dimensions – particularly Learning Benefit – may resemble participation outcomes, they are conceptualised here as experiential evaluations shaped through users' interactions and goal-directed engagement within PHSMCs. This interpretation is supported by Activity Theory and qualitative insights from Study One, which highlight how users perceive learning as a personally meaningful and cognitively enriching experience. Similarly, the remaining dimensions reflect socially embedded experiences that contribute to users'

**Table 1.** Measurement items and performance of the PHSM-CX measurement model

Dimension name, definition and items	PLS loading		t-values (item ← Dimension)		t-values (dimension → PHSM-CX)	
	Study 2	Study 3	Study 2	Study 3	Study 2	Study 3
	<i>Study 2 n = 268 and Study 3 n = 304</i>					
<i>Community voluntarism: Vock et al. (2013)</i>					24.11	30.46
I assist other members with finding what they are looking for	0.798	0.884	27.50	64.80		
I use my knowledge and experience to make valuable contributions on the page	0.730	0.886	15.79	69.77		
I help other members find health information related to their needs	0.877	0.892	55.90	74.09		
<i>Shared language: Zhou (2022)</i>					19.35	25.02
I understand the communication in their messages on social media posts	0.810	0.833	23.65	38.28		
I recognise the language they used during their discussions on social media posts	0.858	0.863	41.90	42.59		
I understand the visual communication in their discussions on social media posts, e.g. use of emojis, gifs, memes	0.801	0.867	27.07	52.35		
<i>Shared vision: Meek et al. (2019)</i>					18.23	28.64
I see a shared vision of helping other members in their health journey	0.838	0.834	38.94	40.67		
I understand how members share the same goal of learning	0.832	0.866	33.12	55.57		
I observe members share a similar vision on the purpose of the page	0.788	0.859	22.80	55.84		
<i>Social Presence: Shi, Chen and Chow (2016)</i>					14.79	29.05
I develop a sense of human contact with other members	0.856	0.876	46.16	61.42		
I observe a sense of personalness with other members	0.865	0.865	36.44	56.74		
I notice a sense of sociability with other members	0.896	0.872	50.14	55.89		
<i>Learning Benefit</i>					14.26	20.21
It is easy to use for enhancing my health-related knowledge	0.827	0.848	26.29	36.60		
It is easy for me to learn about health treatment and self-help tools	0.875	0.889	45.88	64.55		
It is simple for me to become more knowledgeable about my health	0.795	0.839	23.41	40.81		
<b>Note(s):</b> Survey questions started with this prompt: <i>Thinking about your recent experiences with the public health social media communities, please answer the following questions</i>						
<b>Source(s):</b> Authors' own creation/work						

overall perception of PHSMC engagement. This framing aligns with our second-order formative model, where each dimension represents a distinct but interrelated facet of the broader experiential construct (Hair et al., 2023).

Participants were required to meet the inclusion criteria (1) be 18 years or older and (2) have previous usage experience as a community member of the PHSMC platform in Saudi Arabia within the preceding six months. Respondents were instructed to reflect specifically on their PHSMC usage when completing the survey. A priori sample size calculation using Soper's (2024) online tool was conducted to estimate the minimum required sample size for the desired statistical power. The estimate indicated a minimum sample size of 185 (recommended  $n = 200$ ) for a medium ( $d = 0.3$ ) anticipated effect size with 27 measurement items across nine latent constructs in the research model. Data collection in December 2023, yielded 268 responses, exceeding the recommended sample size requirement.

**Table 2.** Nomological network of the PHSM-CX framework

Constructs and measurement items	PLS loading		t-values (item ← Dimension)	
	Study 2	Study 3	Study 2	Study 3
<i>Study 2 n = 268 and Study 3 n = 304</i>				
<i>Quality of life</i>				
It has enabled me to improve my overall health	0.822	0.879	30.86	47.95
It has helped me to improve the conditions of my health	0.850	0.900	41.09	66.85
It has helped me to enhance my well-being	0.776	0.868	24.30	50.12
<i>Compliance: Lu and Zhang (2021)</i>				
I follow the community's suggestions strictly	0.777	0.856	24.67	37.10
I follow their recommendations to improve my health	0.832	0.901	33.61	84.33
I follow most of the preventative behaviours recommended	0.838	0.887	39.09	58.91
<i>Advocacy: Liu et al. (2020)</i>				
I say positive things about the health provider to others	0.824	0.868	27.74	46.65
I recommend this community to others	0.814	0.901	21.55	66.13
I encourage friends and relatives to use it	0.854	0.897	38.58	63.70
<i>Content Consumption: Cao et al. (2021)</i>				
I read most of their posts	0.866	0.906	49.27	72.91
I watch most of their videos	0.852	0.871	40.95	57.14
I click on the links shared within their posts to get more health information	0.864	0.790	46.80	22.83
<b>Note(s):</b> The survey questions started with this prompt: <i>Thinking about your recent interactions with the public health social media communities, please answer the following questions</i>				
<b>Source(s):</b> Authors' own creation/work				

Post-collection, data were cleaned for completeness and consistency, including checks for straight-lining and unreasonably fast completion times. These steps ensured that only high-quality data were retained for analysis.

#### 4.2 Data analysis: reflective and formative construct validation

Data were analysed using partial least squares structural equation modelling (PLS-SEM) via SmartPLS (version 4) software (Hair et al., 2021). PLS-SEM was chosen owing to the formative nature of PHSM-CX and the capability of confirmatory tetrad analysis (CTA-PLS) to empirically confirm formative configurations (Gudergan et al., 2008). Content consumption was used as a control variable for compliance and advocacy outcomes, reflecting the behavioural baseline for user engagement.

