Patients' experience sharing in online social media communities: A base-of-the-pyramid perspective

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Abstract

Purpose: This study focuses on access to healthcare for a highly impoverished population and aims to provide an understanding of how online healthcare communities (OHCs), as transformative service mediators, can be the platforms for patient with chronic and non-chronic health conditions, to share experience in the base-of-the-pyramid (BOP) context.

Design/methodology/approach: A large-scale survey among 658 respondents was conducted in a very low-income country. SEM was used to test the hypotheses.

Findings: A model of patients' experience sharing (PES), motivations, and consequences in healthcare services are introduced and tested. The result supports the PES model for patients with chronic health conditions, showing that utilitarian, hedonic and social value dimensions directly influence PES and indirectly influence their continuance intention with online healthcare communities and patient efforts. However, a mediating effect of PES was found only between the value dimensions and patients' efforts. A negative moderation effect of medical mistrust was found in the relationship between utilitarian value and PES for both chronic and nonchronic patient groups.

Originality: This study is a pioneering attempt to develop and test the PES model in the BOP market.

Keywords: Patients' experience sharing, base-of-the-pyramid, healthcare services, online health communities, healthcare consumers.

Introduction

To date, approximately one in ten people in developing regions continue to live below the international poverty line of US$1.90 per day (United Nation, 2018), referred to as the base-of-the-pyramid (BOP) market. Since its original articulation (Prahalad and Hammond, 2002;

Prahalad and Hart, 2002), interest in a BOP perspective on business strategy and poverty alleviation has continued to grow and refers to the billions of people living on less than $2.50 per day (Prahalad and Hart, 2002). The BOP is a socio-economic concept derived from the economic human pyramid that allows the grouping of the world's poorest citizens, invisible and unserved market, blocked by challenging barriers that prevent them from realizing their human potential for their benefit, those of their families, and that of society's at large (Financial times, 2017). More broadly, BOP refers to a market-based model of economic development that promises to simultaneously alleviate widespread poverty while providing growth and profits for multinational corporations (Kirchgeorg *et al.*, 2014). A BOP consumer is thus part of the largest but poorest group of the world's population and is often excluded from the modernity of society, including consumption, choice, and access to services. While a lack of financial resources is in itself a very significant issue, it also lies at the root of many other problems, such as inequality and having little or no access to basic services, like healthcare. Accordingly, despite the urgent need to gain knowledge about this important portion of the world population, little is known about value creation and service delivery for these very vulnerable markets (Sharma *et al.*, 2017). Therefore, the transformative service research (TSR) stream has called for scholarly research to provide a deeper understanding of these under-researched communities, to translate the findings into practice, and to help improve and better serve these populations (Blocker *et al.*, 2013). Among the solutions, digital healthcare platforms are seen as playing a critical role in terms of prevention, care, and cure in such contexts (Akareem *et al.*, 2020).

Despite healthcare being one of the most accessed information categories on the internet, the knowledge about experience sharing between patients in online communities remains limited (Keeling *et al.*, 2013). Although general knowledge sharing in OHCs have received some

attention (Chiu *et al.*, 2011; Zhang *et al.*, 2017), several gaps still exist in terms of OHCs on social networks including the distinction between chronic vs. non-chronic patient-sharing, as well as a specific focus on medical experience sharing instead of general knowledge sharing in a BOP context. Yan *et al.* (2016) argue that more knowledge sharing research is needed that includes other relational constructs (instead of benefits and costs), as well as the role of trust. This raise the question what other motivational factors (expected value dimensions) encourage consumers to share their health service experience in the OHCs. Despite the importance of information available on OHCs the threat of misinformation (i.e., mistrust on health information) impose risk on physical wellbeing (Diviani *et al.*, 2015). Moreover, outcomes such as consumers' intention to continue (Cheung *et al.*, 2013) and individual efforts in the OHCs (Chen *et al.*, 2018) because of such health service experience sharing among the impoverished consumer groups are unknown. In addition, Gurrieri and Drenten (2019) called for further research to understand the motives and outcomes of vulnerable consumers who use social media to narrate their healthcare experiences. This paper aims to explore the use of OHCs on social media platforms by BOP healthcare consumers in emerging market countries.

Accordingly, this study makes multiple contributions. First, this study seeks to provide a further understanding of how OHC, as transformative service mediator, could create value to vulnerable consumers in the BOP context. This answers recent calls to study how such transformative service mediator contribute to co-create value for vulnerable consumers and mainly they could provide transformational experience to assist and empower them (Johns and Davey, 2019; Previte and Robertson, 2019). Therefore, this paper proposes a unique model of patients' experience sharing (PES) on OHC showing the motivators and consequences of PES behaviors. We define PES as patients' initiation effort for the benefit of other patients on social media platforms. Second, healthcare informational mistrust in social media was considered to

see if it dampens the relationship between utilitarian value and PES. Third, this study considers OHCs for BOP healthcare consumers in emerging market countries as the service context. Finally, chronic and nonchronic diseases are very different in terms of duration of treatments and patients' experiences, which require particular attention (Sandefer *et al.*, 2018). Therefore, this study goes a step further by comparing the perceptions of patients with chronic diseases and of those with nonchronic diseases.

The remainder of the paper highlights the relevant literature and introduces the conceptual model. The research design and data collection method are then presented. Finally the findings and discussion of the results are presented. The paper concludes with managerial and theoretical implications and suggestions for future research.

