

## Willingness to reciprocate in virtual health communities: The role of social capital, gratitude and indebtedness

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### Abstract

Virtual health communities have become popular social environments where patients and carers are able to receive advice and support from other members of the community. However, not much is known of factors that influence willingness to share personal health information. Using the resource exchange theory and the affect theory of social exchange, this paper examines the role of social capital, gratitude and indebtedness in explaining levels of willingness to reciprocate in virtual health communities. Data was collected from 361 users of virtual health community sites in a cross-sectional survey conducted in Gauteng, South Africa. Structural equation modelling was used to analyse the data. The findings show that willingness to reciprocate is directly influenced by social capital, emotions of gratitude and indebtedness. The results also show that gratitude and indebtedness mediate the influence of social capital on willingness to reciprocate. The findings can be used by managers of virtual health communities to inform strategies aimed at stimulating more knowledge sharing on their sites.

Keywords: Social Capital; Gratitude, Indebtedness; Willingness to Reciprocate; Virtual health communities.

### 1 Introduction

Increased use of online social networks for inter-personal interaction has resulted in proliferation of online virtual communities (Surma 2016). Through online interaction, individuals are able to derive significant social benefits including access to information, opinion as well as advice (Bigné et al., 2015; Wu and Korfiatis, 2013). This often comes at a relatively lower cost when compared to offline social relations (Surma 2016). Virtual communities consist of aggregation of individuals who co-produce and consume content that is in line with their interest (Wiertz and de Ruyter, 2007; Kim et al. 2009). The primary purpose of virtual communities is to serve as forum on which members can ask questions, share knowledge and information as well as provide social-emotional support to each other (Welbourne et al., 2013). Common interest that results in formation of online communities vary widely and include communities formed around common profession, common interest in brands, common interest in social issues as well as common interest around health matters. This study focuses on communities centred around health issues, commonly known as virtual health communities. van der Eijk et al. (2013) noted that there is

growing use of virtual health communities by patients especially those suffering from serious or chronic diseases for informational purposes as well as emotional support.

Resources and associated benefits derived by individuals from social structures constitute social capital (Lee and Chen 2011; Keeling et al. 2013; Tormo-Carbo´ et al. 2014). As voluntary spaces of interaction, the ability of any virtual health community to grow its social capital depends on willingness of members to invest their time and effort in responding to one another's appeals for help (Wiertz and de Ruyter, 2007). This is largely because social capital is evident through exchange of favours (Jackson et al. 2012). One unique feature about interactions on virtual communities is that information shared by one member in response to request for support by another member is made visible and accessible to all members of the community. In cases of open access community sites, such information becomes a public good as it benefits anyone who visits the site including non-registered members (Zeng et al. 2016). The fact that individuals cannot be excluded from the shared resources brings with it the challenge of ensuring that members are motivated enough to want to 'give and not just take' from the community. Central to this challenge is the notion of reciprocity in virtual communities. While reciprocity is of significant importance for the success of virtual communities the phenomenon has not attracted much research interest in such contexts (Wu and Korfiatis 2013; Surma 2016). This paper aims at contributing to addressing this research gap by examining levels of willingness to reciprocate in virtual health communities.

In investigating willingness to reciprocate, the study makes use of the resource exchange theory and the affect theory. Research including studies by Chambers (2013) as well as Tormo-Carbó et al. (2014) commonly identify social capital as the main resource associated with social networks. While this is so Cheung and Chan (2010) caution against "taking the oversimplified view that a social network without considering its exchange patterns, is sufficient to represent social capital'. They pointed out the need to take cognisance of the fact that social capital depends on the extent to which social relations are regarded as helpful. In line with the resource exchange theory this study posits that levels of social capital associated with a virtual health community is a significant determinant of willingness to reciprocate. In line with the affect theory, the study further posits that based on perceived benefits, exchange relations in virtual health communities will result in consumers experiencing varied emotions and that these emotions in turn will also exert significant influence on willingness to reciprocate. By so doing the study argues for the mediating effects of emotions on the relationship between social capital and willingness to reciprocate.

In looking at emotions the study focuses specifically on gratitude and indebtedness. Gratitude and indebtedness are widely regarded as important pro social emotions (Mathews and Shook 2013). While this is so gratitude and indebtedness are emotions that have not attracted much research attention in consumer behavioural studies (Raggio et al. 2014). Accordingly, the specific objectives of the study are

to (a) examine the influence of perceived level of social capital in virtual health communities on (i) willingness to reciprocate (ii) emotions of gratitude and (ii) emotions of indebtedness; (b) examine the mediating effect of emotions of gratitude on the relationship between social capital and willingness to reciprocate and (c) examine the mediating effect of emotions of indebtedness on the relationship between social capital and willingness to reciprocate.

