Social value creation through digital activism in an online health community

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Social Value Creation through Digital Activism in an Online Health Community

Abstract

The study explores how online health communities produce social value by uniting individuals under a common purpose, to advance healthcare in post-conflict states. We selected MedicineAfrica—a digital platform known for creating social value by providing medical education in regions with under-resourced healthcare systems—and drew on multiple data collection methods. We found that it is through a unique form of digital health activism that social value is created in this context. Drawing on a sociological understanding of digital health activism, we make the following contributions: First, we identify three types of non-economic, social value: cognitive, professional and epistemic. Second, we indicate that social value creation is enabled by three emergent forms of digital health activism (i.e., philanthropic, moral and reciprocal activity). Third, we elicit three enabling mechanisms explaining how these forms of activism are technically and socially afforded through the platform's connective capacity and emerging collective practices in tandem with its members' growing commitment. Our paper contributes to the growing IS literature on digital activism by offering a framework that elucidates how digital health activism relates to social value creation. The paper provides practical implications as to how platforms can enable sustainable online (health) communities.

Keywords

Social value, digital health activism, online health communities, digital platforms, digital health

1. Introduction

The study explores *how* social value—a non-economic type of value exceeding individual interests and impacting on a wider community—is created within the context of online health communities (OHCs). Our interest in this topic emanates from a wider emphasis on digital health by both policy makers (e.g., Department of Health

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& National Information Board, 2014) and researchers who have identified it as significant for both the western and the developing contexts (Hansen et al., 2019; Mettler, 2018; Tim et al., 2018). OHCs and digital health platforms sit within this area of interest and there is evidence that they have the potential to contribute toward value creation (Barrett et al., 2016) and social value creation in particular (Goh et al., 2016). Following the aforementioned authors, we problematize mainstream research on online communities and OHCs largely focusing on a narrow and mainly economic understanding of value—usually translated as cost efficiencies and profits—embracing a broader conceptualization of value as being non-profit in nature and as having societal implications for the community and wider society. Existing scholarly research has indicated that OHCs can reduce health capability gaps, build capacity and subsequently generate social value for the participants involved and their regions (Goh et al., 2016). Despite this recognition, however, there is no literature explicitly explaining how social value is generated in OHCs. In this paper, we aim to extend research in the area of social value creation in OHCs by asking: What types of social value may emerge in OHCs and what is the process that leads to social value creation? Further to its academic motivation, our study is also guided by a need to better understand the benefits of OHCs as well as the factors that contribute to their sustainability over time.

We study MedicineAfrica—a digital platform developed with the aim of supporting post-conflict states, seen as fragile environments undergoing transition and suffering from weak capacity to carry out basic functions (Frère & Wilen, 2015), through global, digitally enabled health partnerships in the sharing of health education and research (Dawood, 2014; Keynejad et al., 2016; Keynejad, 2016). MedicineAfrica hosts a unique type of an OHC; contrary to other platforms that typically have a profit orientation (Barrett et al., 2016; Kallinikos & Tempini, 2014; Tempini, 2015) and focus on patient interaction (e.g., Bernardi, 2016), MedicineAfrica is a non-profit organization aiming to improve healthcare delivery and care in post-conflict states through delivery of online healthcare education and for this purpose involves healthcare professionals. Such online initiatives offer the opportunity for social value creation through knowledge sharing and learning among the dispersed partners that contributes to

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improved clinical practice and healthcare delivery. Despite their many benefits, OHCs, like other types of online communities, experience high risks of failure especially if they fail to attract and retain members (Ma & Agarwal, 2007). Similarly, MedicineAfrica depends on the voluntary involvement and participation of various individuals such as UK-based medical experts who give freely their time to support and educate healthcare students and workers in post-conflict states.

MedicineAfrica is an appropriate context for our study that aims to explore *how* social value emerges in OHCs. We contribute to the limited studies in this area by eliciting the concept of digital health activism, an emergent concept in our analysis, which was found to play an enabling role in the generation of social value. Drawing on a sociological understanding of health activism (Brown et al., 2004; Caron-Flinterman et al., 2005; Epstein, 1995; Laverack, 2012; Saukko, 2018) and on recent calls to reimagine activism through the prism of digital technology (Bennett & Segerberg, 2012; George & Leidner, 2019; Petersen et al., 2018; Stewart & Schultze, 2019; Vicari & Cappai, 2016), we define digital health activism as a collective action and initiative that emerges in OHCs, intended to challenge and change existing health status quo by building capacity through knowledge sharing and dissemination. Our study is novel in that it explains how digital activism plays out in healthcare settings and how it can contribute to the creation of social value. The paper contributes to the IS literature in three ways: First it expands existing literature on the potential of OHCs to create (non-economic) forms of social value including cognitive, epistemic and professional value. In this specific context, cognitive value is inextricably related to practice, and concerns the transfer of knowledge that is intended to build capacity, to inform medical practice as well as enhance patient outcomes. Professional value is related to the opportunities and possibilities the OHC opens up for healthcare workers to develop their skills continuously. Epistemic value relates to the generation and enrichment of a knowledge base of a specific discipline; in our case, healthcare and medicine. Compared to cognitive value, which is concerned with 'know-how' and is practice-oriented, epistemic value is concerned with 'know-what' and the advancement and validation of episteme, independently of its immediate applicability. Second, the study indicates that social value is developed as individuals get involved in philanthropic,

