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# AN EXAMINATION OF THE ANTECEDENTS OF TRUST IN FACEBOOK ONLINE HEALTH COMMUNITIES

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# AN EXAMINATION OF THE ANTECEDENTS OF TRUST IN FACEBOOK ONLINE HEALTH COMMUNITIES

*Research paper*

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## Abstract

*Online Health Communities have become an increasingly popular information resource. Participants use them to seek health information, to seek support and to source advice regarding health challenges. The resulting lack of dependency on traditional health information channels has not only changed the way in which people source health information, but more importantly, the health information that they choose to trust and consequently act upon. Despite this fact, the factors that predict or inhibit users' trust in online health communities remain unclear. This study seeks to contribute to our understanding of the factors that influence individuals trust in such communities. Data were collected from 410 Brazilian participants of several online health communities on Facebook. The research model was tested using partial least squares, and the results show support for two new predictors of trust in online health communities: Online Community Responsiveness and Community Support. Also, we found that Information Credibility and Propensity to Trust positively influence individual's trust responses. These findings contribute both to the trust literature and to social media research knowledge. From a practitioner perspective, these findings can also serve as a guide for moderators and managers who wish to improve participants' trust in their online health communities.*

*Keywords: Online health groups, Trust, Online health communities, Trust Antecedents*

## **1 Introduction**

In recent years there has been a move towards empowering individuals to self-manage their health conditions. Self-management can assist and inspire patients to become more informed about their conditions and take an active role in their treatment, thereby improving their health-related behaviours and clinical outcomes. Research has shown that individuals, particularly those with chronic health conditions, often seek to manage their health in ways that are frequently unanticipated by experts (Greenhalgh, 2009). One such way is participation in online health communities, which bring together thousands of people who can connect, participate and interact at a very modest cost and without difficulty. Online health communities enable individuals to interact with others who share similar health concerns, to receive health care advice (Eysenbach, Powell, Englesakis, Rizo and Stern, 2004) and to share health information that is frequently based on personal experience (Ziebland and Wyke, 2012). Patients and their relatives frequently access such networks to expand their understanding of diseases, treatments or recommended healthy practices (Goonawardene and Tan, 2013; Ram, Avinandan and Richard, 2008). They seek information about many aspects of medical conditions or concerns, making the issue seem less complex, and more manageable. Typically, they use these online health communities to share their stories, experiences, and knowledge, to learn from others' experiences and gain useful advice from people who comprehend their position (Hajli, Sims, Featherman and Love, 2014). Thousands of people have connected to these communities seeking support, advice, and exchanging experiences with individuals who have overcome similar health challenges (Eysenbach et al., 2004).

Participation in such online health communities has potential to positively influence preventive health care (Goh, Gao and Agarwal, 2016). For example, online health groups may encourage participants to adopt healthy habits by supporting behaviour change. This is particularly attractive in the context of the increasing economic and resource strains that characterise the health systems of many countries. Such strains are expected to intensify due to demographic shifts, including increased life expectancies and the prevalence of health co-morbidities that are associated with increased age (Piccirillo, Vlahiotis, Barrett, Flood, Spitznagel and Steyerberg, 2008). Clearly, the dissemination of health information that can support positive health behaviour change whilst equally assisting in improved self-management of existing health conditions has both urgent social and economic value.

Notwithstanding the potential value of online health communities, simply facilitating access to health-related information does not automatically engender trust in that information, nor result in positive health behaviours. In fact, research has argued that people are actually more likely to trust information acquired online than that obtained via traditional communication channels (Hajli, 2014; Hajli et al., 2014; Scobel and Israel, 2006). Trust is therefore critical to the user's decision to accept and apply health information and reflects the level of trust in the online health community, a fact that is essential to the very survival of that community as it influences the user's desire to keep seeking and providing information through the community (Ridings, Gefen and Arinze, 2002). Despite its importance, the factors that predict an individual's trust response in an online health community context are complex and require investigation (Khosrowjerdi, 2016; Christine and Chun, 2012). Moreover, the need to understand the factors that engender that trust response is urgent, as without that understanding the potential of online health communities to support improved health self-management and health behaviour outcomes is likely to remain inhibited.

Therefore, the objective of this paper is to identify and analyse the antecedents of trust in online health communities, specially test the influence of two new proposed predictors: Online Community Responsiveness and Community Support. In this vein, it presents three main contributions. First, it adds to the limited extant research on trust in online health communities, specifically within a social media context. Second, it provides an empirical test of information credibility as an antecedent of cognitive and affective trust responses. Third, it extends existing theory through the inclusion of new variables that have not previously been considered as antecedents of trust, such as Online Community Responsiveness and Community Support.

The study is structured as follows. First, the theoretical background to this examination of trust in online health communities is outlined. This includes a review of the relevant literature and the study

hypotheses. Then, the methodology employed to test the research model is proposed. Finally, the study findings and their implications are discussed. The paper concludes by outlining limitations and potential directions for future studies in this area.

## **2 Theoretical Background**

Elaborating the hypotheses related to trust antecedents in online health communities requires the previous conceptualization and discussion of trust and its antecedents, which are presented below.