First, the reflectively measured constructs were validated using confirmatory composite analysis (CCA; Hair et al., 2020), following recent applications of PLS-SEM for construct validity tests (e.g. Aldhamiri et al., 2024). All item loadings exceeded the 0.708 threshold with *t*-values >1.96 (see Tables S.I and S.II). Construct reliability ( $\alpha$  and CR > 0.70, AVE > 0.50) and heterotrait–monotrait ratio of correlations (HTMT < 0.90) confirmed construct validity and reliability.

The formative second-order construct PHSM-CX, was composed of five first-order dimensions: Community Voluntarism, Shared Language, Shared Vision, Social Presence and Learning Benefit. Path coefficients between the first dimensions and PHSM-CX were all significant (95% BCa [bias-corrected confidence] intervals did not contain zero) with *t*-values >1.96, and the variance inflation factors were below 5 (Diamantopoulos and Winklhofer, 2001), indicating no multicollinearity issues. Correlations between first- and second-order constructs ranged from 0.674 to 0.868 (threshold >0.50). To assess the convergent validity of the formative construct, a five-item reflectively measured proxy was constructed using one

item from each of the five dimensions of PHSM-CX. The path coefficient between the two constructs was  $\beta = 0.916$ , confirming convergent validity ( $\beta > 0.70$ ).

CTA-PLS analysis confirmed the formative configuration of PHSM-CX (tetrad #2 with  $t > 1.96$  and CI not containing zero). Common method bias was assessed using Harman's single-factor test (total variance explained <50%), and low VIFs, indicating no serious bias (Podsakoff *et al.*, 2003).

#### 4.3 Results: hypothesis testing

To test H1a to H1e, we conducted 10,000 bias-corrected accelerated bootstraps with a fixed seed to assess the standardised path coefficients ( $\beta$  values),  $t$ -values and BCa intervals. All five first-order dimensions significantly contributed to the second-order construct PHSM-CX, supporting H1a to H1e.

We then evaluated the predictive capability of the PHSM-CX.  $R^2$  estimates indicated that PHSM-CX explained 43% of the variance in Quality of Life, 57% of the variance in Compliance and 47% of the variance in Advocacy. All values were well below the overfitting threshold ( $R^2 < 0.90$ ), indicating satisfactory model performance (Hair *et al.*, 2021). Importance–performance matrix analysis (IPMA; Ringle and Sarstedt, 2016; Rahman *et al.*, 2026) further confirmed the relevance of all five dimensions of PHSM-CX for these outcomes (see Supplementary Table S.III).

Mediation analysis in Table S.IV revealed that PHSM-CX exerted significant indirect effects on Compliance ( $\beta = 0.128$ , 95% BCa [0.049, 0.211],  $t = 3.158$ ) and Advocacy ( $\beta = 0.282$ , 95% BCa [0.197, 0.384],  $t = 5.980$ ) via Quality of Life, confirming H2a and H2b.

To test H3a–c, we conducted a PLS-SEM-based advanced NCA (Dul, 2016; Richter *et al.*, 2020). Results (see Supplementary Table S.IV) supported that learning benefit was a necessary condition for achieving high levels of quality of life, compliance and advocacy, supporting H3a–c. This NCA finding suggests that, while the core PHSM-CX model should have five dimensions, and learning benefit is a necessary dimension.

Further, NCA estimates complement the mediation analysis (Richter *et al.*, 2023), demonstrating that quality of life is a necessary condition for both compliance and advocacy to occur. The minimum required level of quality of life to achieve a high level of compliance and advocacy as above 5- on a 7-point scale reinforcing quality of life as a critical mediating and necessary condition. Without quality of life, the effect of PHSM-CX on behavioural outcomes is substantially diminished.

### 5. Study Three: cross-national validation of the framework

To assess the replicability, generalisability and robustness of the PHSM-CX framework developed in Studies One and Two, we conducted Study Three in Australia. Australia provides an ideal context due to its high social media penetration, extensive use of PHSMCs, and strong government support for health technology integration (Australian Digital Health Agency, 2023). Its multicultural population also offers a rich setting to examine diverse user interactions and experiences in PHSMCs (Australian Bureau of Statistics, 2022). Data collection occurred in January 2024 via the online research panel Researchify, employing the same selection criteria as Study Two. This survey yielded 304 valid responses.

Supplementary Table S.II presents the sociodemographic profiles of Saudi (Study Two) and Australian (Study Three) samples. Gender distribution shows a higher proportion of males in the Saudi sample (58.2%) compared with the Australian sample (56.6%). In terms of age, most participants in both samples fell within the 28–37 age range – 42.9% in Saudi Arabia and 29.3% in Australia. Educational attainment varies, with a higher percentage of participants holding a bachelor's degree in Saudi Arabia (36.9%) compared with Australia (34.2%).

Further, the length of time using the PHSMC is predominantly over one year for both samples, though more pronounced in Saudi Arabia (76.5%) than in Australia (51.7%).

The same validation procedures applied in Study Two were repeated. Construct reliability and validity were reconfirmed through reflective and formative measurement model assessments. All indicator loadings exceeded recommended thresholds, and CTA-PLS reconfirmed that PHSM-CX is appropriately modelled as a formative second-order construct. The path estimates for H1a to H1e in Study Three, support the hypotheses that all five dimensions significantly contribute to PHSM-CX formation in the Australian context. The CTA-PLS analysis was repeated, and its results reconfirm that the PHSM-CX is indeed a formatively measured second-order construct. Next,  $R^2$  estimates (QoL = 0.59, CMP = 0.65, ADV = 0.63) reconfirm the predictive ability of the model. Mediation analysis reconfirmed the indirect effect of PHSM-CX on compliance ( $\beta = 0.298$ , 95% BCa [0.209, 0.403],  $t = 6.090$ ) and on advocacy ( $\beta = 0.313$ , BCa [0.212, 0.416],  $t = 5.976$ ) via quality of life, providing further support for H2a and H2b.