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reciprocal and moral activity that enables them collectively to improve the healthcare of the wider community; what we define as digital health activism. Third, our paper also contributes to recent IS calls to explore digital activism (George & Leidner, 2019; Petersen et al., 2018; Stewart & Schultze, 2019; Vicari & Cappai, 2016) by identifying how connectivity and collective practices act as mechanisms enabling social value creation (Bennett & Segerberg, 2012). Current IS studies (e.g., George & Leidner, 2019) have mostly indicated that the connective affordances of technology work toward individualized forms of activism that lack any collective form. We delineate specific technical capabilities (i.e., connective capacity of the platform and emergent collective practices) in tandem with members' growing commitment over time that contribute to digital health activism and social value creation.

In what follows, we start with a literature review on digital platforms and the emergence of digital activism with a specific focus on healthcare, followed by a review of social value creation in the OHC context. We then present our research site, MedicineAfrica, alongside our research design and methods. We subsequently present our analysis followed by a discussion on our theoretical contributions and presentation of our theoretical framework (Figure 1). Discussed last are the study's limitations, future research directions and practical implications.

2. Digital platforms and the emergence of digital activism

Recently, there has been a rise in scholarly research—from across a range of disciplines—on the emergence of digital health platforms, e.g., Care Opinion, 23andMe, NHS Choices (Lupton, 2014; Saukko, 2018; Ziewitz, 2017). Digital health platforms vary in terms of their purpose, funding and type of user involvement. For instance, digital platforms may be of public nature (e.g., NHS Choices); they may have a for-profit orientation (e.g., PatientsLikeMe); or they may be social enterprises (e.g., Care Opinion). A common feature of health platforms is their representation as intermediaries that bring together in the form of a community a range of users including healthcare professionals and providers, patients or carers, scientists,

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pharmaceutical companies, platform owners and others (Barrett et al., 2016). Online interactions concern the exchange and production of information around diagnoses, symptoms, treatments, side effects and experiences of particular conditions (Saukko, 2018) between patients and patients-doctors, and also amongst healthcare professionals, as our study here indicates. The richness of information that is being exchanged as well as its emotional essence renders those platforms sites of consolation and socialization. Further, most digital health platforms are underpinned by the assumption that information sharing contributes to positive outcomes be better health, more empowered patients and enhanced medical innovation and expertise (John, 2013).

In recent years, IS scholars have started exploring the role of the Internet and social media in facilitating or generating—and in both cases transforming—digital activism (Bennett & Segerberg, 2012; George & Leidner, 2019; Vegh, 2003). Typically, digital activism is directed toward raising public awareness and more importantly mobilizing individuals online to engage with activities they would not otherwise do in the offline world either because of inability (for instance, due to disability) or reluctance (for instance to put effort or other resources in support of a collective action) (George & Leidner, 2019; Vegh, 2003). George and Leidner (2019) identify three categories of digital activism depending on the type of activity undertaken (from passive to active) and the level of commitment to a purpose (from individual to collective): (a) digital spectators are individuals or groups who are involved in clicktivism ('liking' or 'following'); metavoicing (sharing, retweeting etc.); and assertion (producing content in social media); (b) digital transitional activists are involved in political consumerism, e-funding, digital petitions etc.; and (c) 'digital gladiatorial activists' are involved in data leaks; hacktivism or data activism. This meta-analysis offers a broad spectrum within which digital activism can be positioned. Essentially, however, it makes two assumptions: First, it sees activism as a technological product because it places the technology at the heart of individuals' mobilization rather than a potentially shared social or political purpose that may trigger actions (Bennett & Segerberg, 2012). Connectivity is therefore prioritized over the notion of the collective. Second, it takes digital activism to be a temporal product (often also instantaneous when 'liking'),

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ephemeral and fluid due to a lack of individuals' long-term commitment to a certain purpose (Stewart & Schultze, 2019).