A better understanding of factors influencing reciprocity can help managers of virtual health community sites come up with better strategies of ensuring that they have significant numbers of consumers on their sites who are not only free riders, benefiting from contributions of others but also ready to render support to others by partaking in creation of the community's support resources. The rest of the paper is structured such that the next section provides the theoretical framework to the study. This is followed by discussion of the methodology used in conducting the study and presentation of findings respectively. Thereafter, the results are discussed and their theoretical as well as managerial implications outlined. The paper concludes with a summary of main findings as well as an outline of the study's limitations and suggestions for future research.

## **2 Theoretical framework**

### **2.1 Resource exchange theory**

The resource exchange theory is a psychological exchange theory proposed by Foa (1971) and is founded on the understanding that human needs are seldom satisfied in solitude. According to Foa (1971) this is primarily because people depend on one another for resources needed to ensure their well-being. Some of the resources that get exchanged are tangible while others are intangible. Examples of tangible resources include money and goods while intangible resources include services, affect, status and information (Mitchell et al., 2012; Brinberg and Wood 1983). Whatever the resource under consideration, one important factor about resource exchange is that it takes place through the interpersonal behaviour of social interaction. Traditionally, social interaction primarily involved face to face type of interpersonal interaction. Developments in information technology have resulted in growing number of social interactions taking place on online platforms of which virtual health communities are an example.

Researchers commonly agree on the fact that virtual health communities serve the primary purpose of being a source of help to those in need (Bender et al. 2013; Zhao et al. 2015). They serve as a platform for resource sharing including sharing of information and provision of social-emotional support (Go et al. 2016; Kordzadeh and Warren 2017). The resources and benefits associated with a social group make up the social capital of the group (Ellison et al. 2007). The more the collective value associated with a social unit the higher its social capital. As places whose primary purpose is to provide support, it can

specifically be argued that high levels of perceived social capital in virtual health communities would be associated with one's sense of availability of help when needed. If one perceived that they can readily turn to a virtual community and their need for help will be attended to, then they are likely to associate such a community with high levels of social capital.

Among the arguments advanced by the resource exchange theory is one that states that resources that are proximal in terms of concreteness and particularism will often elicit similar resources in exchange (Foa, 1971). Brinberg and Wood (1983) tested the applicability of the resource exchange theory to explaining consumer behaviour. Their study found that the theory provides a good theoretical foundation to understanding consumer behaviour. The notion that resource exchange elicits reciprocity using similar type of resources is central to the resource exchange theory. In the case of virtual health communities, this means that reciprocity would manifest itself mainly through rendering of informational and social-emotional support to other individual members of a community in return for informational and social-emotional resources received from the community in the past. Accordingly this study argues that willingness to reciprocate in virtual health communities is influenced by perceived levels of social capital. Taking cognisance of the fact that social capital is a resource (Tang et al 2015) the resource exchange theory is an appropriate theory to use for the current study.

## **2.2 Affect theory**

The resource exchange theory views actors in the exchange process as beings who cognitively process information available to them to inform decisions regarding patterns and nature of exchange with exchange partners. A limitation of this theory relates to its failure to incorporate emotions as a central feature of exchange processes. Noting this shortcoming among exchange theories, Lawler (2001) proposed the affect theory of social exchange. The theory focuses on the structural conditions of exchange. It argues that exchange activities have emotional effects which vary in intensity and form i.e. they can be positive, negative and sometimes mixed emotions. The theory further contends that emotions experienced get attributed to actors in the exchange and that the attribution of emotions, in turn, dictates an individual's reaction to their exchange partners or to groups. Lawler (2001, p 322) stated that "emotions produced by exchange structures are critical to understanding how and when social exchanges promote or inhibit solidarity in relations or groups". According to the theory the promotion or inhibition of levels of solidarity in social relations get manifested in different ways including behaviourally. This is more so taking cognisance of the fact that the affect theory is based on the assumption that actors in the exchange process are free to make decisions about "whether to exchange, with whom to exchange and under what terms to exchange" Lawler (2001 p.326).

In line with the affect theory, this study posits that in virtual health communities, access to resources i.e. social capital, has emotional effects on individual members of the community. It further argues that

emotions experienced by individuals will have influence on how they behaviourally respond to the community. Taking the behavioural factor of interest in this study as willingness to reciprocate, the study argues that emotions experienced have influence on willingness to reciprocate.

### 2.3 Proposed model

Based on arguments advanced in the resource exchange theory as well as the affect theory of social exchange, this study proposes a conceptual model, depicted in figure 1, that helps understand willingness to reciprocate in virtual health communities. In line with resource exchange theory, the model posits that social capital exerts direct influence on willingness to reciprocate. Consistent with the Affect theory, the model further posits that social capital yields emotional effects on users towards virtual health communities and that these emotions in turn exert significant influence on willingness to reciprocate. This study further posits that the relationship between social capital and willingness to reciprocate is mediated by level of emotions experienced. As indicated before emotions of interest include feelings of gratitude towards virtual community and indebtedness to the community.