### **2.1 Trust**

Trust is a construct of enduring interest whose value and contribution to interpersonal, inter-organisational and transactional relationships is widely acknowledged by both researchers and practitioners. The former seeks to understand the antecedents of trust whilst the latter seek to use those insights to reduce risk and improve interaction outcomes in situations of uncertainty. In fact, Golembiewski and McConkie (1975, p. 131) remark that there is “*no single variable which so thoroughly influences interpersonal and group behaviour as does trust.*”

Notwithstanding significant interest in the construct by the academic community, there are numerous conceptualizations of trust. The multiplicity of definitions and the conceptual diversity that surrounds the construct results from the different disciplines of researchers, their differing research foci and emphases (McKnight, Cummings and Chervany, 1998). Despite this fact, some points of commonality are evident in the literature where trust is frequently defined in terms of optimistic expectations or confidence. For example, McAllister (1995) perceives trust in terms of positive expectations regarding consequent behaviour, whilst Jarvenpaa, Knoll and Leidner (1998) define trust as the optimistic expectation about the trusted person will act ethically and morally, even without monitoring (Jarvenpaa et al., 1998; Moorman, Zaltman and Deshpande, 1992). While Hosmer (1995) describes trust as a positive expectation that the other party will not exploit or take advantage of a situation through opportunistic behaviour, a slightly more nuanced approach is provided by Golembiewski and McConkie (1975), who view trust in terms of confidence in an event, person or process based upon personal perceptions and experiences. Interestingly, they also view trust as a dynamic phenomenon, one that can evolve over time and can be influenced by positive experience.

Trust definitions frequently reference issues such as the potential for exploitation or perceived risk, thereby pointing to the fact that trust is critical for the success of all social interactions that involve uncertainty and dependency and that one party to the interaction has a position of vulnerability. In fact, like Mayer, Davis and Schoorman (1995, p. 711) note, the need for trust only arises in a situation of risk. However, it has been proposed that the level of risk (and accordingly the level of vulnerability) will vary according to the level of dependency in the relationship (Sheppard and Sherman, 1998). Clearly, when there exists a greater dependency on one party (e.g., for the provision of correct health advice) to ensure a positive outcome, the potential vulnerability and risk from opportunistic behaviour are correspondingly greater. Since this study focuses the online health community context, it incorporates these perspectives and builds on Corritore, Kracher and Wiedenbeck (2003) to define trust as “*an attitude of confident expectation in an on-line health community context that one’s vulnerabilities will not be exploited.*”

#### **2.1.1 Trust Dimensions**

In research that conceptualises trust as a dependent variable, it is acknowledged that the perception of trustworthiness, the attribute of deserving be trusted, results from the individual’s evaluation of a number of characteristics (e.g., Lee and Turban (2001)). Whilst the exact characteristics may vary according to the differing context and emphasis of each study, a number of common themes consistently emerge. These include perceptions of trustor ability, benevolence, and integrity (Mayer et al., 1995). For example, research in online transaction environments has identified these three characteristics as influencing beliefs in the trustworthiness of an online vendor (Gefen, 2000; Gefen, Benbasat and Pavlou, 2008; Gefen, Karahanna and Straub, 2003; Hoffman, Novak and Peralta, 1999). Similarly, the online

community literature has defined trust in terms of ability and benevolence (Ridings et al., 2002) and in terms of the perceived honesty, competence, and benevolence of its members (Casaló, Flavián and Guinalú, 2008). That evaluation of competence can be influenced by the perceived responsiveness of the community (Ridings et al., 2002), as well as by community familiarity and communication reciprocity (Casaló et al., 2008).

In line with Golembiewski and McConkie (1975) contention that trust formation is a dynamic process, the literature recognises that these individual's characteristics are cognitively and affectively assessed, given rise to two different trust types in interpersonal relationships: cognitive-based trust and affective-based trust (McAllister, 1995; Lewis and Weigert, 1985). The former relates to perceptions of competence and reliability (Moorman et al., 1992) either from the accumulation of knowledge through observation of behaviour or from reported reputation effects. The latter trust dimension relates to the confidence that is placed in another on the basis of feelings that result from the perceived level of care and concern demonstrated and tends to involve personal experiences (Rempel, Holmes and Zanna, 1985). These feelings generate an increased sense of security and a perception that the partner's actions are intrinsically motivated, both of which result in stronger relationship bonds (Rempel et al., 1985). These trust dimensions are frequently viewed as interlinked due to the fact that repeated assessments of perceived competence and reliability can generate a subsequent affective trust response (McAllister, 1995).

Within an online health domain, the unique nature of the type of information sought and the significance of its consequences to the receiver has meant that each of these trust dimensions has merited separate attention by researchers (Fan, Lederman, Smith and Chang, 2014; Fan, Smith, Lederman and Chang, 2010; Zhao, Abrahamson, Anderson, Ha and Widdows, 2013a; Zhao, Ha and Widdows, 2013b). For example, online health communities involve information disclosure for some participants and content assessment for others, which may result in a cognitive trust response as participants assess the reliability of the content provided and the general competence of the community. By contrast, affective trust outcomes are grounded on emotional ties between individuals (Lewis and Weigert, 1985; McAllister, 1995), which result from demonstrations of empathy and genuine care (Chua, Ingram and Morris, 2008). When interactions between online health communities participants are characterized by help, support and empathy, this has the potential to generate an affective trust response. It is unsurprising therefore that empirical examinations of trust as a multidimensional construct in the context of online health communities confirm the value of examining the cognitive and affective dimensions of the construct separately due to their differing antecedents. For example, Zhao et al. (2013b) found that "perspective taking" influenced only a cognitive trust response. Similarly, in their work Fan et al. (2014) treat both cognitive and affective trust dimensions separately, arguing that fundamental distinctions exist between cognitive and affective trust, distinctions that confirm the multidimensional nature of the construct. Consequently, in this study it is considered that superior insights regarding the antecedents of trust in online health communities are most likely to be achieved by examining these trust dimensions separately.