Finally, NCA using the Study Three dataset reaffirmed (see [Supplementary Table S.IV](#)) the findings from Study Two, indicating that learning benefit is a must-have condition across both national contexts. NCA also reconfirms the necessary role of quality as a mediating condition for behavioural outcomes.

## 6. Conclusions and implications

The emergence of PHSMCs has transformed how individuals access health information, connect with peers, and engage in behaviour change. These digitally mediated environments facilitate not only the dissemination of information, but also the formation of supportive social networks that influence health outcomes. At the heart of this ecosystem is the concept of CX – a multidimensional construct that captures users' perceptions of their interactions in these platforms.

Despite the increasing recognition of CX in PHSMCs, prior models offer limited insight into the socially embedded nature of experience in peer-based, non-commercial health platforms. Addressing this gap, our study conceptualises and validates PHSM-CX as a second-order construct, encompassing five dimensions: learning benefit, social presence, shared language, shared vision and community volunteerism. Through a multi-method cross-national design, we confirm both the structural robustness and contextual variability of PHSM-CX, contributing to theory and practice in health service ecosystems.

### 6.1 Theoretical implications

Building on [Zheng et al. \(2016\)](#), who emphasise two-way social support as a determinant of well-being in online health communities, we extend this line of inquiry by theorising CX in PHSMCs as a socially embedded and culturally mediated phenomenon rather than an individualistic or firm-managed process. We identify five interrelated experiential dimensions – learning benefit, social presence, shared language, shared vision and community volunteerism – and demonstrate their joint influence on quality of life, compliance, and advocacy. This study makes four key contributions to the CX literature. First, we extend CX theory by reframing experience in PHSMCs as a socially embedded and culturally mediated phenomenon, rather than an individualistic or firm-managed process. The five dimensions capture not only functional and emotional responses, but also collective identity, shared norms and prosocial participation—addressing calls to broaden the CX construct beyond touchpoints to encompass more participatory and societal dimensions of service ([Becker and Jaakkola, 2020](#)).

Second, drawing on activity theory, we offer a novel lens to explain how tools (platform features), community (peer interactions) and rules (social norms and goals) jointly shape the experience within PHSMCs. Constructs such as shared language and shared vision are not just

contextual variables, but constitutive perceived experiential elements shaped by user participation in culturally and socially organised activity systems. This integration deepens our understanding of how users evaluate experience in relation to collective health goals and shared digital health practices.

Third, our use of NCA provides methodological innovation by identifying which CX dimensions are essential – not just statistically significant – for desired health outcomes. We find that learning benefit functions as a must-have condition for quality of life, compliance and advocacy. While all five dimensions contribute to the sufficiency of PHSM-CX, the absence of key drivers such as learning benefit cannot be compensated for by other dimensions. This moves CX scholarship toward identifying threshold conditions, where the absence of certain dimensions precludes outcome attainment.

Finally, the cross-national design reveals new insight into the cultural embeddedness of CX. While the five-dimensional structure was stable across both Saudi Arabian and Australian contexts, cultural nuances influenced how users prioritised aspects of experience. For example, Australian users emphasised emotional and participatory aspects (social presence and volunteerism), while Saudi participants placed greater value on shared vision and learning. These insights indicate the need for context-sensitive CX strategies that respect cultural preferences and communication norms in public health service design.

### 6.2 Practical implications

For public health organisations, social media managers and digital service designers, this research offers a strategic framework for improving user engagement and health outcomes through CX optimisation. [Table 3](#) summarises key actions that such managers can implement to facilitate each PHSM-CX dimension within PHSMCs.

Of particular significance is the role of learning benefit. As a necessary condition for improving quality of life, compliance and advocacy, organisations should prioritise content strategies that deliver relevant, accessible, and actionable health information. This may include curated expert posts, interactive tools and moderated peer knowledge-sharing to promote user empowerment.

The dimension of shared vision also emerged as a critical contributor to CX. To build alignment and trust, community managers should clearly communicate the platform's purpose, values and behavioural expectations. This can be achieved through transparent messaging, pinned posts and goal-oriented initiatives that reinforce the platform's mission.

The NCA results provides actionable guidance for resource allocation. Given budget and time constraints, investments should prioritise the “must have” CX dimensions – particularly learning benefit and shared vision – identified in this study. Investing in these areas, such as through targeted content marketing pillars or interactive community features, will yield the greatest returns in terms of user engagement, compliance with health guidelines and advocacy. By identifying the imperative conditions (e.g. learning benefit) that must be present in the overall PHSM-CX for quality of life, compliance and advocacy to occur, managers can finetune their strategies to ensure that these essential elements are in place to achieve the intended results. However, as discussed above, NCA alone does not guarantee the outcome with a minimum level of necessary conditions identified. Thus, we emphasise that, although the other dimensions of PHSM-CX are not necessary for higher outcomes to occur, they constitute integral components of CX and contribute to its formation. The presence of all dimensions within the overarching framework of PHSM-CX collectively establishes a sufficient condition (i.e. “should have” dimensions) to achieve these health outcomes.