In healthcare, activism has typically and historically taken a different shape (Saukko, 2018). Typically, health activism has come to refer to groups that construct an identity around a specific disease and take action on the basis of this identity (Epstein, 1995; Vicari & Cappai, 2016). Current research identifies the main purposes that bring activists together, namely health equality and equity particularly in relation to access to healthcare services, generation of medical evidence, promotion of patient rights, improvement of patient lives and experiences and mobilization of patients and society around specific health conditions, such as HIV/AIDS or breast cancer (Brown et al., 2004; del Castillo et al., 2017). Health activists are also orientated toward challenging and changing medical authority, health policy and medical science (Brown et al., 2004; Zoller, 2005), often by identifying gaps in clinical practice and collecting evidence through experiential knowledge and lay expertise (Caron-Flinterman et al., 2005; Laverack, 2012). Health activism has been portrayed as a collective action, often led by patient organizations (Landzelius, 2006), leaders and spokespersons (del Castillo et al., 2016, 2017) in response to restructuring of national health services, a general distrust of the public in clinical research and clinicians, the popularity of social movements, and the emergence of citizen science (Landzelius, 2006).

Recent studies call for new ways of examining health activism given the unique potential digital technology offers for organizing collective action online (Petersen et al., 2018; Vicari & Cappai, 2016). Researchers present how digital media allow the production of crowdsourced health knowledge in a bottom-up manner (for instance, by sharing experiences of a specific condition) that is of interest not only to individuals with a specific condition, but also to the wider public. Similarly, Akrich (2010) shows how online groups turn their experiential knowledge into epistemic knowledge—by articulating it using medical terminology—and how the product of such knowledge impacts on the outside world, for instance by shaping policy. Further, Radin (2006) has shown how activities that take place on platforms—such as the provision of peer support, the sharing of information, the response to queries and the participation in

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projects—constitute forms of activism that ‘plant the seeds of revolution’ (p. 600) despite their not being inherently political.

Some scholars have questioned the altruistic character of digital health platforms. Lupton (2014) argues that these platforms constitute a digital economy intended to capitalize on and exploit the information being shared online. Exploitation entails, for example, online advertising and selling of individuals’ big health data to third parties (Saukko, 2018). Similarly, in their study of PatientsLikeMe, Kallinikos and Tempini (2014) and Tempini (2015) have explored the role of platforms and their architecture in collecting patient-reported health data in large volumes and turning them into data that, when analysed, can be used for the production of medical knowledge (e.g., side effects of medication for chronic diseases) and for commercial purposes (e.g., to enhance pharmaceutical products). This then demonstrates the plurality of purposes, aims and value that OHCs generate. In our study, we expand research on digital health activism by examining how health professionals use an online platform and by doing so, contribute not just toward the transformation of the healthcare status-quo, but also to social value creation both for themselves and for the disadvantaged communities.

Drawing on the literature on health activism outlined above and in light of recent calls to reimagine activism through the prism of digital technology (George & Leidner, 2019; Vicari & Cappai, 2016), we frame digital health activism as being an online collective activity that is orientated toward changing a disadvantaged health status quo by improving local health practice and delivery through the dissemination of actionable health knowledge and expertise. Though earlier literature has looked at patients as digital activists, our study explains how health professionals become activists through platforms. Table 1 below summarizes the main characteristics of digital health activism drawn from the literature.

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Digital health activism	
Nature	<i>Collective</i> —taking the form of an OHC; and <i>connective</i> —emerging within an online space, such as a platform, social medium etc. (George & Leidner, 2019).
Purpose	Challenging and changing an existing disadvantaged health status quo.
Means	Online health knowledge dissemination and production afforded by the platform.
Aims	Promoting and establishing social value including equity, inclusion and fairness.

Table 1. Digital health activism

3. Social Value Creation in OHCs

Some research exists on the study of value creation within the online context including different types of value that may be created within this context (Barrett et al., 2016; Constantinides et al., 2018). Zhao et al. (2015) who studied drivers for patient value co-creation in OHCs have found that social identity is a determinant of knowledge contribution and hence value creation in OHC and this is strengthened by interactions with other members and shared resources.

Barrett et al. (2016) argue that health platforms create different kinds of value as users interact with others online as well as with the materiality of the platform. These are financial, service, ethical, epistemic, reputational and platform value. Although ethical and epistemic types of value—defined here as the intention to help other patients and to share health information—have a social character, in the aforementioned paper they appear to be a side-effect of an enterprising OHC. This then indicates that the creation of social value by an OHC does not constitute a necessary condition for activism but other features also need to be in place, including their nature, purpose, means and aims. Their study also explores the mechanisms and strategies through

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which value is created over time namely through users' rating of healthcare providers, connection with others, tracking of patient feedback and outcomes and finally through user profiling. Their study indicates that different kinds of value are created over time for different stakeholders (platform owners, patients, medical providers, pharmaceuticals, clinicians, charities etc.) as the platform gets configured and re-configured. Our study intends to contribute to this line of enquiry by exploring how digital health platforms create social value. We further aim to illustrate that these platforms generate activist conduct (Akrich, 2010) by building capacity when there is limited or none. In this way, we aim to further our understanding of the potential activist role platforms can play in digital healthcare.