Literature

Online Healthcare Communities (OHCs)

Recent studies in the service field have emphasized the key role played by the transformative service mediators in supporting value cocreation in a service context (Johns and Davey, 2019). In the specific context of healthcare, the role of some actor mediators has been suggested to be crucial for reducing the vulnerable consumers suffering and enhancing their wellbeing (e.g., OHC).

OHCs are complex networks of members who are often dealing with the emotional and informational demands of illness, where they exchange valuable information and helpful social support (Rubenstein, 2015). These groups are hosted and managed by healthcare professionals, patients or third parties (Johnston *et al.*, 2013). Such interpersonal interactions often bring patients comfort and empathy (Preece and Ghozati, 2001), as they obtain the opportunity to

connect with others facing similar health problems (Zhang, 2014). Furthermore, OHCs provide support that is often unavailable from medical providers, who are unable to spend significant amounts of time with patients (Moumjid *et al.*, 2009). These OHCs could be considered as service mediators or safe places that create value and lead to an improvement in consumers wellbeing (Johns and Davey, 2019; Parkinson *et al.*, 2017).

Online health groups have emerged in the healthcare realm as a result of the need for individuals to know more about the health issues that they or their communities are facing (White and Dorman, 2001). These online communities can not only provide a cost-effective means of support and education to a large number of people but also have the potential to reach groups that are currently unreachable or difficult to reach (White and Dorman, 2001), such as the BOP market. OHCs can thus be of benefit to those with limited offline resources and allow people to fulfill health needs that are not being met offline (Pendry and Salvatore, 2015). Despite their wide adoption, little research is dedicated to these platforms. Recent studies have questioned the role of these platforms as intermediaries and called to explore their contributions to value co-creation for vulnerable consumers. Furthermore, there is a call for better understanding the involvement of these transformative service intermediaries (i.e., OHCs) in service ecosystems and delivery processes to reduce vulnerability (Johns and Davey, 2019).

TSR and Healthcare services in the BOP market

Transformative service research (TSR) is defined as the "integration of consumer and service research that centers on creating uplifting changes and improvements in the wellbeing of individuals (consumers and employees), families, social networks, communities, cities, nations, collectives, and ecosystems" (Anderson et al., 2011, p. 3). This stream highlights the

priority to improve the well-being of humans and connects individual wellbeing to higher-level collective wellbeing showing its critical role for society. Previous literature has shown that individual's wellbeing differs depending on their resource conditions and challenges (Chen *et al.*, 2020; Dodge *et al.*, 2012). Several individuals could be in a situation of diminished or limited resources (e.g., impoverished populations) that constrain the realization of service exchange with important consequences for the wellbeing (Dean and Indrianti, 2020). Therefore, the TSR stream called the service community to focus attention on these vulnerable consumers. Because of the lack of resources, these consumers find themselves in a state of powerlessness where their (healthcare service) consumption goals could be hindered. In addition, some studies have also shown that individual wellbeing can fluctuate where it can deteriorate or improve, and depends on each actor's context (La Placa *et al.*, 2013). This implies that studying vulnerable service consumers (e.g., BOP) in various contexts and ecosystems will be beneficial to the field. Therefore, TSR stream has called for scholarly research focusing on impoverished communities to provide a deeper understanding of these under-researched communities, translate the findings into practice, and help to improve and better serve these markets (Blocker *et al.*, 2013).

Due to poverty, vulnerability is widespread in developed countries but even more widespread in developing countries (Hodgson, 2017). The lack of financial resources lies at the root of many important problems, such as inequality, and having little or no access to basic services, like healthcare. At least half of the world's population lacks access to essential health services (Dugani et al., 2018; Fisk et al., 2018). The need for healthcare is one of the key areas in which the lack of access is especially challenging for BOP markets across the world (Kapoor and Goyal, 2013). Critical shortages of healthcare professionals, insufficient healthcare

infrastructure, high costs of treatments, and delays in care delivery (long waiting times) add to reduced life expectancy and quality of life for those in the BOP market (Ahmed and Shirahada, 2019). In addition, the information asymmetry between patients and healthcare professionals is even higher for BOP consumers in developing countries due to their low health literacy levels (Lako and Rosenau, 2009).

Patients search for information through a variety of sources, such as self-help groups, healthcare professionals, medical journals, or meetings with others with the same diagnosis (Herxheimer et al., 2000). However, such information access can be facilitated and supported by emerging new technologies, such as OHCs. Surprisingly, this trend is particularly popular in low-income countries, where patients are ambitious and proactive in terms of technological opportunism (Srinivasan *et al.*, 2002), and countries with higher technological opportunism are more likely to assimilate and exploit such emerging technology (Dutta and Mia, 2011). Therefore, there is a need to leverage technology for innovative solutions that are affordable, available, and accessible to facilitate access to healthcare in the BOP context (Kapoor and Goyal, 2013). Technology, such as OHCs and health pages, can provide the BOP market with access to affordable healthcare and healthcare education. BOP healthcare consumers often have no direct relationship with a medical service provider; however, they engage with other patients to share their experiences. However, very little is known about such experience sharing and serving BOP markets (Chikweche, 2013).

Patients' perceived value and patients' experience sharing

Achieving patient-centered value is treated as the most important outcome of healthcare services (Porter, 2010). Healthcare communication research indicates that healthcare services

should provide the desired value for patients (Crow *et al.*, 1999), and on the basis of this value, they share their experience with others. Once a patient has received proper information that solves his/her health issues or when he/she has found a good doctor who can solve his/her health issues, he/she tends to share this experience with other patients in a patient-based social media group so that others can obtain a similar value. Users share their experiences in an online community, with the expectation that in the future, they will receive similar information from the group when they need it (Luo *et al.*, 2018), which is linked with social exchange theory. The functionality of the information that helps a user solve a problem is the key feature here. Previous research found that vulnerable healthcare consumers provide informational support to one another online using social media platforms (Gurrieri and Drenten, 2019). In OHCs, consumers are more interested in sharing information when they receive information related to their interests (Zhao *et al.*, 2018). Following this notion, patients' perception of obtaining timely health information (utilitarian value) from a patient-based social media group motivates them to share their own experiences in a health-service context.