## **2.2 Antecedents of Trust Response in Online Communities**

Within the online health community literature domain, the antecedents of the different dimensions of a trust response – cognitive and affective-based trust – have not yet been completely established. Nonetheless, a review of that literature has identified several antecedents of a general trust response. For example, Yi, Yoon, Davis and Lee (2013) conceptualise argument quality and source expertise respectively as predictors of perceived information quality and perceived risk, both of which influence a general trust response in the context of an online health community. Fan et al. (2010) proposed a conceptual model that seeks to explain how trust in online health communities develops, paying particular attention to considerations of ability, integrity and benevolence. They suggest that information quality, perceived similarity, confirmation bias and empathy influence trusting beliefs. Subsequently, these same researchers applied a qualitative interpretative approach to examine the formation of

cognitive and affective trust (Fan et al., 2014). Their findings provide support for dispositional trust, confirmation bias, perceived information credibility, medical status, values, perceived empathy and familiarity as predictors of a combination of cognitive and affective trust. In another vein, one study which has attempted to treat trust dimensions separately is that of Zhao et al. (2013b), which found that perspective taking and network density positively influence cognitive trust formation, whilst self-efficacy and network density influence affective trust formation. For example, in relation to network density, they found that members who share close ties and problems among themselves would have higher levels of both cognitive and affective trust. Due to the limited attention that trust in an online health community context has received and the differing foci of researchers, it is difficult to extrapolate with confidence regarding the predictors of trust formation in this specific context. Thus, we now propose information credibility, community support, online community responsiveness and propensity to trust as antecedents of both cognitive and affective-based trust responses in online health community context and develop our hypotheses.

### 2.2.1 Information Credibility

In an online health community, participants seek credible information to help them cope with the uncertainty associated with the illness that they are trying to overcome. This is a significant challenge with serious implications (Hillgoss and Rieh, 2008) as disinformation on various aspects of the disease could negatively impact health outcomes (Hajli, 2014; Hajli et al., 2014; Lober and Flowers, 2011; Maloney-Krichmar and Preece, 2005). Since much of the communication in online groups is subjective, discursive, experiential and frequently anonymous, this assessment of information credibility is not easily performed (Fan et al., 2010). It is possible to assess the quality of argument in an online health community by evaluating the degree to which the information provided is informative, valuable, persuasive and was perceived as useful to the community (Bhattacharjee and Sanford, 2006; Petty, Cacioppo and Goldman, 1981). Such verification can be provided by the agreement or disagreement of members as expressed in their comments or posts, thereby serving as a measure of information approval (Fan, Lederman, Smith and Chang, 2013; Flanagan and Metzger, 2013). This assessment of information credibility is essentially a cognitive judgement. Therefore, online health community information that is perceived as credible is likely to positively influence a cognitive trust response, as users of the community can evaluate information quality and the community's responses to same, using this evaluative information as a basis for their trust beliefs. Moreover, any affective trust response would be mediated by cognitive trust beliefs in the first instance. Based on the above discussion, it is proposed that:

*H1. In an online health community context, information credibility positively influences cognitive trust beliefs*

### 2.2.2 Online Community Support

It is long established that supportive interactions among individuals can provide a protective role against the health-related effects and life-stressing consequences of a disease situation, thus contributing to participants' well-being (Cobb, 1976; Schaefer, Coyne and Lazarus, 1981). Online health communities also can perform this protective role, as they promote social interaction and participants also benefit from learning from the experience of others, resulting in improved health outcomes and greater engagement in the self-management of disease (Lu and Yong, 2014). That support generates a sense that the community is well-intentioned in respect to the individual's well-being (Schueller, 2009). In doing so, it aligns with the benevolence concept as proposed by (Mayer et al., 1995). Community support is a multidimensional construct comprising facets such as emotional support, informational support, tangible support, network support and esteem support (Schaefer et al., 1981; Mattson and Hall, 2011). While tangible support does not apply in the context of online communities, all of the other support categories do apply and serve as manifestations of social support within an online community. For example, it is understandable that once an individual has been diagnosed with a disease, they would search for health information and advice regarding how best to proceed in treating their illness (Schaefer et al., 1981; Lu and Yong, 2014). Informational support is clearly important in this regard as it relates

to whether community members offer information and advice that help the individual cope with their health situation and health-related decision-making. It is therefore distinct from information credibility as the latter focuses on an assessment of the information that is provided. Online health communities are well positioned to provide such support and those that do so effectively are likely to be evaluated by the user as trustworthy. Emotional support is the interaction by which concern and care are demonstrated in the relationship, thereby filling the affective needs of the individual. This concern and care have been described as empathy and sympathy (Yoo, Namkoong, Choi, Shah, Tsang, Hong, Aguilar and Gustafson, 2014); encouragement and security; care and affection. Such emotional support is not characterized by the resolution of the other's problem, but the understanding of difficulties and "feeling sorry" about the problem treatment (Schaefer et al., 1981). Similarly, esteem support can be expressed through online interactions that reinforce the individual's self-esteem and their belief in their capacity to cope with the situation, by overcoming several stages of their health condition (Mattson and Hall, 2011). Finally, network support demonstrates that the individual is part of a support network that is available to assist others, thereby providing the participant with a sense of belonging to the community and the ability to share experiences (Schaefer et al., 1981; Lu and Yong, 2014; van Uden-Kraan, Drossaert, Taal, Shaw, Seydel and van de Laar, 2008). Based on this discussion, it is proposed that:

*H2. Online health community support positively influences participants' cognitive trust response.*

*H3. Online health community support positively influences participants' affective trust response.*