Further to economic values, Goh et al. (2016) examined whether OHCs can help participants in creating social value by alleviating regional disparities, which, as they argue, may be attributable to unequal access to health resources including knowledge and expertise. As they note, prior research has paid attention to economic value creation and sought to examine how firms benefit from OHCs. Customer engagement and increased sales for example has been seen as a positive outcome contributing to value creation. However, economic return is only one dimension of value creation. OHCs are known for their knowledge exchange and creation and therefore can exert a positive effect on rural patients by reducing rural-urban disparity. In this way they subsequently contribute to value creation that is more social orientated than economic. Situated in the above debates, our study extends research on how OHCs create social value. It goes beyond the rural-urban context, which was studied by Goh et al. (2016), to include developed and post-conflict states, in particular fragile, post-war regions. Extending existing accounts, our study also goes beyond confirming the potential for social value creation by revealing specific mechanisms that enable social value creation through digital health activism, as we explain later.

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4. Research Site: MedicineAfrica

MedicineAfrica was set up in 2008 as a partnership between the former British protectorate of Somaliland, the King's Health and the Tropical Health and Education Trust (THET) (Thornton, 2010) to provide a digital platform for medical education to medical students and junior doctors in Somaliland. Since then, similar initiatives have been set up on the platform with Ghana, Palestine and Sierra Leone (Woodward et al., 2014) and more recently with Iraq, leading to the emergence of an OHC that we focus on in this study. Health services in these states are characterized by significant shortages of medical specialists and of medical teaching faculty, lack of essential basic medications and of infrastructure (clinical tools and equipment), lack of doctors in local health centres, low financial resources, increased mortality rates as a result of self-treatment and unreliable clinical protocols (King's Health Partners, n.d.-b, n.d.-c, n.d.-a). It is financially supported by donations from the THET, MedicineAfrica and other healthcare charities (Ali et al., 2014; Dawood, 2014) and at the time of our study it had nearly 1000 users.

The purpose of MedicineAfrica is to build capacity in regions with weak health systems through the delivery of teaching, training, supervision and mentoring, whilst also intending to contribute to the global health agenda through knowledge transfer between countries. A core pedagogical motivator of the platform is that '*...online teaching directly meets the deficiency of locally available interactive teaching*' (King's Health Partners, n.d.-c, p. 2).

MedicineAfrica was intentionally developed at low bandwidth to enable connectivity and interactivity with the dispersed members in the post-conflict states in which it is available (Hendy, 2015). Weekly online tutorials are text-based, yet interactive, as they give learners the opportunity to interact with one another synchronously and to ask questions during the online teaching sessions. They are often coupled with practical sessions, delivered by locally based instructors. Users participate in the platform through the use of desktop computers, laptops, tablets and smartphones (King's Health Partners, n.d.-c). As one of the participants in the study described it:

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“A course can be organized by teachers and then the case can be uploaded by either the learners or by the teachers themselves and then there is an online appointment where the... instructor and the learners come together and present their cases. Usually the instructor leads in a formal classroom style... It doesn’t have visual aids, it’s only text-based” (PUK2).

The platform relies on the voluntary contribution of around 100 UK-based health professionals from across specialties and levels of seniority. They are clinicians, nurses, midwives, academics, regulators and clinical managers (King’s Health Partners, n.d.-a). Patients are not involved in online interactions.

MedicineAfrica focuses on eight main medical and medical-related subjects: hospital-management; public health, nursing and midwifery, obstetrics and gynaecology; general medicine; general surgery; paediatrics; mental health; regulation. It is also dedicated to offer postgraduate medical training (in the context of continuous professional development) and to develop clinical research skills. More recently, the platform has also started hosting teleconsultations. Teaching is directed toward the development of ‘clinical reasoning’—the cornerstone of clinical competence (King’s Health Partners, n.d.-c)—and the transfer of medical knowledge (for instance, about diagnosis and the management of medical procedures) from UK-based tutors to health professionals (Ali et al., 2014).