Deci and Ryan (2000) found that psychological values, such as enjoyment, are autonomous motivations for consumers as they engage with each other due to enjoyability and meaningfulness. In an online community, users' experience sharing not only helps other users but also generates value for themselves (Chen *et al.*, 2018). In the context of knowledge-sharing behavior, Yu *et al.* (2010) found that the hedonic value derived from helping others leads to sharing behavior. People are willing to help others solve problems because answering questions provides them with feelings of pleasure (Lakhani and Von Hippel, 2003) and thus serves as a reward. Consequently, patients' enjoyment of sharing experiences leads to sharing behavior with other patients in a social media group.

The third value dimension is social value, which is also found to have a direct influence on users' experience sharing. For example, Cyr and Choo (2010) revealed the direct influence of the perceived value of users' social orientation on sharing behavior. In line with the TSR, the majority of online community members share their experience in an online forum because they want to enrich community knowledge without any expectation of personal gain (Wasko and Faraj, 2000). People often visit OHCs to participate in dialogue, to ask questions and to share their experiences with other members to obtain social support (Li *et al.*, 2014). Consequently, patients are expected to share their experiences with other patients in an online community if they are motivated by the social value they obtain from the community.

Rubenstein (2015) found that social support via the sharing of information and emotional experiences is connected with individuals' interactions with one another, and these experience interactions and exchanges create functional, emotional and social values. Members (patients) can influence their (online) communities cognitively, emotionally and socially since they co-create value and information by sharing their experiences (Bolton *et al.*, 2018). It is thus evident that various types of value influence consumers' willingness to experience sharing in social media groups (Zhao *et al.*, 2018). Considering this and the reasoning behind social exchange theory, we propose that all dimensions of healthcare consumers' perceived value influence their experience-sharing behavior in social media groups.

> *H1: Utilitarian value positively influences PES in OHCs.*

> *H2: Hedonic value positively influences PES in OHCs.*

> *H3: Social value positively influences PES in OHCs.*

Patient experience sharing and continuance intention

To date, we still do not fully understand how members evaluate their information sharing experiences and how these evaluations affect their decisions to continue sharing knowledge in online communities (Cheung *et al.*, 2013). When a patient shares information in an online health community, it not only helps other patients with similar health issues but also helps the sharer himself/herself (i.e., retrieving the information from the online group/page for future reference).

Thus, sharing an experience brings about a sense of satisfaction for the patient, which influences his/her long-lasting motivation to participate in the online health community (Shang and Liu, 2015). Therefore, drawing from the above and from social exchange theory, as long as exchanges maximize rewards, behavior will continue. We propose that PES affects patients' intention to continue with the social media group.

H4: PES positively influences patients' continuance intention in OHCs.

Patients' experience sharing and efforts

Engagement with social media is recognized as a motivator of feedback and collaboration among members (Kind and Evans, 2015). In the context of health services, patients share their experiences with other members of OHCs to obtain feedback in different ways (i.e., likes, shares and comments). In addition, patients share their experience, inviting other patients in the social media group to share their own experiences of similar health issues, and aim to find solutions (Shang and Liu, 2015).

Social exchange theory supports users' expectation that they will have equal interaction from others as they had offered to others (Luo *et al.*, 2018), and therefore, once a patient shares his/her experience, other patients in the group are expected to provide their experience or feedback as well. Considering this notion, we hypothesize that PES positively affects patients' efforts in social media groups.

H5: PES positively influences patients' efforts in OHCs.

Mediating role of PES

Information sharing (Kaewchur *et al.*, 2013) and knowledge sharing (Ahmed et al., 2018) often plays a mediating role in different contexts. Gruen *et al.* (2005) found that firms' overall value proposition is related to their customer-to-customer exchange activities. In addition, users' experience encompasses emotional evaluation, as well as the level of engagement with the service provider, and users' knowledge and skill (Chen *et al.*, 2018). As such, the level of interaction with the service provider leads to interaction with other consumers of a service. In a health-service context, interacting with others through social media enables patients to gain confidence through validation from and knowledge of other patients' opinions, motivating them to continue interacting with social media communities (Shang and Liu, 2015). Given that participation through online experience sharing is crucial for the OHC to exist in the first place and that none of the benefits or reciprocal behavior (e.g. effort and intention to continue) would be possible without experience sharing, we propose that PES plays a mediating role in patients' experience sharing model.

H6: PES mediates the relationship between (a) utilitarian value, (b) hedonic value, and (c) social value and continuance intention in OHCs.

H7: PES mediates the relationship between (a) utilitarian value, (b) hedonic value, and (c) social value and patients' efforts in OHCs.