### 2.2.3 Propensity to Trust

In the literature, the effect of the propensity to trust characteristic on the individual's trust response is a matter of dispute. Personality-based psychologists contend that each person has a unique propensity to trust that is influenced by personality type, culture and developmental experiences (Hofstede, 1980; Rotter, 1980; Rotter, 1971). They suggest that the individual's dispositional propensity to trust determines the amount and level of trust that a person has for another party in the absence of available or experiential information on which to base a judgement (Rotter, 1980; Hofstede, 1980). On the other hand, organisational psychologists tend to view the propensity to trust characteristic with caution and consider that situational factors exert a greater influence on the trust response than does the individual's tendency to trust (Mishra, 1996; Burt and Knez, 1995). This raises the question as to whether this examination of trust in an online health community context should include a measure of dispositional trust as a control variable. Due to the fact that there is sufficient evidence to suggest that individuals differ greatly in their tendency to trust others (Gefen, 2000; Lee and Turban, 2001; Kim and Prabhakar, 2000), it was determined that this characteristic and its influence on trust response merits attention in this study. As the question of whether and to what degree the individual's trust in online health communities is influenced by this characteristic has not yet been determined, it will provide very relevant insight into this issue. Therefore, in this study, it is proposed that:

*H4. Propensity to trust positively influences online health community participants' cognitive trust response*

*H5. Propensity to trust positively influences online health community participants' affective trust response*

As previously noted, the literature has confirmed the value of examining the antecedents of cognitive and affective trust dimensions separately in contexts including the online health domain (Fan et al., 2014; Fan et al., 2010; Zhao et al., 2013a). The online health community context is characterised by participant vulnerability through reliance on provision of truthful information. Therefore, evaluations of the credibility of the information and the observed level of support provided by the information network are likely to engender confidence in the participant thereby influencing trust beliefs. Trust formation is a dynamic process (Golembiewski and McConkie, 1975) and once the participant has positively evaluated the online health community as a trusted forum, this is likely to manifest in increased

disclosure and reciprocal empathic interactions, resulting in the formation of stronger affective trust-based relationship bonds (Rempel et al., 1985). Consequently, it is proposed that

*H6. In an online health community, participants' cognitive trust beliefs positively influence their affective trust response.*

#### 2.2.4 Online Community Responsiveness

Users (and new users in particular) of an online health community frequently experience difficulty in personally assessing the credibility of an information source or a particular piece of information. Performing an individual assessment of posts is especially problematic for those lacking expertise or experience in relation to the health condition. On the other hand, crowds are considered (Surowiecki, 2005) more effective mechanisms for evaluating information and guiding decisions due to the fact that the health topic is exposed to collective scrutiny, open discussion, criticism, correction or endorsement based on participants' expertise and experience. This effectiveness is accentuated in online communities that are characterised by high levels of responsiveness, a characteristic that has been defined by Butler and Wang (2012) as the community's capacity to quickly and frequently generate content in response to participants' efforts to initiate conversation. That responsiveness is often led by a small group of highly responsive and informed individuals who emerge in response to postings. As previously noted, trust exists in the context of perceived risk and this mechanism of collective reasoning reduces the risk associated with participants' information assessment. It is particularly useful when other means to evaluate a piece of information or the reputation of an information source are not available. As the network of interested and informed individuals increases, the perceived informational and support value of the network correspondingly increases, thereby drawing in more active participants and increasing trust in the network. Additionally, respondents to information requests usually desire to maintain high reputational confidence (McLure Wasko and Faraj, 2005) and therefore posts are more likely to be consistent and free of errors due to their awareness that responses are open to group scrutiny. In fact, the literature has shown that these small groupings of online community 'issue specialists' are capable of producing highly accurate and very reliable recommendations (Mannes, Soll and Larrick, 2014). An online health community that is perceived as being both responsive to information requests and provides timely responses to others' postings is therefore likely to be evaluated as trustworthy. Repeated interactions that confirm those positive assessments of the community are also likely to engender stronger relationship bonds with that community. In consequence, we posit that:

*H7. Online health community responsiveness positively influences participants' cognitive trust responses*

*H8. Online health community responsiveness positively influences participants' affective-trust responses*



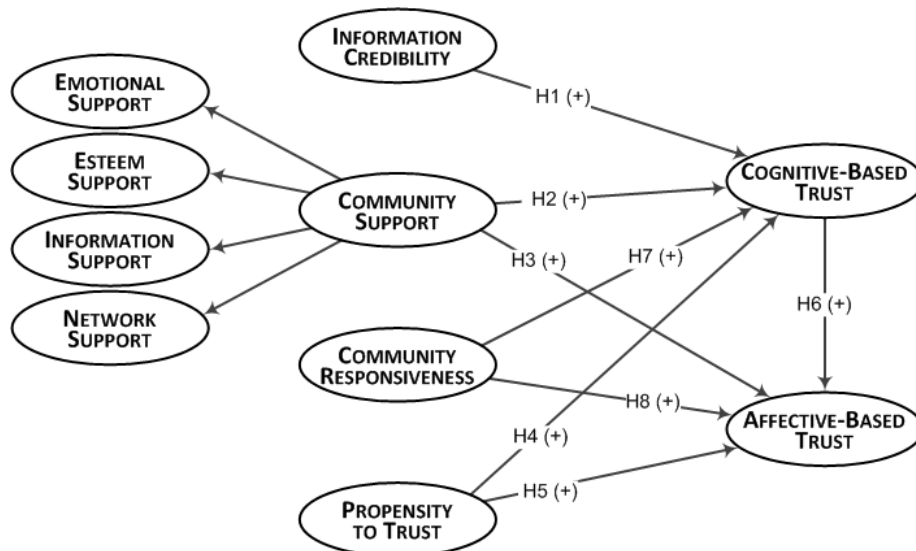


Figure 1 - Research Model - Antecedents of Trust response in Online Health Care Groups

The research model for this study is shown in Figure 1. It proposes that trust in online health groups is influenced by information credibility, community support, community responsiveness and propensity to trust. Community support is conceptualized as a reflective second-order construct, with four dimensions corresponding to the four facets of community support (Chiu, Huang, Cheng and Sun, 2015).