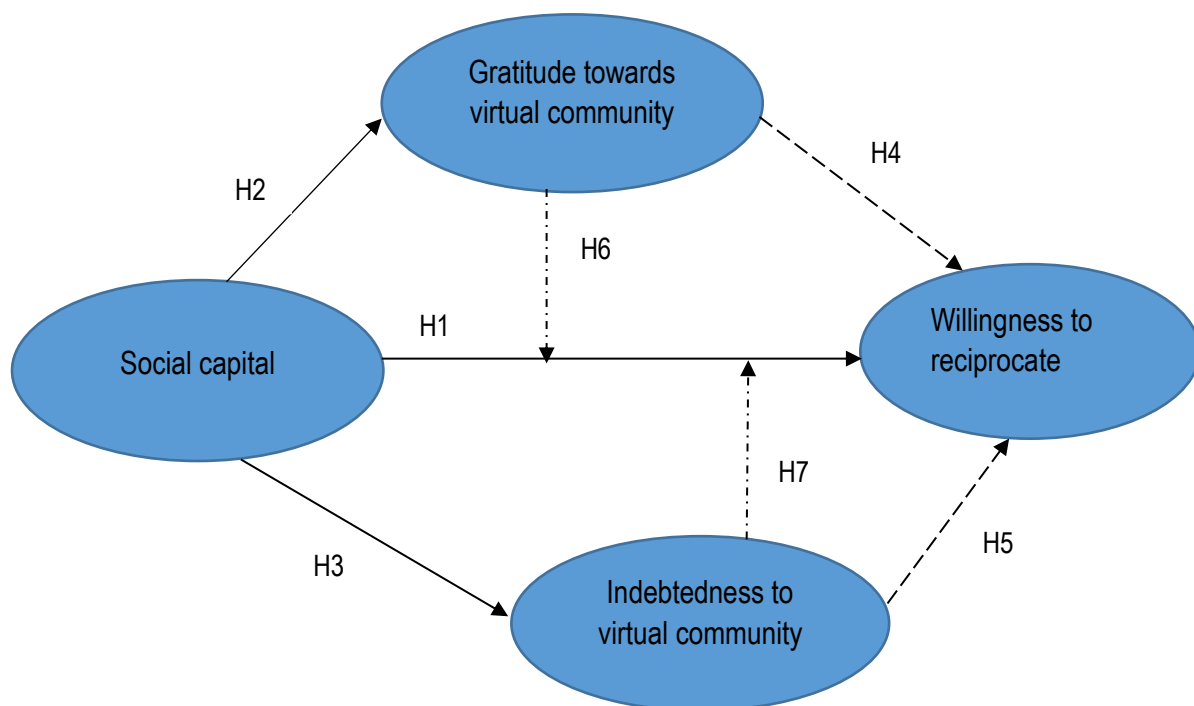


Figure1: Conceptual model on willingness to reciprocate in virtual health communities

### 2.4 Social capital and willingness to reciprocate

Bourdieu and Wacquant (1992, p.14) defined social capitals as the “the sum of the resources, actual or

virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition". Ellison et al (2007) noted that resources making up social capital can differ in form and function depending on the nature of relationships. In the case of virtual communities perceptions of social capital is likely to be dependent on quality of exchanges taking place between members (Ellison et al. 2014; Vila and Ribeiro-Soriano 2014). For example, high levels of social capital on virtual health communities would entail high levels of responsiveness to members' request for support. This is so considering that social capital is by its nature meant to work to the benefit of members of the social unit. Accordingly in looking at social capital, this study focuses on the extent to which members of virtual health community feel that they can rely on other members of their community as a source of support to get their problems addressed.

As per the proposed model, social capital is posited to have positive influence on willingness to reciprocate. Coleman (1988) observed that social capital helps in facilitating actions and that it also aids in accounting for different behavioural outcomes at the level of individual actors. The action of interest in this study is reciprocity which is by its nature conditional. It is conditional because there must be something received and given back in order for an exchange to be considered reciprocal (Lee et al. 2014). In the case of virtual health communities, what members receive is the support in terms of having their need for information and emotional support attended to by the community through its other members. While being in receipt of something of value cannot always guarantee reciprocity this study argues that willingness to reciprocate will be contingent on perceived levels of social capital. This argument is in line with the resource exchange theory. The specific hypotheses put forward is that:

H1: Social capital in virtual health communities has positive influence on willingness to reciprocate.