Moderating role of mistrust in PES

Consumers' main reason for visiting online health websites and communities is to search for health information and advice, thereby being reflective of the utilitarian value of healthcare services (Sbaffi and Rowley, 2017). OHCs are consequently an important source of health information and have a significant effect on healthcare decisions and the health outcomes of members (Xiao *et al.*, 2014). Furthermore, research suggests that low health literacy, as is so often the case in access-denied vulnerable groups, such as those of BOP consumers, enhances users' susceptibility to inaccurate or misleading information (Diviani *et al.*, 2015). As a result, Sbaffi and Rowley (2017) argued that research pertaining to the role of trust in online health information needs to develop coherent reviews and informed practices for these vulnerable groups. Alarmingly, a significant amount of medical information available online has not been validated by medical professionals (University of Michigan, 1999). It is thus evident that while online health communities offer high utilitarian value, they are also a high-risk information source.

Trust in the accuracy of information (utilitarian value) is relevant on social networking sites, such as Facebook and Twitter (Gupta and Dhami, 2015). Credibility and trust are consequently imperative for seeking and sharing health information in these communities. Emotional value or social value is less dependent on the credibility of social media information, but from a utilitarian perspective, the effect is significant since the use of inaccurate information impacts patients' health directly (Zhang, 2014). While the quality and accuracy of the information shared on these sites frequently varies, acting on incorrect advice can result in dire

consequences (Fan *et al.*, 2014). Trust is also central to social exchange theory (Lin and Lu, 2011) and has a positive effect on information sharing (Gupta and Dhami, 2015). Studies on interpersonal exchange situations confirm that trust is a precondition for self-disclosure because it reduces the perceived risks involved in revealing private information, such as personal health issues (Metzger, 2004). Trust is thus critical for sustaining patients' continued use and involvement in OHCs (Fan *et al.*, 2014).

While the extant literature on trust has focused on how online trust in general can be established and sustained, the topic of online distrust or mistrust has been neglected (Chang and Fang, 2013). Previous research suggests that mistrust not only lowers satisfaction with healthcare treatments but also leads to less engagement with health services (Renzaho, 2009), especially among vulnerable communities. Furthermore, mistrust has a negative indirect effect on the intention of patients to participate in healthcare programs (Polonsky *et al.*, 2018). Grabner-Kräuter and Bitter (2015) argue that trust shapes interactions and participation in online social networks. Not only does trust shape the interactions in social networks, but it is also a requirement for interaction to take place (Fan and Lederman, 2018). Sillence *et al.* (2006) conjecture that users will engage with health sites that they believe to be trustworthy. Consequently, trust has been found to facilitate information and knowledge sharing online (Gupta and Dhami, 2015). Therefore, we propose that mistrust will negatively moderate the relationship between utilitarian values and PES in social media groups, such as OHCs.

> *H8: Mistrust in the medical information available on social media negatively moderates the relationship between utilitarian value and PES.*

PES model of patients with chronic versus nonchronic diseases.

It is common for patients to use the internet and social media to seek information about their health conditions, especially patients with chronic diseases (Pew Research Center, 2013). Chronic diseases are claimed to be the 'silent epidemic', and they affect an increasing number of people every year (Willis and Royne, 2017). OHCs are powerful tools for addressing some of the difficulties that chronic care patients face since these communities can be used to share experiences, to exchange knowledge and to improve disease-specific expertise (Johnston *et al.*, 2013). Nevertheless, limited research has been done comparing e-healthcare management and use across patients with reported chronic and nonchronic conditions (Sandefer *et al.*, 2018).

Various definitions of chronic diseases exist (Bernell and Howard, 2016), based not only on disease type, such as diabetes, obesity and cancer, but also on the duration of the condition(s). For the purpose of this study, we used the definition of Shiel Jr. (2018), defining a chronic disease as one lasting 3 months or longer. Chronic diseases generally can neither be prevented by vaccinations or cured by medicine, nor do they just disappear (Bernell and Howard, 2016); therefore, such patients use healthcare services for a substantial length of time, reflecting their long-term engagement with a service provider.

Several differences are evident in the way chronic versus nonchronic patients access and use e-health technologies (Pew Research Center, 2013). Patients with a chronic disease reported significantly higher rates of e-information seeking and the use of internet-based health technologies, and they had higher uptake of e-health in general (Madrigal and Escoffery, 2019). Furthermore, commitment (patient effort and continue intention) is a complex construct because an individual's underlying motivation to continue the relationship can vary in an online community (Jin *et al.*, 2010). Inaddition, empirical support indicates that social exchange

theory differs across psychological, social, and demographic factors (Wan and Antonucci, 2016). Consequently, one can hypothesize that the PES in OHCs will differ between the two groups, and as a result, it will be worthwhile to investigate how the PES model in OHCs is different for poor chronic and nonchronic disease healthcare consumers.

Figure 1 reflects the conceptual model based on the discussions in the aforementioned literature review sections.

Place Figure 1 here

Research design

Data collection

The population of this study is BOP healthcare consumers (monthly income approx. BDT 5,000/USD 60 or less) in Bangladesh who use Facebook regularly and are members of at least one patient-initiated Facebook health group/page. The term patients' experience sharing (PES) is used throughout the paper as this is a emerging field in the user experience sharing literature and the term patient is general used in research pertaining to information or knowledge sharing in a healthcare context. However, when referring to patients one needs to take note that for the purpose of the paper it implies a healthcare consumer. The term healthcare consumer is used and implied since a formal diagnosis is not needed for a consumer to classify themselve as a patient to visit and use OHCs. Almost 25% of the population of Bangladesh lives below the national poverty line, representing a significant number of BOP consumers (Asian Development Bank, 2019). BOP consumers of Bangladesh have largely adopted the use of smartphones, social media, and smartphone-supported services (Hasan *et al.*, 2019). In

addition, statistics show that 67.3% of the population has attained internet penetration, where 26.7% of the population use Facebook regularly (Internet world stats, 2021). Internet penetration has occurred mainly because of the availability of inexpensive smartphones (Afp, 2014), where 95.3% of the overall population owns mobile phones (Passport, 2020). Over the years, the preference for Facebook compared to other popular social media platforms (i.e., Instagram and LinkedIn) did not change (NapoleonCat.com, 2019). Therefore, we consider BOP healtcare consumers in Bangladesh as an appropriate research context for this study.