### 3 Methodology

The target population was participants of online health groups on Facebook. These online health groups include those focusing on healthy lifestyle, diet and nutrition, beauty and well being, as well as those interested in the treatment of diseases. Our study was conducted between December 2016 and January 2017 and was achieved by accessing online health communities available at Facebook that gathers Brazilian users.

#### 3.1 Sample

Invitation posts were published in 10 online health communities after securing authorisation from group managers. These groups comprised 813,223 registered members in total. The focus of the groups spanned several health fields, ranging from preventive medicine, nutrition and healthy lifestyle, diet, and exercise, pregnancy and mothers, beauty and aesthetics, to treatment of a number of diseases and even animal health. To encourage respondent participation, nine raffles of USD 20 were announced. These were organised so as to stimulate the participation of members with diverse profiles. For example, four of the raffles were offered through a task force within specific communities; one was directed specially towards moderators and managers; whilst the other four raffles were aimed at regular participants. The data collection phase gathered 602 responses, of which 410 were deemed valid after screening for incomplete responses, resulting in a rate of around 68%. The majority of respondents are female 93.2% (n=382); almost half are aged from 26-35 years (46.6%); 58.0% are married and 56.8% were educated to at least college level or higher. The majority of the respondents (74.2%) have more than one year of experience using online groups on Facebook. Access to these online groups is predominantly through smartphones. When the intensity of participation of examined, it is clear that these respondents are active participants. For example, most of them (81.2%) visit online health groups at least once a day, participating in online health groups with similar themes (79%). Interestingly, almost half (48.0%) of the respondents consider themselves to be active participants, in that they regularly contribute through posting questions, respond to questions, like others' postings and contribute more

generally. However, nearly one third of the respondents (31.2%) who define themselves as regular participants, only participate as a passive recipient, that is, they regularly participate by reading and searching for knowledge, but do not interact with others. An additional 18.3% define themselves as causal members who rarely interact and finally only 1.2% of the respondents define themselves as inactive participants.

### **3.2 Operationalization of Variables**

The measurement instrument consists of items drawn from the extant literature. The construct Information Credibility is measured with items drawn from Lederman, Fan, Smith and Chang (2014). The Community Support construct employed items drawn from previous research and measured the dimensions of social support as tangible, emotional, informational, esteem, and network (Schaefer et al., 1981; Chiu et al., 2015). However, their measures for tangible support were dropped as this study focuses on a virtual community context where there is no physical interaction between participants, resulting in a shorter measure that comprises four facets and 11 items. In order to assess propensity to trust, measures from Gefen (2000) and Ridings et al. (2002) were employed, whilst items used to measure trust response were adapted from Chiu, Hsu and Wang (2006), Mayer and Davis (1999) and Zhao et al. (2013b). In order to measure online community responsiveness, we propose three items following the definitions of previous literature (Wang and Lantzy, 2011; Wagner, Trier, Richter and Wagner, 2014).

The measures were translated into Portuguese and two pre-tests were conducted to keep the meaning and idiomatic equivalence (Cha, Kim and Erlen, 2007). In the first, expert researchers in the field were invited to respond to the questionnaire and also to provide feedback to improve the items. For the second test, the process was repeated with the moderators and group managers of each online health community. During this process, we examined the validity of the scales based on statistical procedures proposed by MacKenzie, Podsakoff and Podsakoff (2011). The research participants were asked to answer the questions using a 5-point Likert scale ranging from 1= "strongly disagree" to 5= "strongly agree". Overall, there were no significant changes in the items, but some of them were slightly adjusted in order to maintain the real meaning and comply with Portuguese grammatical requirements.

### **3.3 Data Analysis**

To test the model, we use partial least squares (PLS) structural equation modeling (SEM) as implemented in SmartPLS (Ringle, Wende and Becker, 2015). PLS-SEM is particularly adequate when the objective is to identify key driver constructs in a relatively complex model that simultaneously deals with multiple latent variables and relationships, without being subject to rigorous distributional assumptions (Hair, Hult, Ringle and Sarstedt, 2017).

## **4 Results**

A preliminary test of overall sample size adequacy was performed in line with Hair, Hult, Ringle and Sarstedt (2014). Using GPower (Buchner, Erdfelder, Faul and Lang, 2014), it was found that the sample size required to reveal effect sizes as low as  $f^2 = 0.1$  (a medium effect) with good power ( $1-\beta=90\%$ ) would be  $n=252$ , which means the sample acquired is deemed sufficient for the purpose of the analysis.

To examine the model, the two-step approach as defined by Hair et al. (2014) was employed. Firstly, the measurement model was analysed and then the structural model properties were subjected to more detailed examination.

### **4.1 Measurement Model**

Table 1 shows that the Average Variance Extracted (AVE) of all constructs are acceptable as they reach the threshold of 0.5 (Fornell and Larcker, 1981). The results show Cronbach's Alpha (CA) results higher than 0.70, indicating satisfactory scale reliability (MacKenzie et al., 2011). The Composite Reliability (CR) was also examined and supported values above 0.80, which is in line with Fornell and Larcker

(1981) criterion which considers that the composite reliability value should be above 0.70. Finally, Table 1 also shows that the root means square of the AVE is higher than the inter-correlations between the other constructs, thus providing evidence of discriminant validity (Hair Jr, Black, Babin and Anderson, 2009).