MedicineAfrica featured as an ideal research site for our study for three reasons: First, it presents a successful case of an OHC through its growing activities and membership. As our findings also suggest, although it started off as a digital platform with the purpose of providing medical education, it has become an OHC advancing the medical field, in the ways discussed later in our findings. Second, unlike other OHCs presented in the literature, MedicineAfrica is not patient-centric; instead, it is a community of healthcare professionals, providing us with the opportunity to study doctor-volunteers’ motives, roles and contributions. Third, MedicineAfrica has been designed as an organization intended to create social value by improving clinical education, and subsequently practice, in post-conflict states. Evidently, MedicineAfrica shares some characteristics with online *learning* communities (OLCs; e.g., its members are tutors

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and tutees); however, MedicineAfrica is an online *health* community primarily because it creates opportunities not just for exchanging education material, but also for actual collaboration on specific medical cases between both tutors and tutees, and also among the dispersed tutors. These collaborations go beyond the completion of a course, and contribute to building a community of MedicineAfrica users regardless of their role (tutors vs. tutees). These collaborations, in turn, have a direct impact on local health issues, enhancing healthcare in disadvantaged settings and contributing to knowledge generation. Consequently, learning for MedicineAfrica is its means for achieving its mission, while for OLCs it is their *raison d'être*.

We used MedicineAfrica as a paradigmatic case (Gerring, 2008) given that it is known for the social value it creates. Although our aim was not to produce statistically generalizable results, we adopted an interpretive case study approach which allowed us to develop in depth understanding of the phenomenon we studied. On the basis of this we developed a theoretical framework (Figure 1), which could be useful to other contexts with similar characteristics to the case studied here (Walsham, 1995). Next, we present our research design and methods for data collection and analysis.

5. Research Design and Methods

We studied MedicineAfrica between 2016 and 2018 and adopted multiple data collection methods in line with the case study approach (Cavaye, 1996; Yin, 2008): interviews, observations, document analysis. We carried out 20 interviews with 17 MedicineAfrica members in different roles, work arrangements (e.g., employed, volunteers) and from different partnerships, geographical locations and functional areas (see Table 2 below for their characteristics and Appendix A for the two interview guides). We began with a discussion-based interview with PUK2, who introduced us to MedicineAfrica. This was followed by two in-depth interviews with PUK1 and PUK2, whereby a generic interview guide was used in order to understand the MedicineAfrica context, goals and ways of working. As our understanding got better and our research aims became clearer, we developed a second interview guide which

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we used to conduct semi-structured interviews with all 17 participants. Another six of our first interviewees had managerial roles at the time of the interview, and the rest were clinicians with teaching roles on the platform. During our initial interviews, we used the snowballing strategy to identify participants. Not all problems associated with snowballing were relevant to our case, e.g., treating participants as assistants or verifying the eligibility of recommended participants (Biernacki & Waldorf, 1981). On the one hand, we only asked senior members (PUK1 and PUK2) to recommend suitable participants, while on the other hand, we had set specific criteria to mitigate the issue of possible ineligibility: by seeking diversity in terms of functional areas, geographical locations, and partnerships in our effort to ensure that we capture as many perspectives as possible. This strategy helped to get a stratified sample, painting a rich picture of MedicineAfrica (Eisenhardt, 1989). Interviews were conducted on Skype, with the exception of PPS4 who shared his responses with us via email due to unavailability.

Further to interviewing, we were given access to the actual platform and we conducted online observations asynchronously for six months. Our observations played a complementary role to the interview data by allowing us to familiarize ourselves with the platform, the way the teaching materials are organized, and the type of interactions that take place on it between tutors and tutees as well as between tutees themselves. This informed our understanding of the technical and communication capabilities of the platform (e.g., text-based communication) and its limitations (e.g., lack of video-link) which then contributed to further questioning during our interviews. Finally, we collected and analysed a wide range of materials including several documents produced by MedicineAfrica, media interviews, briefs, newspaper articles and reports. These are cited as references throughout the paper and also appear in Table A1 (Appendix B). Documents complemented our dataset by offering background information (for example, about the history of MedicineAfrica) to build the case study. They also provided contextual information that helped us during the analysis and interpretation of our findings often by confirming or enriching it. Documents were analysed together with, and in the same way as, interview and observation data. Collecting different types of data was used for completeness

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purposes, i.e., in order to paint a richer picture of the phenomenon under study, in line with the interpretive tradition (e.g., Symon et al., 2018).