## **2.5 Emotions of gratitude and indebtedness**

Emotions are a psychological response to stimuli (Jeon and Kim 2012). They can be actuated by different stimuli including circumstances, events or relationships with others. Schachter and Singer (1962) pointed out that emotions are dependent on one's cognitive appraisal of stimuli and context. Consequently, they can be positive or negative and they do vary in intensity. According to Fredrickson (2004) gratitude is an example of a positive emotion while indebtedness is negative emotion. Other scholars regard indebtedness as a mixed emotion in that it has both positive and negative elements. Despite this some studies like to equate gratitude with indebtedness (Tsang, 2006; Watkins et al. 2006). This study argues for treatment of the two emotions as distinctively different constructs. This is consistent with assertions in contemporary research in psychology on the two constructs (Tsang, 2006). Similarities in the way the gratitude and indebtedness are conceptualised may be due to the fact that both emotions result from the

existence of beneficial exchange relations. What makes gratitude and indebtedness different from each other is however the fact that gratitude is a pleasant emotion while indebtedness is an emotion that is associated with some uneasiness. Greenberg (1980:4) described indebtedness as an “emotional state of arousal and discomfort” and as “the state of obligation to repay another”. The idea of being indebted or ‘owing’ is normally unpleasant and leads to individuals looking for ways of getting out of such a state. Gratitude on the other hand is not being in debt. It is defined by McCullough et al. (2008:281) as “a positive emotion that typically flows from the perception that one has benefited from the costly, intentional, voluntary action of another person”.

## **2.6 The influence of social capital on gratitude and indebtedness**

Emotions by their nature are not evoked on their own but they are rather evoked by something that one experiences or that stimulates them (McCullough and Tsang, 2004; Schoefer and Diamantopoulos 2008). In exchange relations, emotions of gratitude and indebtedness are evoked when one party provides favours or benefits to another (Lee et al. 2014; Mathews and Shook 2013). According to Lee et al. (2014) one can look at favourable emotional responses in exchange relations as a return on investment. Members and management of virtual health communities invest their time and effort to build up these social structures that individuals may rely on for support. The higher the extent to which individual members can rely on their community for support, the higher the social capital. Disabato et al. (2016) states that grateful people are known to view help from others as being valuable and costly to the benefactor while at the same time being motivated by genuine altruism on the part of the benefactor. McCullough et al. (2008) identified perceived value of benefit as one of the major factors that drives experience of gratitude and indebtedness including the intensity of emotions’ experiences. The affect theory of social exchange states that emotions are an important outcome of exchange relations. Accordingly it is hypothesised in this study that:

H2: Gratitude towards virtual health community is positively influenced by perceived levels of social capital.

H3: Indebtedness to virtual health community is positively influenced by perceived levels of social capital.

## **2.7 Effects of gratitude and indebtedness**

Prior research on consequences of both gratitude and indebtedness indicate that they motivate reciprocation including reciprocation intentions (Greenberg 1980; Kim and Lee 2013). How the two types of emotions drive reciprocation may however differ. For example, when one feels indebted, they are likely

to use reciprocation as a way of reducing or getting rid of the feeling. Behavioural response in such a case is likely to thus have a lot to do with self-benefit i.e. managing discomfort, than to do with being thankful for benefits enjoyed and made available by others for one's enjoyment. Since feelings of 'owing and the need to pay back are not central to gratitude, feelings of thankful appreciation of benefits are what is more likely to motivate reciprocity under gratitude. Disabato et al. (2016) noted that gratitude influences the motivation to give back through appreciation of help received from other. Mathews and Shook (2013) observed that because gratitude is motivated by thankfulness, the behavioural options resulting from it tend to be broader than when behaviour is motivated by indebtedness. Findings by Bartlett and DeSteno (2006) as well as Naito et al., (2005) provide empirical evidence of the positive influence that gratitude has on different pro-social behaviours. Studies by Alan et al. (2016) as well as Ahn and Rho (2016) also found that behavioural intentions are positively influenced by emotions. Mathews and Shook (2013) noted that when indebtedness is experienced, unlike when gratitude is experienced, the focus of attention tends to be narrowed down to the elements of the social exchange i.e. a pie for a pie. In looking at reciprocity, this study focuses on return of emotional and informational support in return for informational and emotional support made available to individual members. The affect theory notes that emotions in social exchange have influence on promotion or inhibition of solidarity in social relations. As reciprocity can be pro-social behaviour in that it can help strengthen relations, the hypotheses put forward in this study are that:

H4: Gratitude towards virtual health community has positive influence on willingness to reciprocate.

H5: Indebtedness to virtual health community has positive influence on willingness to reciprocate.

Since social capital is posited, in the proposed model, to influence emotions of gratitude and indebtedness which in turn influence willingness to reciprocate, this study further posits that the influence of social capital on willingness to reciprocate in virtual health communities is mediated by emotions. According to Baron and Kenny (1986, p. 1173) mediation "represents the generative mechanism through which the focal independent variable is able to influence the dependent variable of interest". The proposed model shows that the focal independent variable, social capital, is able to influence the dependent variable, willingness to reciprocate, through its influence on gratitude and indebtedness. Lee et al. (2014) asserts that gratitude is well acknowledged as a missing significant mediator in relationship marketing literature. This study argues that indebtedness is also a significant mediator. Findings in studies by Kim and Lennon (2013) as well as Mpinganjira (2015) provide empirical evidence on the mediating role that emotions have on the influence of stimuli on behavioural intentions. The specific



hypotheses put forward in this study are that:

H6: Gratitude mediates the relationship between social capital and willingness to reciprocate in virtual health communities.