Variables	CA	CR	1	2	3	4	5	6	7	8	9	10
1 Affective-based Trust	0.875	0.915	<b>0.854</b>									
2 Cognitive-based Trust	0.875	0.843	0.591	<b>0.758</b>								
3 Disposition to trust	0.862	0.900	0.393	0.359	<b>0.802</b>							
4 Community Support	0.715	0.840	0.489	0.441	0.280	<b>0.798</b>						
5 Information Credibility	0.878	0.905	0.371	0.406	0.200	0.354	<b>0.760</b>					
6 Comm. Responsiveness	0.891	0.911	0.525	0.344	0.308	0.423	0.398	<b>0.699</b>				
7 Support - Emotional	0.864	0.936	0.403	0.257	0.219	0.295	0.332	0.840	<b>0.938</b>			
8 Support - Esteem	0.916	0.947	0.424	0.283	0.245	0.299	0.348	0.833	0.683	<b>0.925</b>		
9 Support - Information	0.889	0.931	0.460	0.302	0.301	0.483	0.340	0.770	0.521	0.413	<b>0.905</b>	
10 Support - Network	0.660	0.813	0.354	0.231	0.189	0.226	0.208	0.708	0.468	0.448	0.468	<b>0.769</b>

Table 1 - Latent Variables Cronbach's Alpha, Composite Reliabilities, Correlations and AVE's RMS

Table 2 shows the loadings and cross-loadings for each of our constructs. All but two of the loadings were above 0.70, indicating they account for at least 50% of the variance of the indicator (MacKenzie et al., 2011). The two lower loading items (one each for information credibility and cognitive-based trust) are between 0.6 and 0.7 and since the overall construct scores (composite reliability and AVE) were adequate we opted to retain them in the model. The cross-loadings for each of the items were substantially lower than the loadings, providing further evidence of discriminant validity (Chin, 1998). We also assessed the second-order construct community support. This construct is reflective, with four dimensions. Our assessment of the community support dimensions revealed high loadings (all > 0.70), and an AVE of 0.62, meaning that a majority of the variance in the first-order sub-dimensions is shared with the second-order latent construct (MacKenzie et al., 2011).

## 4.2 Structural Model

We began by assessing the possibilities of multicollinearity and common method bias. No VIF values higher than 1.8 were present, indicating that multicollinearity is not a confounding factor for this model (Cohen, Cohen, West and Aiken, 2003). Examinations for common method bias were conducted using Harman's one-factor test via a principal component factor analysis. The results showed no cause for concern. The first factor explained 29.5% of the overall variance, not accounting for more than 50% of the variance (Podsakoff, MacKenzie, Jeong-Yeon and Podsakoff, 2003).

Figure 2 shows the results of the structural model.

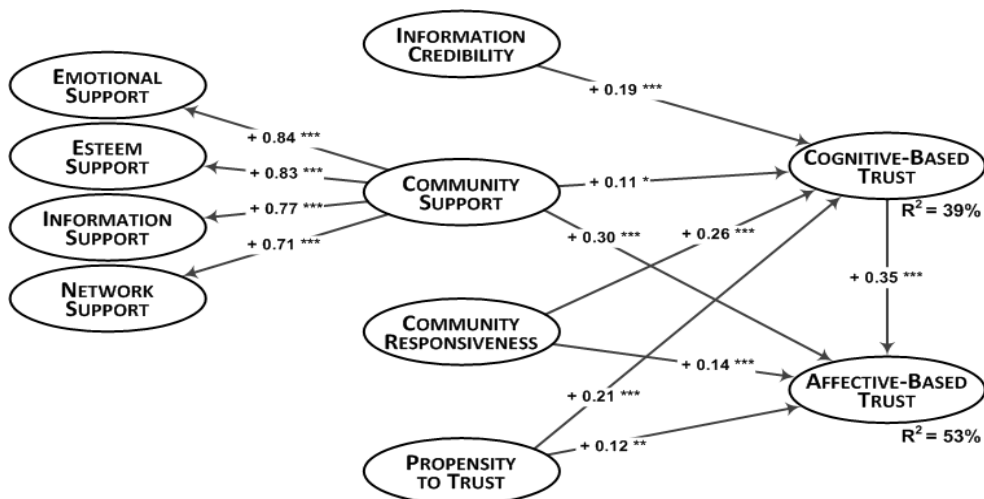


Figure 2 – Structural model results

Note: (\*)  $p < 0.05$ ; (\*\*)  $p < 0.01$ ; (\*\*\*)  $p < 0.001$

The results support each of our hypotheses. Information credibility significantly influences cognitive-based trust (H1), but not affective-based trust. Community support influences both elements of trust, with a stronger effect on affective-based trust (H2 and 3). Propensity to trust directly influences both forms of trust (H4 and 5), as does community responsiveness (H6 and 7). As a previous study (Butler and Wang, 2012) of community responsiveness had found evidence of both direct and indirect influences on the construct, tests for moderation effects were also conducted. The results showed that community responsiveness exerted a significant positive moderating effect on the path from information credibility to affective-based trust (+0.10,  $p < 0.05$ ). Community responsiveness also exerted a positive moderating effect (+0.15,  $p < 0.01$ ) on the path from community support to cognitive-based trust. Finally, cognitive trust was also found to significantly influence affective-based trust, as predicted (H8). Overall, the model explains 53% of the variance in affective-based trust and 39% of the variance in cognitive-based trust.