While PHSMCs offer considerable benefits, it is equally important to recognise their potential risk and limitations to ensure a balanced view. One key concern is the spread of misinformation or unverified health content, which can lead to harmful behaviours if not properly moderated ([Househ et al., 2014](#)). Another challenge is the over-reliance on peer support in place of professional medical advice, which can inadvertently delay proper

**Table 3.** Managerial guidance to facilitate PHSM-CX

CX dimension	Managerial guidance
<i>Learning benefit</i>	<ul style="list-style-type: none"> <li>• Provide educational content (e.g. blog posts, videos and podcasts) to help audiences learn more about different health issues</li> <li>• Interactive learning experiences: host live sessions, in which public health experts can share their knowledge and answer questions from the audience</li> <li>• Leverage interactive tools on social media to help community members learn at their own pace and track their progress</li> <li>• Encourage audience dialogue and participation on different health topics: pose questions, share news and updates, and create polls</li> <li>• Collaborate with other organisations and experts in the field to share knowledge and expertise</li> </ul>
<i>Community volunteerism</i>	<ul style="list-style-type: none"> <li>• Make volunteer opportunities more accessible to potential volunteers and promote benefits of volunteering</li> <li>• Share success stories from previous volunteers to inspire others</li> <li>• Provide volunteer training and resources (e.g. online tutorials) that make participation easier</li> <li>• Connect volunteers with each other to foster a sense of community</li> <li>• Recognise and celebrate the contributions of volunteers by highlighting achievements, acknowledging their service and showcasing how their efforts have influenced the community</li> </ul>
<i>Shared language</i>	<ul style="list-style-type: none"> <li>• Use insights from content analysis to identify common language patterns, terminology and keywords used by community members to use in the strategic direction of the service</li> <li>• Develop a content strategy that addresses specific health concerns, challenges, and interests of individuals and caregivers within the community</li> <li>• Collaboration with influencers who are proficient in the shared language to amplify public health messaging and initiatives</li> <li>• Establish feedback mechanisms to gather insights from community members regarding the effectiveness of content marketing initiatives</li> </ul>
<i>Shared vision</i>	<ul style="list-style-type: none"> <li>• Clearly define the shared vision and mission of the community, emphasising the importance of collective action and collaboration</li> <li>• Content creation and curation that reinforces key messages and insights related to shared vision, which also resonates with the values and priorities of community members</li> <li>• Highlight stories that demonstrate the impact of collective efforts in achieving shared goals and improving health outcomes</li> <li>• Collaborate with influencers and organisations who share the same vision and values. Leverage these relationships to amplify messaging, mobilise support and advocate for collective action</li> </ul>
<i>Social presence</i>	<ul style="list-style-type: none"> <li>• Establish community norms and guidelines that promote respectful communication, empathy and support</li> <li>• Provide regular opportunities for members to introduce themselves, share their experiences and connect with others</li> <li>• Implement interactive engagement strategies (e.g. live chats) to facilitate real-time interaction and camaraderie among community members</li> <li>• Facilitate peer support and mentoring programs to enable individuals to connect with others who have lived experiences similar to their own</li> <li>• Establish feedback mechanisms to gather insights and suggestions from community members</li> <li>• Regularly review and analyse social media analytics to assess the effectiveness of content marketing initiatives and community engagement strategies</li> </ul>

**Source(s):** Authors' own creation/work

diagnosis or treatment (Hunt and Linos, 2022). Users may also experience digital fatigue or social isolation, particularly if online interactions begin to substitute for in-person relationships (Azer and Alexander, 2022; Benetoli *et al.*, 2019). Additionally, cultural

misalignment in health messaging may result in disengagement, especially in diverse populations where localised, contextually relevant communication is essential (Sharkiya, 2023). These risks highlight the need for careful design, moderation and evaluation of PHSMCs to safeguard users while maximising health outcomes.

### 6.3 Limitations and future research

As with all studies, several limitations should be noted, which offer avenues to guide future research. First, while this study conceptualised PHSM-CX as a second-order construct, there may also be additional experiential components influencing user engagement in PHSMCs. Future research could explore contingency factors (e.g. health literacy or digital access) that may affect this linkage. Second, the “shared language” construct adapted by Zhou (2022), originally focused on common terminology and ease of communication. However, qualitative insights revealed participants also associated shared language with elements of emotional support and empathy, particularly in how consumers and employees communicate within PHSMCs. As a result, the shared language dimension in this study was expanded to include these additional components. Future research should consider developing new measures that capture the emotional and empathetic dimensions of shared language in health-related digital contexts.

Third, while Study One included both patients and carers, Studies Two and Three did not distinguish these subgroups. Thus, limiting understanding of how experiential priorities may vary; for example, carers may place greater value on emotional support, whereas patients may emphasise learning. Future research could explore these variations to refine PHSMC strategies for diverse user groups. Fourth, although this study focused on positive dimensions constituting CX within PHSMCs, it did not examine potential risks associated with PHSMCs. These include misinformation, privacy violations, and social exclusion, which can negatively affect well-being. Future studies could investigate negative CX dimensions within PHSMCs and understand psychosocial impacts of harmful content or over-reliance on peer-based advice in digital health communities.

Fifth, the use of purposive sampling and panel-based sampling in two country settings allowed efficient data collection but may introduce self-selection bias, potentially limiting generalisability of findings. Further, the cross-sectional design restricts the ability to establish causality or temporal dynamics of PHSM-CX. Future studies could adopt random sampling, longitudinal or experimental designs to test causal pathways, track changes in experience over time and validate the temporal dynamics of CX in PHSMCs.