To avoid challenges such as method-based bias, nonrepresentative responses, and inappropriate constructs, using items developed for non-BOP contexts, we followed the suggestions of Ingenbleek *et al.* (2013). We approached a local NGO specializing in healthcare in the BOP market to access the target population. The local NGO agreed to cooperate based on a pro-bono basis where the anonymity of identity of patients as well as the local NGO was assured. Historically, the field workers of the local NGO operating in the capital city of Bangladesh trained the BOP consumers how to use the Facebook groups where the primary objective was to exchange health information. During the pretest, and initial stage of the second phase of data collection, the local NGO helped the data collection team with contacts of the consumers who use at least one Facebook health group.

During the pretest, 6 trained data collectors approached to patients waiting for the healthcare service in the NGO-operated health center. Once they confirmed the selection criteria (BOP consumer status (monthly income approx. BDT 5,000/USD 60 or less), and membership of at least one facebook healthcare group), they requested if the respondents can fill-up the questionnaire to ensure the accuracy of the statements in local language. In this way, 20 responses were collected. Accoringly, the wording of a few items have been improved based

on participants' feedback. In the second stage, the data collection team approached 150 convenience-sampled BOP consumers located at four slums in the capital city. 89 agreed to participate and met the study criteria. To increase the sample size, the data collectors used the snowball sampling method, in which participants in the survey were requested to recommend their friends and family members who were also part of OHCs (Malhotra, 2008).

In total 658 responses were collected, with an average respondent age of 30 years. In terms of gender, 60.3% of respondents were male, 39.7% of respondents were female. 41% of respondents had a primary school certificate, 46.4% of respondents had educational qualifications higher than primary school degree where the majority did not finish secondary school level education, 7.1% of respondents had a vocational degree, and 5% of respondents had no formal education at all. The government initiative of educational stipend targeting the poor children since early 2000 had a positive impact on the urban slum education reflected by 97% primary enrolment and 109% gross enrolment rate (BANBEIS and Bangladesh Ministry of Education, 2015). Therefore, the educational background of the urban slum population is considerably higher than the overall BOP market in the country. Furthermore, the demographic characteristics of the sample are similar to recent studies in a similar context (Akareem *et al.*, 2020; Hasan *et al.*, 2019). Out of 658 responses, 310 respondents were healthcare consumers with nonchronic disease, and 348 with chronic diseases.

Validity of measurements

All of the measurement instruments were adopted and refined (during the pretest) from previous studies. Confirmatory factor analysis (CFA), following the guidelines of Anderson and Gerbing (1988), was conducted. Table 1 shows the factor loadings, along with the sources

from which the scale items were adopted and refined. The model fitness indices ($\chi2$ = 511.014 [df= 303, p=0.00], GFI=0.945, AGFI=0.931, TLI=0.987, CFI=0.989, IFI=0.989, RSMEA=0.032, CMIN/DF=1.687, SRMR=0.033) are all acceptable, considering the sample size and complexity of the model (Bagozzi and Yi, 1988; Bearden *et al.*, 1982).

We also checked the construct reliability (CR>0.70) and average variance extracted (AVE>0.50), which met the standard cutoff point (Bagozzi and Yi, 1988). Although the factor loading of one of the items of continuance intention was below 0.060, all the other items scored substantially higher. It does not create a problem for the practical and statistical relevance of our results as the loadings are higher than 0.50 in a sample of 658 (Hair *et al.*, 2019). Therefore, the model achieved convergent validity. In addition, the discriminant validity test was conducted using the guidelines of Fornell and Larcker (1981). The correlation matrix is presented in Table 2, which shows that the AVE of each factor is higher than the shared variance of other factors, thereby indicating that discriminant validity has been achieved.

Place Table 1 here

Place Table 2 here

Common method bias test

We dealt with the concern of common method bias by following the procedural remedies suggested by MacKenzie and Podsakoff (2012), in which we translated the questions into the local language and used simple terms that BOP consumers can understand.

Following Podsakoff *et al.'s* (2012) statistical remedies, we tested the model by creating a common latent factor (CLF), where the model fit remained similar before and after, including the CLF (model without a common latent factor: $\chi 2/d.f. = 1.687$, model with a common latent factor: $\chi 2/DF = 1.616$) (Podsakoff *et al.*, 2003). Finally, we added a theoretically unrelated three-item variable, "societal perception of offline advertisements." This was added as a marker variable to test the correlation coefficients among the constructs following the instructions of Lindell and Whitney (2001). These correlations retained their statistical significance, thereby indicating that there was little or no common method bias in the sample.

Invariance Test

We followed the guidelines of Steenkamp and Baumgartner (1998) for conducting a two-stage invariance test on both the chronic and nonchronic disease consumer groups. In the first step, we tested the configural invariance to check item equivalency. The chi-square value and individual model fit indices were found to be satisfactory for both groups. In the second stage of the invariance test, we tested the metric invariance (see Table 4). The $\chi 2$ difference of 35.76 (df=27, p>0.05) was found to be significant for the fully restricted model. Therefore, full metric invariance was achieved.