Participant*	Gender	Professional background	Initial role	Current role	Commitment	Starting year
PUK1	M	General medicine	Founder	Director	Paid	2008
PUK2	F	International Development	Administrator	Programme manager	Paid	2014
PUK3	M	Human Rights	Administrator	Programme Manager	Voluntary	2014
PUK4	F	Public Health	Partner	Partnership lead	Voluntary	2016
PUK5	F	Psychiatry	Course Lead	Programme Lead	Voluntary	2009
PUK6	F	Obstetrics/ gynaecology	Tutor	Clinical Lead	Voluntary	2013
PUK7	F	Surgeon	Tutor	Surgical Lead	Voluntary	2012
PUK8	F	Psychiatry	Medical Student	Mental health co-lead	Voluntary	2009
PUK9**	M	Psychiatry	Tutor	Scientific community member	Voluntary	2015
PUK10**	M	Forensic psychiatry	Tutor	Programme Psychiatry Lead	Voluntary	2015
PUK11	M	Oncology	Admin	Chief operational officer	Paid	2016
PUK12	M	Public health	Chief operational officer	Interim CEO	Paid	2018
PDE1**	M	Psychiatry	Student	Programme Director	Voluntary	2010
PPS1	F	General medicine	Medical Student/then Tutor	Course lead	Voluntary	2011
PPS2	M	General medicine	Founding Member and Course Lead	Clinical coordinator	Voluntary	2009
PPS3	F	Public health	Medical Student	Clinical Coordinator	Voluntary	2008
PPS4	M	Psychiatry	Medical Student	Course Lead	Voluntary	2015

Table 2. Presentation of research participants.

*PUK (Participant, in the UK), PDE (Participant in Germany), PPS (Participant in post-conflict state)

**Migrant participant from a PPS now living in either the UK or Germany

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The recorded interviews were transcribed and analysed together with the collected documents and our observation notes on NVivo. We adopted specific methods to assess the rigour of our study, specifically Lincoln and Guba's (1985) assessment criteria for qualitative research, as well as Klein and Myers' (1999) principles for conducting interpretive research (detailed in Tables A2 and A3 respectively in Appendix C). We used the six phases of thematic analysis: familiarization with data, initial code generation, theme search, theme review, theme definition and naming, and writing-up (Braun & Clarke, 2006). Our open coding was guided largely by notes we had taken during the interviews and observations, but also by our understanding of the transcripts as we read them (Phase 1). Phase 2 resulted in a wide range of related and unrelated codes. Phase 3 was guided by our understanding of the dataset and the literature and aimed at grouping the existing open codes from Phase 2 into larger thematic categories, which were then further reviewed and finalized in Phase 4 as we checked for meaning both within and across the previously identified themes. The literature played a significant role in constructing and refining our themes and understanding their relationships. For example, existing literature had already identified different types of value produced in OHCs and our themes aimed at unpicking further the types of non-economic value more specifically. The review of the literature on digital health activism also shaped our themes around the emergence of a digital collectivity, connectivity and their relationship. Following numerous meetings as a research team, we conducted more granular analysis within the final themes (Phase 5) and identified sub-themes. A depiction of examples of Phases 3-5 appears in the form of a data display in Table 3 below where we provide a snippet of our interpretations. The individual quotes in Table 3 were extracted from our NVivo file in which a number of similar quotes were used until themes were finalized and written up (in Phase 6) and the inter-relations between the different themes were developed.

Code or theme	Datum supporting the code or theme	Researchers' interpretive summary
Professional value	<i>"This sense of kind of being able to help people who didn't get the chance to come to the UK, e.g., and get the training I</i>	UK-based doctor participant speaking about the two-way learning that leads to the creation of professional value

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	<i>got [...] And also, learning from them, you know, how they are able to overcome the difficulties of assessing the patients in a society [...] where stigma is really very dominant. [...] I was able to bring some of the things I gained through MedicineAfrica to my [postgraduate studies] e.g., case-based discussions and service-improvement project [...]. So, I would say it's a mutual benefit." (PUK9)</i>	for himself too, in addition to value created by him teaching students based in PPS.
Digital activism in the form of philanthropy	<i>"It's not much for me; an hour or two sitting at home ...I know that I'm teaching a group of people that wouldn't necessarily get that teaching, and so they're very grateful for it [...] a lot of the students don't get very much surgical training, so I can potentially impact patient outcomes by what I teach them." (PUK7)</i>	UK-based doctor participant feeling motivated to join MedicineAfrica as a means for contributing to the common good, benefitting people in need, and making a wider impact. Participant explaining that it costs nothing to them to put some effort that can make a difference to someone else.
Growing commitment	<i>"What keeps me going and keeps me motivated is those volunteer doctors that are giving their time, giving their efforts, giving their knowledge, giving 100% of their commitment. And seeing that commitment makes me more committed to make those students get the best of the MedicineAfrica tutorial and never give up." (PPS3)</i>	PPS-based participant explaining how her commitment to MedicineAfrica has grown over time and how others' commitment (hinting at the issue of collective practices) reinforces her commitment further.

Table 3. Data display depicting examples of our interpretations (Phases 3-5 of our thematic analysis).