Finally, the study focused on consumers from Saudi Arabia and Australia, offering insights into cultural variation but limiting broader applicability. Future work should extend this framework to diverse geographic and cultural contexts to distinguish between universal and culturally specific CX dimensions. Cross-cultural comparisons would inform locally relevant strategies for enhancing public health engagement and support global learning from PHSMC initiatives.

In conclusion, while this study contributes valuable insights into CX within PHSMC, it is important to acknowledge its limitations and consider future research directions to advance our understanding of this phenomenon. By addressing these limitations and exploring new avenues of inquiry, researchers can contribute to the development of effective CX strategies for leveraging digital health platforms to improve health outcomes on a global scale.

### Supplementary material

The supplementary material for this article can be found online.

### References

- Akareem, H.S., Wiese, M. and Hammedi, W. (2022), “Patients’ experience sharing with online social media communities: a bottom-of-the-pyramid perspective”, *Journal of Services Marketing*, Vol. 36 No. 2, pp. 168-184, doi: [10.1108/JSM-12-2020-0512](https://doi.org/10.1108/JSM-12-2020-0512).

- Aldhamiri, A., Carlson, J., Vilches-Montero, S., Rahman, S. and Gudergan, S. (2024), "What drives higher active customer engagement in luxury brands' social media? Measurement and contingencies", *Journal of Retailing and Consumer Services*, Vol. 79, 103804, doi: [10.1016/j.jretconser.2024.103804](https://doi.org/10.1016/j.jretconser.2024.103804).
- Australian Bureau of Statistics (2022), "Cultural diversity in Australia", available at: <https://www.abs.gov.au/articles/cultural-diversity-australia> (accessed 28 May 2024).
- Australian Digital Health Agency (2023), "Australia's national digital health strategy", available at: <https://www.digitalhealth.gov.au/sites/default/files/documents/national-digital-health-strategy-2023-2028.pdf> (accessed 28 May 2024).
- Azer, J. and Alexander, M. (2022), "Covid-19 vaccination: engagement behavior patterns and implications for public health service communication", *Journal of Service Theory and Practice*, Vol. 32 No. 2, pp. 323-351, doi: [10.1108/jstp-08-2021-0184](https://doi.org/10.1108/jstp-08-2021-0184).
- Becker, L. and Jaakkola, E. (2020), "Customer experience: fundamental premises and implications for research", *Journal of the Academy of Marketing Science*, Vol. 48 No. 4, pp. 630-648, doi: [10.1007/s11747-019-00718-x](https://doi.org/10.1007/s11747-019-00718-x).
- Benetoli, A., Chen, T. and Aslani, P. (2019), "Consumer perceptions of using social media for health purposes: benefits and drawbacks", *Health Informatics Journal*, Vol. 25 No. 4, pp. 1661-1674, doi: [10.1177/1460458218796664](https://doi.org/10.1177/1460458218796664).
- Blau, P. (1964), *Exchange and Power in Social Life*, Wiley, New York.
- Bocking, H., Russell-Bennett, R. and Lethren, K. (2022), "I'm no expert, but...? Consumer use of supportive digital tools in health services", *Journal of Service Theory and Practice*, Vol. 32 No. 2, pp. 105-131, doi: [10.1108/JSTP-09-2020-0225](https://doi.org/10.1108/JSTP-09-2020-0225).
- Carlson, J., Rahman, S., Rahman, M., Wyllie, J. and Voola, R. (2021), "Engaging Gen Y customers in online brand communities: a cross-national assessment", *International Journal of Information Management*, Vol. 56, 102252, doi: [10.1016/j.ijinfomgt.2020.102252](https://doi.org/10.1016/j.ijinfomgt.2020.102252).
- Carlson, J., Rahman, M., Voola, R. and De Vries, N. (2018), "Customer engagement behaviours in social media: capturing innovation opportunities", *Journal of Services Marketing*, Vol. 32 No. 1, pp. 83-94, doi: [10.1108/JSM-02-2017-0059](https://doi.org/10.1108/JSM-02-2017-0059).
- Cao, D., Wong, D. and Xia, S. (2021), "Understanding consumers social media engagement behaviour: an examination of the moderation effect of social media context", *Journal of Business Research*, Vol. 122, pp. 835-846.
- Carlson, J., Gudergan, S., Gelhard, C. and Rahman, M. (2019a), "Customer engagement with brands in social media platforms: configurations, equifinality and sharing", *European Journal of Marketing*, Vol. 53 No. 9, pp. 1733-1758, doi: [10.1108/EJM-10-2017-0741](https://doi.org/10.1108/EJM-10-2017-0741).
- Carlson, J., Wyllie, J., Rahman, M. and Voola, R. (2019b), "Enhancing brand relationship performance through customer participation and value creation in social media brand communities", *Journal of Retailing and Consumer Services*, Vol. 50, pp. 333-341, doi: [10.1016/j.jretconser.2018.07.008](https://doi.org/10.1016/j.jretconser.2018.07.008).
- Chen, J. and Wang, Y. (2021), "Social media use for health purposes: systematic review", *Journal of Medical Internet Research*, Vol. 23 No. 5, e17917, doi: [10.2196/17917](https://doi.org/10.2196/17917).
- Creswell, J. and Creswell, J. (2018), *Research Design: Qualitative, Quantitative, and Mixed Method Approaches*, 5th ed., Sage Publications, Los Angeles.
- Creswell, J. and Plano Clark, V. (2017), *Designing and Conducting Mixed Methods Research*, 3rd ed., Sage Publications, Los Angeles.
- Davis, R., Piven, I. and Breazeale, M. (2014), "Conceptualizing the brand in social media community: the five sources model", *Journal of Retailing and Consumer Services*, Vol. 21 No. 4, pp. 468-481, doi: [10.1016/j.jretconser.2014.03.006](https://doi.org/10.1016/j.jretconser.2014.03.006).
- Diamantopoulos, A. and Winklhofer, H. (2001), "Index construction with formative indicators: an alternative to scale development", *Journal of Marketing Research*, Vol. 38 No. 2, pp. 269-277, doi: [10.1509/jmkr.38.2.269.18845](https://doi.org/10.1509/jmkr.38.2.269.18845).