H7: Indebtedness mediates the relationship between social capital and willingness to reciprocate in virtual health communities.

### **3 Methodology**

#### **3.1 Sample and data collection**

This study was part of a larger study focused on members of virtual health communities from Gauteng, South Africa. The study followed a quantitative research approach using a cross-sectional survey. A structured questionnaire was used to collect data. As there was no readily available list of members of virtual health community from which to draw a random sample non-probability convenience sampling was used to select respondents. Trained research assistants were used to administer the questionnaire. The respondents were approached in public by the research assistants and invited to participate in the study. Due to need for informed consent, only respondents who were 18 years and above were asked to complete the questionnaire. In responding to the questions, respondents were asked to keep in mind one specific virtual health community that they are members of. Screening questions were used to identify respondents who were members of virtual health communities. The respondents were patients and personal carers of patients i.e. non-professional health carers. By the end of the data collection phase a total of 361 usable responses were received. 42.7 percent of the respondents were male while 57.3 percent were female. 66.2 percent of the respondents were in the youth age category i.e. between the ages of 18 and 35 while the remaining 33.8 percent were over the age of 35 with only one respondent over the age of 60.

#### **3.2 Measures**

Constructs of interest in the study as per the proposed model were operationalised using multi-item scales found in literature. Scales were adapted to suit the context of this study. Social capital was specifically measured using items adapted from Ellison et al., (2007) as well as Sánchez-Franco and Roldán (2015). Gratitude towards virtual health community was measured using items adapted from Kim and Lee (2013). Indebtedness to virtual health community was measured using items adapted from Mathews and Shook 2013; Wiertz and de Ruyter (2007) and Naito and Sakata (2010). Willingness to reciprocate was measured using items adapted from Sánchez-Franco and Roldán (2015). Response anchors of 1 = very strongly disagree to 7 very strongly agree were used for all items. Table 1 provides

details of all items used for each construct.

### **3.3 Analysis**

Structural equation modelling using Amos software was used to test the hypotheses. A two stage approach was followed in analysing the data. The first stage involved assessment of the measurement model for goodness of fit using confirmatory factor analysis. This entailed examination of goodness of fit indices as well as testing constructs for reliability and validity. A number of fit indices were used to assess goodness of fit including goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), Tucker–Lewis index (TLI), incremental fit Index (IFI), and root mean square error of approximation (RMSEA). The second stage involved hypotheses testing. Maximum-likelihood estimation method was used to estimate model parameters.

Before the main analysis, preliminary analysis was done to test the data for normality; its suitability for factor analysis as well testing the data for common bias. Normality of data was tested using skewness and kurtosis coefficients. The skewness coefficients were found to range from -0.952 to -.140 while the kurtosis coefficients ranged from -0.743 to 1.991. Norman and Streiner (2008) notes skewness and kurtosis coefficients of between -2 and 2 indicate that data does not violate assumptions of normality. Suitability of the data for factors analysis was assessed using the Kaiser-Mayer-Olkin (KMO) measure of sampling adequacy and the Bartlett test of sphericity. The results showed that the KMO coefficient was 0.822 and that the Bartlett's test of sphericity was significant ( $p = .000$ ). Hair et al. (2010) notes suitability of data for factor analysis is evident when the KMO is not less than 0.5 and the Bartlett's test of sphericity is significant. This means that the data used in this study was suitable for factors analysis. Common method bias was tested using Harman's single factor test. As noted by Podsakoff et al. (2003) Harman's single factor test entails subjecting all variables to factor analysis while constraining number of extracted factors to one and checking the amount of variance accounted for by the single factor. The results in this study showed the single factor produced accounted for only 37.68 percent variance which means that there was no evidence of common bias. According to Eichhorn (2014) common method bias is evident when the extracted single factor accounts for more than 50 percent of the variance.

## **4 Results**

### **4.1 Assessment of measurement model**

Results of the confirmatory factor analysis conducted to assess the 4 factor, 12 item measurement model showed satisfactory fit ( $\chi^2 = 101.180$ ,  $df = 48$ ,  $\chi^2/df = 2.108$ ,  $GFI = 0.956$ ,  $AGFI = 0.929$ ,  $CFI = 0.966$ ,  $TLI = 0.953$ ,  $IFI = 0.966$  and  $RMSEA = 0.055$ ). In order to assess reliability of constructs, composite reliability coefficients were used. The results, presented in table 1, showed that all reliability scores exceeded the

recommended minimum score of 0.70 (Hair et al. 2010). The reliability coefficients ranged between 0.752 (willingness to reciprocate) and 0.832 (gratitude towards community).