Hypothesis testing

To test our model*,* we conducted structural equation modeling (SEM) using AMOS 25. The first model included all responses, which were treated as a single group, whereas in the second model, we divided all the responses into two groups based on the type of health condition: chronic or nonchronic disease. Although the chi-square differences for both models were significant [$\Delta\chi 2/df(all) = 1.831$ (p < 0.01); $\Delta\chi 2/df$ (chronic Vs nonchronic) = 1.531 (p < 0.01)],

other fit indices for both models were found to be acceptable (Hair *et al.*, 2010). We also controlled the demographic variables: gender and education in the model. For testing the effects of control variables, the prominent category was treated as a dummy variable. For example, respondents having educational background higher than a primary school degree was treated as the prominent category during the dummy variable creation. None of the demographic variables had any significant influence on patients' experience sharing, patient efforts, and continuance intention.

The results of hypothesis testing are presented in Table 3. They show that the utilitarian value [β(all)=0.565, p<0.01; β(nonchronic)=0.559, p<0.01; β(chronic)=0.547, p<0.01], hedonic value [β(all)=0.280, p<0.01; β(nonchronic)=0.196, p<0.01; β(chronic)=0.374, p<0.01] and social value [β(all)=0.335, p<0.01; β(nonchronic)=0.473, p<0.01; β(chronic)=0.235, p<0.01] significantly influenced PES behavior, supporting H1, H2 and H3, respectively.

The relationship between utilitarian value and PES is similarly strong for both patients with chronic and those with nonchronic diseases. In contrast, the relationship between hedonic value and PES for patients with chronic disease was stronger than that for patients in the nonchronic group, whereas nonchronic patients' perception of social value strongly influenced their experience-sharing behavior compared with the chronic disease group. Supporting H5, a significant relationship between *PES* and *patients' efforts* was observed in both the chronic and nonchronic patient groups [β(all)=0.251, p<0.01; β(nonchronic)=0.242, p<0.01; β(chronic)=0.261, p<0.01]. However, the significant influence of PES on continuance intention was only observed among patients with chronic diseases [β(chronic)=0.241, p<0.01], and these findings, therefore, partially support H4.

Place table 3 here

The results of the indirect effects show that utilitarian value, hedonic value and social value have significant indirect effects on patients' continuance intention when we combine all patients' results. However, such relationships between value dimensions and continuance intention were only observed among patients with chronic diseases, which partially supports H6.

Supporting H7, utilitarian value [β(all)=0.142, p<0.01; β(nonchronic)=0.135, p<0.01; β(chronic)=0.143, p<0.01], hedonic value [β(all)=0.070, p<0.01; β(nonchronic)=0.047, p<0.01; β(chronic)=0.098, p<0.01], and social value [β(all)=0.084, p<0.01; β(nonchronic)=0.114, p<0.01; β(chronic)=0.061, p<0.01]) have significant indirect effects on consumers' efforts in both the chronic and nonchronic groups. The results also show that the indirect effects of utilitarian value on patients' efforts were stronger than those of the hedonic and social value dimensions.

Supporting H8, the moderation test results show a significant negative moderation effect of mistrust for both chronic and nonchronic groups [β(all)=-0.101, p<0.01; β(nonchronic)=-0.131, p<0.01; β(chronic)=-0.073, p<0.01]. Table 3 shows that mistrust negatively influences consumers' experience sharing. It also shows that the presence of mistrust in medical information available in social media significantly deteriorates the relationship between utilitarian value and consumers' experience sharing in both chronic and non-chronic health conditions.

Discussion

The present study developed and tested a model of PES in peer-to peer OHCs in the BOP context. In that sense, one unique aspect of this study is the application of the social exchange theory in explaining how PES in OHC benefits participants, and how those benefits are reciprocated to the OHC in the form of continue intention and effort. We investigated the model for both chronic and nonchronic disease patients. By doing so, this study makes several contributions to theory in the service marketing and TSR streams of research.

First, our findings show that utilitarian, hedonic and social value significantly influence PES behavior. Among these three different value dimensions, utilitarian value is found to be the strongest motivator for both the chronic and nonchronic groups. It is evident that solving health issues and improving wellbeing quickly and effectively encourage BOP healthcare consumers to share experiences and suggestions and to ask for others' healthcare experiences. Therefore, regardless of the nature of the illness, all patients are more concerned with solving their own and other patients' health issues, than they are with any of the other drivers investigated. The other two value dimensions (hedonic and social value) play the role of secondary motivators to share their personal experience, regardless of the nature of their health issue (chronic vs nonchronic). However, the influence of social value on PES behaviors was found to be stronger for nonchronic disease patients, while the influence of hedonic value was stronger for chronic patients. Patients with chronic disease try to help others with similar health issues, as it makes them feel that they are contributing to improving the lives of one another (Jung *et al.*, 2020).

Patients' experience sharing directly influences their participation (Shang and Liu, 2015), as evident in patients' effort and continuing to participate in OHCs. The increase in participation (patients' efforts) by contributing comments and reviews, offering recommendations, or providing constructive feedback as a result of sharing an experience is in line with social exchange theory (Kind and Evans, 2015). In online communities, patients act as 'experts' by providing support and answering questions, as well as making recommendations based on their healthcare service experiences, also known as "expertise by experience" (Bradley, 2015). Sharing experiences amplifies patients' social connections and emotions (Jolly *et al.*, 2019), which encourage patient effort, as shown by the increase in contributions, comments, reviews or ratings. Although PES behaviors influence both chronic and nonchronic patients' efforts in OHCs, the relationship between PES and continuance intention is found only among patients with chronic diseases. The explanation can be the nature of the condition, as chronic health issues require long-term treatment, which is why patients with such conditions tend to continue with patient-based online healthcare groups compared to patients with nonchronic health issues.