- Dul, J. (2016), "Necessary condition analysis (NCA) logic and methodology of 'necessary but not sufficient' causality", *Organizational Research Methods*, Vol. 19 No. 1, pp. 10-52, doi: [10.1177/1094428115584005](https://doi.org/10.1177/1094428115584005).
- Economist Impact (2023), "The future of cancer care: health system sustainability in the Middle East and North Africa (MENA)", available at: [https://impact.economist.com/perspectives/sites/default/files/ei248\\_-\\_mena\\_report\\_a4\\_v6.pdf](https://impact.economist.com/perspectives/sites/default/files/ei248_-_mena_report_a4_v6.pdf) (accessed 31 May 2024).
- Engeström, Y. (1999), "Activity theory and individual and social transformation", *Perspectives on Activity Theory*, Vol. 19 No. 38, pp. 19-30, doi: [10.1017/CBO9780511812774.003](https://doi.org/10.1017/CBO9780511812774.003).
- Ghahramani, A., de Courten, M. and Prokofieva, M. (2022), "The potential of social media in health promotion beyond creating awareness: an integrative review", *BMC Public Health*, Vol. 22 No. 2402, 2402, doi: [10.1186/s12889-022-14885-0](https://doi.org/10.1186/s12889-022-14885-0).
- Gudergan, S.P., Ringle, C.M., Wende, S. and Will, A. (2008), "Confirmatory tetrad analysis in PLS path modeling", *Journal of Business Research*, Vol. 61 No. 12, pp. 1238-1249, doi: [10.1016/j.jbusres.2008.01.012](https://doi.org/10.1016/j.jbusres.2008.01.012).
- Hair, J.F., Jr., Hair, J., Sarstedt, M., Ringle, C.M. and Gudergan, S.P. (2023), *Advanced Issues in Partial Least Squares Structural Equation Modeling*, Sage Publications, Los Angeles, Thousand Oaks, CA.
- Hair, J.F., Howard, M.C. and Nitzl, C. (2020), "Assessing measurement model quality in PLS-SEM using confirmatory composite analysis", *Journal of Business Research*, Vol. 109, pp. 101-110, doi: [10.1016/j.jbusres.2019.11.069](https://doi.org/10.1016/j.jbusres.2019.11.069).
- Hair, J.F., Jr, Hult, G.T.M., Ringle, C.M. and Sarstedt, M. (2021), *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, Sage Publications, Los Angeles, doi: [10.1007/978-3-030-80519-7](https://doi.org/10.1007/978-3-030-80519-7).
- Harkness, J.A., van de Vijver, F.J.R. and Mohler, P.P. (2003), *Cross-cultural Survey Methods*, Wiley, New Jersey.
- Househ, M., Borycki, E. and Kushniruk, A. (2014), "Empowering patients through social media: the benefits and challenges", *Health Informatics Journal*, Vol. 20 No. 1, pp. 50-58, doi: [10.1177/1460458213476969](https://doi.org/10.1177/1460458213476969).
- Hunt, I. and Linos, E. (2022), "Social media for public health: framework for social media-based public health campaigns", *Journal of Medical Internet Research*, Vol. 24 No. 12, e42179, doi: [10.2196/42179](https://doi.org/10.2196/42179).
- Ihm, J. (2017), "Classifying and relating different types of online and offline volunteering", *Voluntas: International Journal of Voluntary and Nonprofit Organizations*, Vol. 28 No. 1, pp. 400-419, doi: [10.1007/s11266-016-9826-9](https://doi.org/10.1007/s11266-016-9826-9).
- Jeong, S.W., Ha, S. and Lee, K.H. (2021), "How to measure social capital in an online brand community? A comparison of three social capital scales", *Journal of Business Research*, Vol. 131, pp. 652-663, doi: [10.1016/j.jbusres.2020.07.051](https://doi.org/10.1016/j.jbusres.2020.07.051).
- Josefsson, U. (2005), "Coping with illness online: the case of patients' online communities", *Information Society*, Vol. 21 No. 2, pp. 133-153, doi: [10.1080/01972240590925357](https://doi.org/10.1080/01972240590925357).
- Krippendorff, K. (2018), *Content Analysis: An Introduction to its Methodology*, Sage Publications, Los Angeles, doi: [10.4018/ijec.2015100101](https://doi.org/10.4018/ijec.2015100101).
- Lemon, K.N. and Verhoef, P.C. (2016), "Understanding customer experience throughout the customer journey", *Journal of Marketing*, Vol. 80 No. 6, pp. 69-96, doi: [10.1509/jm.15.0420](https://doi.org/10.1509/jm.15.0420).
- Liu, S., Xiao, W., Fang, C., Zhang, X. and Lin, J. (2020), "Social support, belongingness, and value co-creation behaviors in online health communities", *Telematics and Informatics*, Vol. 50, 101398, doi: [10.1016/j.tele.2020.101398](https://doi.org/10.1016/j.tele.2020.101398).
- Lu, X. (2023), "The effects of patient health information seeking in online health communities on patient compliance in China: social perspective", *Journal of Medical Internet Research*, Vol. 25, e38848, doi: [10.2196/38848](https://doi.org/10.2196/38848).