Table 1: Factor loadings and composite reliability

Constructs and Items	Factor loading	Composite Reliability	Mean	Standard Deviation
<b>Social Capital</b> <ul style="list-style-type: none"> <li>• There are many people who help me feel better on this online health community</li> <li>• I have trust in members of online health community to help me solve my problems</li> <li>• I know that I can turn to members of the online health community if I need help</li> </ul>	.831 .888 .788	.794	6.00	.716
<b>Gratitude towards online community</b> <ul style="list-style-type: none"> <li>• I feel grateful to the online health community</li> <li>• I am thankful to the online health community</li> <li>• I feel appreciative to the online health community</li> </ul>	.862 .892 .834	.832	6.13	.709
<b>Indebtedness to online community</b> <ul style="list-style-type: none"> <li>• I feel it is only right to help others for the benefits received from the online health community</li> <li>• It is important for me to return favours when other members of the online health community are in need</li> <li>• Some members have done things for me that I feel I am responsible for repaying by helping others</li> </ul>	.832 .832 .824	.772	6.06	.711
<b>Willingness to reciprocate</b> <ul style="list-style-type: none"> <li>• I am willing to help others on this online health who are in need, in return for help that I receive</li> <li>• When other members need my help, I am willing to return favours by assisting them, even if it may cost me time and effort</li> <li>• I am willing to share my experiences with the online health community based on benefits received</li> </ul>	.816 .836 .798	.752	6.15	0.572

Results on construct validity are presented in table 2. Convergent validity of constructs was assessed using average variance extracted (AVE) scores while discriminant validity was assessed by comparison AVE scores of each construct with the maximum shared variance (MSV). According to Hair et al. (2010) convergent validity of a construct is evident when the AVE coefficient is greater than 0.5 while discriminant validity is evidenced by the AVE coefficient is greater than the MSV. According to the results in table 2, the AVE for each of the four constructs in the measurement model was greater than 0.5. The values ranged from 0.503 to 0.624. The results also show that the AVEs were superior when compared to the maximum shared variances between each pair of constructs, thereby confirming discriminant validity. As per Hair et al. (2010) convergent validity of the constructs is further evidenced by factor

loadings of not less than 0.5 of items on their respective factors, refer table 1. Discriminant validity is further evidenced by results in table 2 showing that the square root of each AVE score was greater than the inter-construct correlations.

Table 2: Descriptives, construct correlation and validity

Construct	Social capital	Gratitude	Indebtedness	Willingness to reciprocate
Social capital	<b>0.752</b>			
Gratitude	0.495	<b>0.790</b>		
Indebtedness	0.546	0.487	<b>0.729</b>	
Willingness to reciprocate	0.404	0.358	0.540	<b>0.709</b>
<b>AVE</b>	<b>0.565</b>	<b>0.624</b>	<b>0.531</b>	<b>0.503</b>
<b>MSV</b>	<b>0.298</b>	<b>0.245</b>	<b>0.298</b>	<b>0.292</b>

## 4.2 Hypotheses Testing

Before examining relationships between constructs, an examination was undertaken to determine how well the data fitted the constructed model. The results showed that the data satisfactorily fit the proposed structural model:  $\chi^2 = 116.932$ ,  $df = 49$ ,  $\chi^2 / df = 2.386$ ,  $GFI = 0.950$ ,  $AGFI = 0.920$ ,  $CFI = 0.957$ ,  $TLI = 0.942$ ,  $IFI = 0.957$  and  $RMSEA = 0.062$ . Just as with Jung and Yoo (2016) the proposed hypotheses in the study were tested through a series of structural path models. The analysis in this study focused firstly on the direct influence of social capital on gratitude, indebtedness and on willingness to reciprocate. Thereafter the analysis focused on examining concurrently, the direct effects of mediator variable on willingness to reciprocate and their mediation effects.

The direct influence of social capital

Table 3: Hypothesis test results – direct influence of social capital

Predictor Variable	Predicted variable	Applicable hypothesis	Standardised regression coefficient	SE	P	Conclusion
Social capital	Willingness to reciprocate	H1	.484	.058	.000	Hypothesis supported
	Gratitude	H2	.549	.074	.000	Hypothesis supported

	Indebtedness	H3	.620	.089	.000	Hypothesis supported
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Table 3 presents results on the direct influence of social capital on gratitude, indebtedness and on willingness to reciprocate. The path coefficients show that perceived level of social capital has significant positive influence on willingness to reciprocate ( $\beta = .484$ ;  $p = .000$ ), feelings of gratitude towards virtual health communities ( $\beta = .549$ ;  $p = .000$ ) as well as on indebtedness to virtual community ( $\beta = .620$ ;  $p = .000$ ). Based on these results hypotheses H1; H2; and H3 are supported.