## 5 Discussion

The study findings are of interest both from a conceptual and practical viewpoint as they add to the body of knowledge as well as providing indicators to practitioners regarding how to develop trusted online health communities. Three main contributions emerge from this study.

The first relates to our knowledge of trust antecedents within online health communities context. For example, the finding that information credibility positively influences participants' cognitive trust responses in online health communities is consistent with findings obtained by Fan et al. (2014). This finding is of particular importance to online health groups context since most of the information available in the community is experiential and it is not easy for participants to assess whether the information is reliable or not (Fan et al., 2010). This outcome provides additional strength to the arguments suggesting that a greater focus should be placed on indicators of ability, integrity and verifiability in online community contexts (Bhattacharjee and Sanford, 2006) and extends this understanding specifically to an online health community context. Allowing participants to indicate whether they agree with the information provided in responses that are posted can facilitate such indicators. As this study confirms that information credibility approval influences trust beliefs, measures such as these have both a practical and long-term impact on the online health community. These insights obtained from this study contain valuable implications for online health group managers, moderators and those interested in increasing participant trust in their online health communities. For example, the importance of perceived information credibility on the participant's trust response indicates to social media managers and moderators the value of emphasising the reliability of the community's content and its benefit to participants. This can be achieved through testimonials from satisfied participants and those

who have benefited from information obtained via the online health community. It confirms the necessity of content monitoring and the need to remind individuals to only share content from reliable sources since following wrong information could negatively impact their health outcomes (Hajli, 2014; Hajli et al., 2014; Lober and Flowers, 2011; Maloney-Krichmar and Preece, 2005). Participants should be encouraged to verify their information source before sharing to prevent the dissemination of false information or information that puts the member's health at risk. This would help the community as a whole, as participants seek reliable information to help them better cope with their health condition (Hilligoss and Rieh, 2008).

The second contribution relates to our understanding of the formation of affective trust responses within an online health community context. In this regard, the findings relating to community support are of particular interest. They indicate that greater levels of support can strengthen the development of relationship bonds, a more durable form of trust response. Whilst the literature has ample evidence of the influence of community support on cognitive trust beliefs, evidence of its influence on affective trust outcomes was lacking. This study, therefore, complements the theory of trust in online health care communities not only through its focus on community support, but by providing empirical evidence that such support serves as an important predictor of both cognitive and affective-based trust responses. It also reinforces the importance of network support and the sense of belonging that can derive from sharing information (Schaefer et al., 1981; Lu and Yong, 2014; van Uden-Kraan et al., 2008). The support provided by the community is an important predictor of whether the source can be viewed as trustworthy by participants. Therefore, from a practical perspective, managers and moderators of these groups should focus on developing an empathic and supportive culture. Participants can be encouraged to give constructive comments about the challenges they have faced, to provide suggestions about how a health problem can be addressed or how they address it. These measures may improve the individual's trust in online health groups, which in turn can strengthen the community. As is the case with most online information communities, it may be helpful to post a policy regarding the culture of the community and acceptable interactions, as well as monitoring posts.

A third contribution relates to the role of community responsiveness in trust formation in online health communities. It is of particular interest from a number of angles. The first is that responsiveness exerted direct effects on cognitive trust beliefs. The fact that the perceived responsiveness of the health community would engender trust beliefs is not in itself surprising (Butler and Wang, 2012). However, what is of interest is the fact that additional analysis showed that community responsiveness also positively moderated the effect of community support on cognitive-based trust and also moderated the effect of information credibility on affective trust formation. The fact that community responsiveness moderates the relationship between community support and trust is interesting as it confirms that users rationalize that there are higher levels of support in communities that are characterised by higher levels of participation. As this implies that participation numbers convey confidence regarding potential support, it indicates to social media managers that the more ways in which they can direct individuals to their health communities, encourage postings and communication between members, the more their online community will be evaluated in terms of its network effects as the destination of choice for support. This is a significant contribution in light of the fact that community responsiveness is a newly developed measure that has not previously been considered in this context or in terms of trust outcomes. Secondly, higher levels of community responsiveness enhance the effects of information credibility on affective trust outcomes. This is of particular interest in light of the fact that affective trust is a more developed form of trust resulting in the development of stronger relationship ties between the participant and community. This information was not previously available and provides greater insight into the complexity of the community responsiveness construct and its effects, thereby encouraging new and more nuanced possibilities for its employment in future investigations. Given the importance of perceived responsiveness to individuals' trust levels, managers and moderators of online health communities should consider implementing mechanisms to increase the responsiveness within their communities. This may include reducing response time by flagging questions from participants in terms of issue and urgency, or that the person posting the question is semantically directed towards the correct information. The latter may necessitate hiring someone to curate information, to direct questions to

previously posted answers or to someone who has demonstrated competence in relation to a particular issue.

Finally, the insights obtained regarding the influence of the propensity to trust characteristic in this online health communities context are noted in that they align with the extant literature. For example, this characteristic was found to explain the initial process of trust formation by means of a direct significant effect on cognitive-based trust and affective-based trust, a result that is consistent with the research of Ridings et al. (2002). It also confirms the findings of Fan et al. (2014). However, the particular value lies in the fact that this study provides empirical evidence of the influence of this characteristic on both trust dimensions specifically within the online health community participant context, thereby adding strength to arguments for its inclusion in future trust formation examinations within emerging or novel contexts.