- Lu, X. and Zhang, R. (2021), "Impact of patient information behaviours in online health communities on patient compliance and the mediating role of patients' perceived empathy", *Patient Education and Counseling*, Vol. 104 No. 1, pp. 186-193, doi: [10.1016/j.pec.2020.07.001](https://doi.org/10.1016/j.pec.2020.07.001).
- Malterud, K., Siersma, V.D. and Guassora, A.D. (2016), "Sample size in qualitative interview studies: guided by information power", *Qualitative Health Research*, Vol. 26 No. 13, pp. 1753-1760, doi: [10.1177/1049732315617444](https://doi.org/10.1177/1049732315617444).
- Meek, S., Ryan, M., Lambert, C. and Ogilvie, M. (2019), "A multidimensional scale for measuring online brand community social capital (OBCSC)", *Journal of Business Research*, Vol. 100, pp. 234-244, doi: [10.1016/j.jbusres.2019.03.036](https://doi.org/10.1016/j.jbusres.2019.03.036).
- Muniz, A. and O'Guinn, T. (2001), "Brand community", *Journal of Consumer Research*, Vol. 27 No. 4, pp. 412-432, doi: [10.1086/319618](https://doi.org/10.1086/319618).
- Olivier, L., Carlson, J., Rahman, S. and Rosenberger, P. (2023), "Measuring tourist festival experience: development and validation of the PHF-tx model", *Journal of Travel Research*, Vol. 62 No. 7, pp. 1530-1549, doi: [10.1177/00472875221129251](https://doi.org/10.1177/00472875221129251).
- Ostrom, A.L., Field, J.M., Fotheringham, D., Subramony, M., Gustafsson, A., Lemon, K.N., Huang, M.-H. and McColl-Kennedy, J.R. (2021), "Service research priorities: managing and delivering service in turbulent times", *Journal of Service Research*, Vol. 24 No. 3, pp. 329-353, doi: [10.1177/10946705211021915](https://doi.org/10.1177/10946705211021915).
- Park, A. and Conway, M. (2017), "Longitudinal changes in psychological states in online health community members: understanding the long-term effects of participating in online depression community", *Journal of Medical Internet Research*, Vol. 19 No. 3, e.71, doi: [10.2196/jmir.6826](https://doi.org/10.2196/jmir.6826).
- Piyathasanan, B., Mathies, C., Wetzels, M., Patterson, P.G. and de Ruyter, K. (2015), "A hierarchical model of virtual experience and its influences on the perceived value and loyalty of customers", *International Journal of Electronic Commerce*, Vol. 19 No. 2, pp. 126-158, doi: [10.1080/10864415.2015.979484](https://doi.org/10.1080/10864415.2015.979484).
- Plewa, C., Sweeney, J.C. and Michayluk, D. (2015), "Determining value in a complex service setting", *Journal of Service Theory and Practice*, Vol. 25 No. 5, pp. 568-591, doi: [10.1108/JSTP-03-2014-0059](https://doi.org/10.1108/JSTP-03-2014-0059).
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.-Y. and Podsakoff, N.P. (2003), "Common method biases in behavioral research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903, doi: [10.1037/0021-9010.88.5.879](https://doi.org/10.1037/0021-9010.88.5.879).
- Rahman, S.M., Carlson, J., Chowdhury, N.H., Gudergan, S.P., Wetzels, M., Ringle, C.M. and Grewal, D. (2026), "Omnichannel safe customer experience: how should it be measured? Does it affect customer well-being and retailers' performance?", *Journal of Business Research*, Vol. 202, 115760, doi: [10.1016/j.jbusres.2025.115760](https://doi.org/10.1016/j.jbusres.2025.115760).
- Rahman, S.M., Carlson, J., Gudergan, S.P., Wetzels, M. and Grewal, D. (2022), "Perceived omnichannel customer experience (OCX): concept, measurement, and impact", *Journal of Retailing*, Vol. 98 No. 4, pp. 611-632, doi: [10.1016/j.jretai.2022.03.003](https://doi.org/10.1016/j.jretai.2022.03.003).
- Richter, N.F. and Hauff, S. (2022), "Necessary conditions in international business research: advancing the field with a new perspective on causality and data analysis", *Journal of World Business*, Vol. 57 No. 5, 101310, doi: [10.1016/j.jwb.2022.101310](https://doi.org/10.1016/j.jwb.2022.101310).
- Richter, N.F., Hauff, S., Ringle, C.M., Sarstedt, M., Kolev, A.E. and Schubring, S. (2023), "How to apply necessary condition analysis in PLS-SEM", in Latan, H., Hair, J.F., Jr. and Noonan, R. (Eds), *Partial Least Squares Path Modeling: Basic Concepts, Methodological Issues and Applications*, Springer, pp. 267-297.
- Richter, N.F., Schubring, S., Hauff, S., Ringle, C.M. and Sarstedt, M. (2020), "When predictors of outcomes are necessary: guidelines for the combined use of PLS-SEM and NCA", *Industrial Management and Data Systems*, Vol. 120 No. 12, pp. 2243-2267, doi: [10.1108/IMDS-11-2019-0638](https://doi.org/10.1108/IMDS-11-2019-0638).
- Ringle, C.M. and Sarstedt, M. (2016), "Gain more insight from your PLS-SEM results: the importance-performance map analysis", *Industrial Management and Data Systems*, Vol. 116 No. 9, pp. 1865-1886, doi: [10.1108/IMDS-10-2015-0449](https://doi.org/10.1108/IMDS-10-2015-0449).