We also tested for the indirect effects of utilitarian, hedonic and social values on PES behaviors for both groups and found that patient effort is affected by all three value dimensions via PES behaviors, regardless of patients' disease nature. However, the indirect effects of the value dimensions on continuance intention are observed among only the chronic group. It seems that even if nonchronic healthcare consumers receive value from sharing their experiences, they will not necessarily continue to share their experiences in OHCs. Since these patients do not have a chronic disease requiring long-term medical treatment, they will stop visiting OHCs as soon as their health issue is resolved or their wellbeing is improved; consequently, they have no need to continue to visit and share experience in these communities. The reverse is true for

patients with chronic diseases, as they generally neither can be cured by medicine, nor do the illness just disappear (Bernell and Howard, 2016). Therefore, chronic patients will continue to use OHCs, as well as continue sharing and recommending, reflecting long-term engagement with OHCs.

Second, the results confirm that mistrust negatively moderates the relationship between utilitarian value and PES behavior. This is in line with previous research suggesting that especially among vulnerable communities, mistrust results in less participation and engagement in health services (Renzaho, 2009). The findings confirm that if members of OHCs believe that medical information on social media is deceptive, then it hinders the sharing of their experiences or the requesting of feedback from others on OHCs. The trust issue in online health communities is important due to not only the privacy of personal information but also the variability of the quality and accuracy of the information shared on online platforms. Therefore, acting on incorrect advice can result in dire consequences (Fan *et al.*, 2014), even more so for BOP consumers with low health literacy levels (Diviani *et al.*, 2015). This study contributes not only to the neglected area of mistrust (Chang and Fang, 2013) in general but also to the limited research pertaining to the role of trust in an online health context (Sbaffi and Rowley, 2017).

Third, this study contributes to the scarce research on the BOP market in emerging market countries. In addition to being conducted in an emerging market country, this research focuses on patients with very low incomes and living standards that are below the poverty line. Accordingly, despite the urgent need to create knowledge about this important proportion of the world population, little is known about service delivery to these markets (Fisk *et al.*, 2018; Sharma *et al.*, 2017). Our study is one attempt to start filling this void and is in line with the

prediction that marketing research focusing on the BOP should become one of the key focus areas in service research in the future (Koku, 2019).

This study also responds to the calls of TSR for scholarly research into impoverished communities to provide a deeper understanding of these under-researched communities, to translate the findings into practice, and to help improve and better serve these markets (Blocker *et al.*, 2013). This study responds to Blocker *et al's* (2013) by (a) providing a solution to *transform the lives of the poor* by suggesting OHCs as cost-effective options for healthcare advice and support; (b) harnessing the "*power within lived experience of poverty*" by suggesting and testing the PES framework, enabling poor patients to co-create by exchanging their health experiences to the benefit of the larger community, and lastly (c) providing an alternative yet complementary online platform addressing the *deficient healthcare* challenges the BOP consumers often face. Thus, joining the movement within the service research community that aspires to support impoverished communities across the world to achieve better service, as suggested by Fisk *et al.*(2016), especially from each other and from their communities.

Poverty is the complete 'lack of the means' necessary to 'access products and services' to meet 'basic needs'. Our research is thus also aligned with the first of the 17 Sustainable Development Goals coined by the United Nations in 2015 as a drive to "end poverty in all its forms everywhere" (Cuaresma *et al.*, 2018), not by addressing the 'lack of means' by bringing financial reprieve but rather a solution to meet basic needs by improving and expanding 'access' to healthcare. OHC is a valuable resource to facilitate access to healthcare that complements the formal healthcare systems provided by governments and the informal support already available offline by family members or communities. Therefore, this study helps by shedding light on the role played by OHCs in the healthcare service ecosystem in impoverished

contexts. Due to the immense strain of delivering healthcare to poor patients (for example, enormous demand and limited supply and resources), service providers (such as healthcare practitioners and governments) will appreciate the opportunity to have BOP consumers participate in their own healthcare and in that of the community.

In conjunction with the informal social support from families and other social support systems and more formal support provided by healthcare practitioners, OHC provide a platform that enlarges the impact and benefits of 'social exchange' from a mere one-to-one exchange, to a one-to-many. OHC is thus an example of social exchange theory where the individual behavior involved in the process of resources exchange between two parties (experience-sharing) leads to benefits for the community at large. Therefore, it could potentially multiply the benefits of social exchange, especially in improvised communities.

The participation of vulnerable customers in OHCs impacts not only the individual's wellbeing (Sharma *et al.*, 2017) but also that of the community at large (Hurley *et al.*, 2018). This mutual value-creation perspective is central to the TSR stream of the literature (Kuppelwieser and Finsterwalder, 2016). The research thus contributes to this important issue of health experience sharing that is expected to lead to transformative outcomes for a specific and large vulnerable population. Consequently, this study contributes to the TSR by enhancing our understanding of how to improve the wellbeing of vulnerable consumers (i.e., BOP healthcare consumers) (Anderson *et al.*, 2013) and proposing OHCs as a means of reducing inequalities and facilitating access to such basic services in emerging market countries (Fisk *et al.*, 2019). Finally, this paper contributes to the limited research comparing e-healthcare management and use across patients with reported chronic and nonchronic conditions (Sandefer *et al.*, 2018).