6. Analysis and Findings

This section is structured around the three core themes of the study: the types of social value identified (6.1), evidence of digital health activism (6.2) and the mechanisms that enable social value creation through digital activism (6.3).

6.1 Social Value Creation at MedicineAfrica

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Three types of social value were identified in the findings. Cognitive value was embedded in the core purpose of the platform. Professional value was found to emerge over time as engagement with the platform increased and it formed part of the reasons why certain tutors continued with MedicineAfrica. Similarly, epistemic value emerged over time, primarily through contributions to research in the field. These three types of social value are presented in detail below.

Cognitive value

Cognitive value refers to knowledge transfer and exchange between two parties, normally the healthcare professionals and the junior and trainee doctors in the post-conflict states. This type of social value was expected following MedicineAfrica's aim to provide capacity building in the receiving regions through medical education. As such, tutees had the opportunity to learn about clinical practices and procedures which they could then adopt in their own healthcare systems.

Education is neither seen as a one-off, box-ticking, nor is a unidirectional activity; it rather has a longer vision, which happens on a continuous basis, involving tangible outcomes in terms of behaviour change, improved patient outcomes and improved healthcare systems at large:

"Education is one way that we do that, so by equipping them with the skills and the knowledge... That's the core of what we do [...]. Some of that knowledge changes their actions and behaviours. Those changes in actions and behaviours change the way that patients are treated... [which] lead to better clinical outcomes." (PUK12)

Another way in which MedicineAfrica helps to build capacity in post-conflict states is by hosting targeted initiatives (e.g., psychiatry) that aim to improve medical practice in specific regions through online collaborative consultations:

"it's amazing, really, when you have all those professionals from all those different backgrounds, discussing what could be better in the management of a patient there." (PUK9)

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These findings were also enriched by our observations of online tutorials when we noted the enthusiasm with which tutees (both medical students and junior doctors) asked questions around the management of patients with suspected sexually transmitted diseases.

Professional value

MedicineAfrica is available to professionals at different career stages, i.e., from medical students to clinicians. We find that professional value is created through the opportunities for development the platform provides to healthcare professionals at different stages of their career. In the case of MedicineAfrica, this type of value has been enabled through the new knowledge that both tutees and tutors gain, the roles they undertake on the platform, mentoring and networking opportunities:

“We identified a challenge in [East Africa] that graduates in medicine [...] may be appointed to roles in relatively isolated parts of the country without a good level of supervision. And the idea of developing a postgraduate network will be to try and better connect people, and support them, so that they have got access to a good level of continuing professional development....” (PUK6).

Our findings revealed that it was not only the tutees in the post-conflict states that benefitted from their participation, but also the UK-based doctor volunteers who freely gave their time to support the platform. *‘It was good for their CV’* was one reason that was identified by PUK5 for initially attracting some UK-based doctors to take part. The doctor volunteers we interviewed referred to the voluntary work they offer as ‘a dual process’, ‘shared learning’ or ‘two-way education’ in their attempt to emphasize that opportunities to enhance professional expertise were not unidirectional but more widespread. In the following extract, one of the psychiatrist volunteers explains how he enhanced his own learning about how psychiatry is exercised in different parts of the world:

“.... I was recently delivering a workshop on forensics psychiatry in [Western Asia] I learnt a lot from it...I learnt a lot on how they deal with things. I’ve seen very

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interesting scenarios, very interesting cases which actually we don't have sometimes the clinical exposure to such cases here in the UK." (PUK10)

MedicineAfrica allows all involved parties to get practical exposure to current global health matters they would otherwise be unable to get. For example, UK-based tutors learn about rare mental health issues taking a non-Western perspective and without disrupting their career. They also get the opportunity to develop skills they could transfer to their job, such as *'communication, interdisciplinary working, teaching, management, leadership and service development'* (King's Health Partners, n.d.-a, p. 7). Tutees acquire medical knowledge about health conditions and specialties (e.g., psychiatry) that are not sufficiently covered locally (King's Health Partners, n.d.-a).

Further to providing opportunities for professional development, the platform is also seen as a space for networking. One of the problems we observed in our analysis was that, once qualified, doctors in some of these states are posted to relatively isolated regions with limited access to information. MedicineAfrica allows those individuals to develop and maintain networks with colleagues in areas they would not be able to travel easily to. For them, the platform serves as a provider of continuing education and professional development:

"... you could bring healthcare workers together. So isolated healthcare workers, which of course, they are in [East Africa]. You know, it's very difficult to travel with a [East Africa country's] passport and they don't have those kinds of links. They don't have exposure to kind of up to date teaching methods or content of teaching. So, it's a way of reducing that distance." (PUK5)