- Sahhar, Y., Loohuis, R. and Henseler, J. (2023), "GraphEx: visualizing and managing customer experience in its multidimensionality", *Journal of Service Theory and Practice*, Vol. 33 No. 7, pp. 94-115, doi: [10.1108/JSTP-03-2023-0077](https://doi.org/10.1108/JSTP-03-2023-0077).
- Sha, M. and Lai, J. (2016), "A case study of improving and evaluating consumer survey translation", *Translation and Interpreting*, Vol. 8 No. 1, pp. 86-100, doi: [10.12807/ti.108201.2016.a06](https://doi.org/10.12807/ti.108201.2016.a06).
- Sharkiya, S. (2023), "Quality communication can improve patient-centred health outcomes among older patients: a rapid review", *BMC Health Services Research*, Vol. 23 No. 1, p. 886, (2023), doi: [10.1186/s12913-023-09869-8](https://doi.org/10.1186/s12913-023-09869-8).
- Shi, S., Chen, Y. and Chow, W.S. (2016), "Key values driving continued interaction on brand pages in social media: an examination across genders", *Computers in Human Behavior*, Vol. 62, pp. 578-589, doi: [10.1016/j.chb.2016.04.017](https://doi.org/10.1016/j.chb.2016.04.017).
- Son, J.-E., Lee, S.H., Cho, E.-Y. and Kim, H.W. (2016), "Examining online citizenship behaviours in social network sites: a social capital perspective", *Behaviour and Information Technology*, Vol. 35 No. 9, pp. 730-747, doi: [10.1080/0144929X.2016.1143032](https://doi.org/10.1080/0144929X.2016.1143032).
- Soper, D. (2024), "Free statistics calculators version 4.0", available at: <https://www.danielsooper.com/statcalc>
- Sorensen, A., Andrews, L. and Drennan, J. (2017), "Using social media posts as resources for engaging in value co-creation: the case for social media-based cause brand communities", *Journal of Service Theory and Practice*, Vol. 27 No. 4, pp. 898-922, doi: [10.1108/JSTP-04-2016-0080](https://doi.org/10.1108/JSTP-04-2016-0080).
- The Business Report (2025), "Health care social media global market report: market size, trends and global forecast 2025-2034", available at: <https://www.thebusinessresearchcompany.com/report/health-care-social-media-global-market-report>
- Thomas, D.R. (2006), "A general inductive approach for analyzing qualitative evaluation data", *American Journal of Evaluation*, Vol. 27 No. 2, pp. 237-246, doi: [10.1177/1098214005283748](https://doi.org/10.1177/1098214005283748).
- Venkatesh, V., Brown, S.A. and Sullivan, Y.W. (2016), "Guidelines for conducting mixed-methods research: an extension and illustration", *Journal of the Association for Information Systems*, Vol. 17 No. 7, pp. 435-495, doi: [10.17705/1jais.00433](https://doi.org/10.17705/1jais.00433).
- Vock, M., Dolen, W.V. and Ruyter, K.D. (2013), "Understanding willingness to pay for social network sites", *Journal of Service Research*, Vol. 16 No. 3, pp. 311-325, doi: [10.1177/1094670512472729](https://doi.org/10.1177/1094670512472729).
- Vujcich, D., Roberts, M., Gu, Z., Kao, S., Lobo, R., Mao, L., Oudih, E., Phoo, N., Wong, H. and Reid, A. (2021), "Translating best practice into real practice: methods, results and lessons from a project to translate an English sexual health survey into four Asian languages", *PLoS One*, Vol. 16 No. 12, e0261074, available at: [https://doi:10.1371/journal.pone.0261074](https://doi.org/10.1371/journal.pone.0261074)
- Výgotsky, L.S. (1978), "Socio-cultural theory", *Mind and Society*, Vol. 6, pp. 52-58.
- Watkins, M., Mallion, J.S., Frings, D., Wills, J., Sykes, S. and Whittaker, A. (2023), "Doing public health differently: how can public health departments engage with local communities through social media interventions", *Public Health in Practice*, Vol. 6, pp. 1-5, doi: [10.1016/j.puhip.2023.100412](https://doi.org/10.1016/j.puhip.2023.100412).
- Wyllie, J., Carlson, J., Heinsch, M., Kay-Lambkin, F. and McCoy, A. (2022), "eHealth services and SDG3: increasing the capacity of care", *Australasian Marketing Journal*, Vol. 30 No. 2, pp. 131-141, doi: [10.1177/18393349211069114](https://doi.org/10.1177/18393349211069114).
- Zhao, J., Wang, T. and Fan, X. (2015), "Patient value co-creation in online health communities: social identity effects on customer knowledge contributions and membership continuance intentions in online health communities", *Journal of Service Management*, Vol. 26 No. 1, pp. 72-96, doi: [10.1108/JOSM-12-2013-0344](https://doi.org/10.1108/JOSM-12-2013-0344).

---

Zheng, Q., Yao, T. and Fan, X. (2016), "Improving customer well-being through two-way online social support", *Journal of Service Theory and Practice*, Vol. 26 No. 2, pp. 179-202, doi: [10.1108/JSTP-09-2014-0188](https://doi.org/10.1108/JSTP-09-2014-0188).

Zhou, T. (2022), "Understanding online health community users' information adoption intention: an elaboration likelihood model perspective", *Online Information Review*, Vol. 46 No. 1, pp. 134-146, doi: [10.1108/OIR-09-2020-0412](https://doi.org/10.1108/OIR-09-2020-0412).

**Corresponding author**

Jessica Wyllie can be contacted at: [jessica.wyllie@newcastle.edu.au](mailto:jessica.wyllie@newcastle.edu.au)