This study is not free of limitations. For example, although the sample size is adequate, all participants of the research are Brazilians from online health communities on Facebook. The extension of the research scope to other countries and community providers should therefore be considered in future studies to achieve a broad generalization and establish the culture and media independence of the model. Moreover, it is not suggested that the factors considered in this study are the only variables that are likely to influence trust in online health communities and other factors also merit attention. Further value is also likely to be obtained by decomposing these factors into sub-dimensions in order to obtain a more precise and nuanced understanding of trust formation.

## **6 Conclusion**

This study examined the factors that influence trust in online health communities on Facebook. The empirical results have high explanatory power and show that information credibility, community support, online responsiveness and disposition to trust are significant determinants of trust in such online communities. This research advances the previous literature on trust in online environments as it provides insight into the predictors of trust in the unique context of social media, specifically online health groups on Facebook. Moreover, these findings contribute to the literature by including variables that have not previously been considered as antecedents of trust, such as online responsiveness and community support, thereby paving the way for future research employing these constructs. The results obtained also provide valuable insights that can benefit managers, moderators, and those interested in developing trusted online health information environments.

ITEMS		AbT	CbT	DT	CR	IC	EMSup	ESTSup	INFSup	NETSup
AT01	Members are very concerned about my welfare	0.844	0.573	0.356	0.400	0.277	0.298	0.297	0.391	0.289
AT02	My needs and desires are very important to others	0.894	0.497	0.333	0.378	0.314	0.335	0.400	0.389	0.303
AT03	Members really look out for what is important to me	0.875	0.498	0.362	0.409	0.372	0.372	0.380	0.380	0.321
AT04	Members will go out of their way to help me	0.798	0.442	0.288	0.347	0.302	0.374	0.373	0.412	0.295
CT02	Members seem to keep the promises with each another	0.400	0.668	0.270	0.279	0.325	0.169	0.235	0.187	0.213
CT03	Members seem not intentionally disrupt the conversation	0.367	0.734	0.276	0.308	0.265	0.103	0.123	0.126	0.073
CT04	Members behave in a consistent manner	0.448	0.811	0.231	0.346	0.337	0.194	0.218	0.234	0.177
CT05	Members are truthful in dealing with one another	0.550	0.810	0.311	0.365	0.304	0.284	0.265	0.333	0.219
DT01	I generally trust other people	0.278	0.323	0.811	0.186	0.160	0.159	0.170	0.191	0.069
DT02	I tend to count upon other people	0.403	0.309	0.797	0.227	0.185	0.208	0.269	0.255	0.229
DT03	I generally have faith in humanity	0.264	0.224	0.779	0.196	0.111	0.182	0.162	0.270	0.168
DT04	I feel that people are generally reliable	0.331	0.319	0.836	0.242	0.193	0.159	0.194	0.234	0.118
DT05	I generally trust people unless they give me reason not to	0.269	0.238	0.783	0.198	0.134	0.166	0.164	0.265	0.166
R01	The posts are quickly answered	0.358	0.381	0.253	0.834	0.299	0.183	0.202	0.288	0.103
R02	Questions are not left unanswered	0.346	0.340	0.164	0.850	0.302	0.183	0.214	0.358	0.128
R04	In general, all posts are answered	0.431	0.370	0.247	0.854	0.322	0.181	0.241	0.366	0.155
IC01	The posts are clear and well written	0.211	0.198	0.151	0.225	0.641	0.202	0.175	0.170	0.114
IC02	The arguments in the postings are convincing	0.304	0.401	0.136	0.333	0.820	0.293	0.308	0.285	0.173
IC03	The message reflects the major community view	0.334	0.381	0.211	0.290	0.797	0.313	0.296	0.316	0.178
IC04	I think the message is credible	0.213	0.273	0.083	0.262	0.830	0.271	0.262	0.233	0.114
IC05	I think the message is believable	0.236	0.253	0.121	0.193	0.730	0.163	0.243	0.148	0.148
IC06	The content is consistent with external information	0.281	0.306	0.182	0.320	0.767	0.190	0.233	0.291	0.181
IC07	I think the content is coherent with what I already knew	0.344	0.278	0.159	0.281	0.719	0.294	0.297	0.305	0.176
ES02	Members encourage me to face the difficulties	0.379	0.215	0.202	0.215	0.292	0.939	0.624	0.511	0.451
ES03	Members are supportive of my feelings	0.377	0.266	0.210	0.189	0.331	0.937	0.657	0.466	0.427
ETS1	Compliment my ability to deal with my problems	0.392	0.286	0.248	0.201	0.305	0.635	0.931	0.360	0.399
ETS2	Members agree with how I dealt with problems	0.394	0.231	0.235	0.239	0.327	0.615	0.932	0.381	0.394
ETS3	Members are positive about the way I deal with problems	0.391	0.268	0.198	0.280	0.333	0.644	0.912	0.403	0.449
IS01	Members usually offer advice and suggestions	0.424	0.238	0.288	0.374	0.304	0.507	0.376	0.917	0.410
IS02	Members give me information to go through the problem	0.458	0.286	0.280	0.371	0.333	0.454	0.399	0.929	0.442
IS03	Members tell me what they did in a similar situation	0.365	0.296	0.248	0.337	0.284	0.452	0.345	0.868	0.417
NS1	I share common values or interests with specific members	0.173	0.161	0.187	0.039	0.106	0.211	0.263	0.284	0.742
NS2	I built contact with members who faced the same problem	0.305	0.197	0.164	0.156	0.163	0.426	0.350	0.476	0.802
NS3	I knew people with whom I can share joys and sorrows	0.317	0.170	0.094	0.138	0.201	0.408	0.407	0.295	0.764

Table 2 - Items and Cross-loadings

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