Managerial implications

Our findings indicate that OHCs can provide innovative technological solutions to improve the accessibility to healthcare services of almost half of the world's population, which is suffering from limited or unfair access to these vital services (Dugani *et al.*, 2018). Given the high penetration rate of information technology and the wide adoption of social media by poor people (Hasan *et al.*, 2019), these platforms can be seen as a way to democratize access to healthcare and to decrease some of the related costs. As a result, our findings can help healthcare providers and policy makers identify and facilitate the collective power and voice of BOP consumers, fostering ways in which disadvantaged healthcare consumers can meaningfully engage with one another, as well as with their healthcare providers, by sharing their health experiences. OHCs are not only a source of helpful information for patients to assist in managing and solving their health issues and improving their wellbeing but are also crucial means to deliver emotional and social support, which is so often lacking in more traditional healthcare programs. In addition, many healthcare systems in emerging market countries cannot afford social support because of their limited resources. Most of these systems are mainly focused on the essence of medicine, which is the cure, and they are unable to deliver social support services, which are desperately needed, especially in the management of chronic diseases (Kangovi, 2019).

OHCs have the potential to transform healthcare and has several implications for governments, healthcare professionals and healthcare consumers. Firstly, impoverished communities must be educated on the availability of existing OHC. Government initiatives to start and moderate OHCs are needed to further expand the reach and impact of these platforms. Healthcare professional could be encouraged to join and partake in OHCs and inform their patients about the availability of such communities and use these communities as complementary to the more

traditional healthcare options. Not only can healthcare professionals such as doctors and nurses provide expert opinions and support on these platforms by expanding their reach, but also can gain valuable insight into the experiences of impoverished healthcare consumers. In general, OHCs lend itself towards tools for patient care, patient education, and public health programs as a means of relieving the burden on healthcare systems in times of increasing healthcare costs, especially in BOP markets.

However, despite the importance of OHCs, it is important that health professionals, to limit potential risks, validate the information provided on these platforms. For example, the risks related to self-medication, fake profiles, the quality and veracity of the content, and the risk in which these platforms become places for commercial recommendations of some doctors. It is vital to ensure that the information provided on these platforms is reliable and trustworthy and that BOP consumers can utilize these platforms effectively. OHCs can be beneficial not only for BOP healthcare consumers but also for health policy makers who can use these platforms for health education purposes.

This study focuses on access to healthcare for a highly impoverished population and aims to provide an understanding of how online healthcare communities (OHC), as transformative service mediator, could create value to vulnerable consumers in the base-of-the-pyramid (BOP) context.

Firstly, with extreme differences in standards of living and in cultural, political, and socioeconomic systems across developed and emerging countries. Many disciplines have called for the contextualization of research and further exploration of these countries. For instance, strategic management considers that formal and informal institutions such as

regulations, culture, and norms influence how customers and firms behave. It has been suggested that developing markets can create an environment fundamentally different from developed economies and such, require an in-depth analysis and investigation.

Secondly, at a societal level, our findings reveal how the use of online support groups (peer to peer) could enable marginalized population to overcome this issue of limited access to services that are supposed or used to be provided by governments. Therefore, an improved understanding of the manner in which impoverished consumers use, experience these platforms will provide insights into how these platforms could be optimized to create safe and trustful third places for the health consumers. The study helps to understand the factors that could maintain and encourage motivation of users of these OHCs. We highlighted the key information in order to better improve OHCs effectiveness, within the whole healthcare ecosystem.

Finally, it is expected that OHCs will play a crucial role in the future for social support and prevention not only in BOP contexts, but also in developed countries. A recent report by OECD (European commission) states the big concern regarding shortages of medical staff arising from population ageing and the ageing of the medical workforce (OECD Publishing, 2020). Furthermore, the significant differences in the density of medical staff between urban and rural regions remains a challenge. Proper access to medical services could be seriously constrained by insufficient number of healthcare professionals and the disparity in terms of geographic distribution to serve patients in both rural and urban regions. Therefore, OHCs and other technology mediated services will play an important role as service mediators (Johns & Davey, 2019) and offer improved accessibility to unserved, underserved or marginalized consumers (Fisk et al., 2019).

Future research and limitations

While our research contributes to understanding OHCs in emerging market countries and their value creation for disadvantaged and poor consumers, limitations such as nonprobability sampling methods and the limited number of variables investigated necessitate further research to truly understand the phenomenon. Furthermore, we draw the attention of researchers to the challenges of conducting research in the BOP market, which may require more creativity in the research design and methods used (Ingenbleek et al., 2013). Conditions of low human development (e.g., low formal education, literacy, language barriers), cultural or political conditions (gender bias, in some countries only women could interview women) in BOP markets present researchers with complex conceptual and methodological challenges. To advance further research on service in the BOP context, service researchers are invited to think of different approaches, methods of data collection (e.g., collaboration with locals, NGOs) that are applicable to the very different contexts found in emerging market countries. We also encourage collaboration with local researchers in the studied nations for a higher impact. In addition, ours study hypothesized different value dimensions as the antecendent of PES behavior, patients' effort, and continuance intention for the OHCs. Future research can explore the effect of the dependent variables on the value dimensions to see if the overall value perceptions improve due to sharing experiences on OHCs. We focused on the level of engagement by including as dependent variables: the patient's effort on the platform and future continuance intention. We proposed that the PES model, specifically the perception of value dimensions and experience sharing behavior, is inherent with both physical and psychological wellbeing. Further research should consider measuring the effects of these OHCs on the wellbeing of their users. It will be interesting to see if someone else (e.g., family members or

friends) helps a BOP consumer to manage OHCs interaction and how that helps to manage relationships with the formal healthcare service providers.

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