#### Effects of emotions

According to Baron and Kenny (1986) testing for mediation effects demands establishing first that significant relationships exists between the predictor variable and the outcome variable, the predictor variable and the mediating variable as well as between mediating variable and the outcome variable. In testing for mediation effects the study followed the four step approach recommended by Baron and Kenny (1986) in which regression coefficients are examined at each step. The results were later checked using the bootstrapping method in AMOS. According to Baron and Kenny (1986), the first step involves testing the simple regression model with independent variable (X) predicting the outcome variable (Y) while the second step entails conducting a regression analysis with the independent variable (X) predicting the mediating variable (M). The third step entails conducting a regression analysis with the mediating variable predicting the outcome variable. This step thus allows for testing of the direct effect of the mediator variable on the dependent variable. The last step involves conducting regression analysis in which both the independent variable and mediating variable predict the outcome variable. Following these steps, mediation is established when the relationship between the independent and outcome variable becomes insignificant or loses strength of significance as reflected by a higher p value and/or lower regression weight.

In this study two tests for mediation effect were conducted. The first test focused on the influence of gratitude on the relationship between social capital and willingness to reciprocate. The second test focused on the influence of indebtedness on the relationship social capital and willingness to reciprocate while the last test focused on the combined effect of gratitude and indebtedness on willingness to reciprocate. Table 4 presents the results of the analysis focusing first on the effects of mediating variables i.e. gratitude and indebtedness respectively, on willingness to reciprocate.

The results in table 4 show that willingness to reciprocate was positively influenced by both gratitude ( $\beta = .356$ ;  $p = .000$ ) and indebtedness ( $\beta = .542$ ;  $p = .000$ ). Hypotheses H4 and H5 are thus supported. The results in table 4 also show reduction in direct effect of the influence of social capital on willingness to

reciprocate when the mediator variable is present ( $\beta = .396$  to  $\beta = .302$ ;  $p = .000$ ). The bootstrapping results show that the indirect influence of social capital on willingness to reciprocate through gratitude is significant ( $p = .030$ ). The results thus provide support for H6. Results in table 4 show loss of significance in influence of social capital on willingness to reciprocate in the presence of indebtedness. This is at 95 percent significance level. The results of the indirect effect of social capital on willingness to reciprocate through indebtedness show a significant p value of 0.002. Based on these results it can be concluded that indebtedness has mediation effect on the relationship between social capital and willingness to reciprocate. H7 is thus supported.

Table 4: Effects of mediating variable of willingness to reciprocate

Effects of mediating variable on willingness to reciprocate – simple regression							
Predictor variable	Predicted variable	Applicable hypothesis	Standardised regression coefficient	SE	P value	Conclusion	
Gratitude	Willingness to reciprocate	H4	.356	.052	.000	Hypothesis supported	
Indebtedness	Willingness to reciprocate	H5	.542	.055	.000	Hypothesis supported	
Results of hypothesis testing – mediation effect							
Relationship	Direct effect without any mediator – Simple regression		Direct effect with mediating variable		Indirect effect -- Bootstrap		Conclusion
	Standardised regression coefficient	P value	Standardised regression coefficient	P value	Standardised regression coefficient	P value	
Social capital - gratitude - willingness to reciprocate	.396	.000	.302	.000	.195	.030	H6 supported
Social capital - indebtedness - willingness to reciprocate	.396	.000	.152	.055	.336	.002	H7 supported

## 5 Discussion and Implications

Virtual communities face the real threat of some people benefiting from others without reciprocating. The findings in this study shed light on factors that influence members of virtual health communities to reciprocate by helping other members in return for help that they themselves received. The results provide support for the argument that 'give and not just take' mentality in virtual health communities can be explained by the level of social capital members associate their virtual communities with. The

findings show that this social capital, as manifested through level of reliability of members to effectively serve as a source of help in times of one's need, influences individuals' level of willingness to reciprocate. The findings are consistent with assertions that reciprocity is not unconditional (Wiertz and de Ruyter, 2007). The results specifically show that the higher the perceived value of benefits derived from virtual health community the more will be the willingness to reciprocate. This means that when people do not associate their virtual communities with much personal value, they are unlikely to want to contribute to content generation.

The findings in this study also point to the fact that emotions of gratitude and indebtedness play a significant role in mediating the influence of social capital on members' willingness to reciprocate. This is consistent with findings reported by Kim and Lennon (2013) as well as Mpinganjira (2015) showing that emotions have a mediating effect on the influence of stimuli on behavioural intentions. The results in this study specifically show that indebtedness has stronger influence on willingness to reciprocate than gratitude. The findings in this study are of significant theoretical and managerial implication as outlined below.

### Theoretical Implications

From a theoretical perspective the study provides insights into constructs that may help explain reciprocity. Firstly, with regard to social capital, the study shows the need for researchers to look at value at individual level. This is because of the influence that social capital has on members' willingness to reciprocate and in so doing contribute to content generation. Information shared online can be targeted at specific individuals or at the community as a whole. The findings in this study point to the importance of meeting needs at individual level. Unless an individual feels that they are benefiting personally from the community, their levels of perceived value associated with the community is likely to be low.

Secondly, the study sheds light on the evolution of willingness to reciprocate. Gong et al. (2013) observed that the structure and evolution of reciprocal relations are largely unexplored in social networks. This study contributes to theory on reciprocity in online social networks, specifically in virtual health communities. The findings point to the fact that the influence of social capital on willingness to reciprocate gets mediated by emotions of gratitude and indebtedness with indebtedness having the stronger mediation effect than gratitude. By focusing on gratitude and indebtedness, this study goes beyond looking at the commonly studied emotional construct of satisfaction in exchange relations. The study thus contributes to understanding the influence of emotions, specifically the relative influence of gratitude and indebtedness in explaining consumer behaviour in virtual health communities.

Thirdly, as noted by Tsang, (2006) as well as Watkins et al. (2006) due to poor conceptualisation, emotions of gratitude and indebtedness are commonly defined and used interchangeably. As a result it

is rare to find studies that include both emotions. By examining the two emotions together, this study empirically validates the distinctiveness of gratitude and indebtedness. The study empirically shows that gratitude and indebtedness are distinctively different, as evidenced by findings on discriminant validity.

Lastly, the findings in this study empirically validate the resource exchange theory as well as the affect theory of social exchange in the context of virtual health communities. With regard to resource exchange theory, the findings in this study specifically show that value of resources exchanged in social relations exerts significant influence on behavioural response of consumers. With regard to affect theory, the results in this study point to the fact that exchange relations in virtual health communities have emotional effects. They affect members' levels of gratitude towards their virtual community and feelings of indebtedness to their virtual community. Moreover, the results also show that experience of emotions of gratitude and indebtedness influence consumers' behavioural related reaction i.e. willingness to reciprocate.

### Managerial Implications

From a managerial perspective, the findings in this study show that managers can leverage the power of their virtual communities to stimulate reciprocity by growing levels of social capital. One way in which managers may be able to do this is by attracting people with high network value to be part of their community. This includes people who are likely to be seen by members of their community as reliable sources of information such as doctors and other health practitioners as well as past and present sufferers/carers of different ailments. Health professionals such as doctors are likely to enhance social capital in online health communities by providing informational support that is based on expert knowledge. Past and present patients as well as carers are likely to be good sources of emotional support to those struggling with specific ailments. The findings also show the importance of emotions particularly gratitude and indebtedness in explaining willingness to reciprocate. Managers of virtual health communities can thus use emotions of gratitude and indebtedness as a benefit detector. This is because emotions of gratitude and indebtedness are positively associated with social capital.

The fact that emotions had stronger direct influence on willingness to reciprocate than social capital, point to the need for managers to look for other factors that may also impact on emotions. The aim should be to stimulate emotions that exert positive influence on consumer behaviour in virtual health communities. A study by Mpinganjira (2015) for example found that with online platforms issues of web usability can have an impact on people's emotional response. Sites that are difficult to navigate are known to be irritating to users.

Managers can avoid this by paying attention to design issues of their sites.

## **6 Conclusion, limitations and suggestions for future research**



This study was conducted with the purpose of examining factors influencing levels of willingness to reciprocate in virtual health communities. The findings demonstrate the significant role that social capital and emotions of gratitude and indebtedness play in influencing willingness to reciprocate. The research also shows that the relationship between social capital and willingness to reciprocate is mediated by emotions of gratitude and indebtedness.

While the study has significant theoretical and managerial implications, it is not without limitations. The limitations include the fact that the study is based on a sample of respondents drawn from a limited geographical area in South Africa, namely Gauteng using non-probability sampling. This limits the extent to which the findings may be generalised to the wider population. Future research could consider including respondents from other part of the country as well as using probability sampling methods. Additionally, the study examined virtual health communities in general without differentiating them according to kind of ailments that the community caters for nor the kind of owner managing the community. Future research can examine if there are differences in participation intentions or behaviours between members of different kinds of virtual health communities. Furthermore, the study examined social capital as a unidimensional construct and looked at the mediation effect of only two emotional factors by examining the effect of each on its own. The study is also cross sectional in nature which means that it provides a view of the situation at a particular point in time. As social spaces of interaction, the quality of engagement taking place on virtual health community sites is likely to go through changes over time. Future research could consider taking a multidimensional perspective in operationalising social capital and also consider investigating other possible mediator factors as well as examining mediation effects of multiple variables concurrently. Future studies can also aim at and understanding consumer behaviour over time by conducting longitudinal studies. Such studies are likely to provide a lot more insight into consumer behaviour.

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