Epistemic value

Epistemic value refers to the enrichment and validation of the knowledge base ('know-what') that advances medical science. It usually emerges through research intended to strengthen 'episteme'. The knowledge that is produced is not intended for immediate clinical use as it might require for example further testing and validation, among others. For instance, the platform offers opportunities for research on global health which UK-based tutors wouldn't be able to have otherwise. As such,

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a number of research projects which have led to published work were enabled by participating in MedicineAfrica:

“...it would be a good opportunity to implement something, evaluate it, and then obtain data that could be published, which we did manage to do.” (PUK8)

Enabling a two-way shared learning was generally seen as having a wider social impact, by giving rise to opportunities for research and also teaching cases, drawing on data that would be otherwise hard to collect. In fact, most participants agreed on the extreme contrast in terms of resources between the UK/Europe and states with weaker healthcare systems being a source of unique data for research.

6.2 Digital health activism as a philanthropic, reciprocal & moral activity

In this section, we draw on our conceptualization of digital health activism (see Table 1) as an online collective activity orientated toward changing a problematic health status quo through the dissemination and production of health knowledge in order to promote equity, inclusion and fairness. Using this definition, we explore the different manifestations digital health activism took in MedicineAfrica.

UK-based participants saw volunteering in MedicineAfrica as an opportunity for putting their skills in effective use and for being involved in activities that have a direct positive impact to other national health systems. Activism therefore became manifest as a form of ‘charity-like work’ UK-based clinicians did:

“Just making sure that people are doing something useful ... I think a lot of it is actually motivated because they feel that it's a way for them to use their skills to deliver impact, and that feels like a positive thing to do.” (PUK1)

Although the opportunity to teach online enriched tutors’ work experience and development, tutors were primarily driven by their desire first to educate medical students in post-conflict states that have limited opportunities for training and education and second to have a positive impact on clinical practice, patient outcomes and public health. We thus see a clear link between UK-based tutors’ motivation to

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join MedicineAfrica and the philanthropic purposes their involvement would stimulate:

“It’s not much for me; an hour or two sitting at home ...I know that I’m teaching a group of people that wouldn’t necessarily get that teaching, and so they’re very grateful for it [...] a lot of the students don’t get very much surgical training, so I can potentially impact patient outcomes by what I teach them..”. (PUK7)

In the light of this, activism was associated with the generation of societal benefit for all the involved stakeholders. Doctors based in post-conflict states disseminated the knowledge they developed through the OHC to their local communities by means of their improved clinical work:

“the reason I still continue to learn is because I want to increase my knowledge ...and also to share my knowledge and experience in [East Africa], because although I am sometimes as a student I get knowledge but at the same time I share my experience in [East Africa] with recommendations how we manage, so it’s a kind of sharing the knowledge and teaching.” (PPS1)

UK-based doctors identified their ability to offer their medical expertise through MedicineAfrica as a way of serving the common good and fulfilling a moral goal. They were triggered by an observed discrepancy between the available resources in developed countries and the scarce resources (human, financial, cognitive) in the developing world:

“The extreme contrast in terms of resources was significant. So, knowing that the patients, and clinicians, and students have such limited access to resources, while we have such an abundance, was a factor, as a, kind of, moral goal in terms of, this is a good thing to do, and a generous and worthwhile thing to do with your educational knowledge”. (PUK8)

“The students usually get some courses which we don’t have lecturers, you know, in place, so we have the halls, the lab, computers, and then we give specific time

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for the students and they come and then they sit and they log in and they start learning from UK tutors.” (PPS2)

Activism was therefore a way to address existing educational gaps in the global health landscape. UK-based participants were motivated to offer voluntary training due to a lack of equal distribution of educational resources among countries. They saw their participation as a means for making up for inequalities between health services and resources among different countries:

“Their health system is extremely rudimentary. And if we can do anything possible to help support them in their learning, then it is an immense privilege to be a part of it”. (PUK7)

“We are not aid workers; we are doctors. We aren’t paid to do this; we do it for free because it’s critically important. We both [tutors and tutees] identified the problem [...] designed a solution, and delivered that solution to junior doctors. These junior doctors are the future of the [East African] healthcare system”
(extract from tutor interviewed in King’s Health Partners (n.d.-d))

Digital activism was also manifest as a form of reciprocity. This concerns primarily migrant healthcare workers in the UK who participate in MedicineAfrica in order to give back to their home countries medical expertise and know-how. Compared to other UK-based tutors, those migrant healthcare workers were aware of the health disparities in their home countries and saw the platform as a means for addressing some them:

“So, this is really my passion ... lucky enough to leave [Western Asia] in a very difficult situation where my life was at threat, but at this time, I feel I should give back, ...it's something that I want to do, and it's something as a payback to the country... To my country.” (PUK9)

To sum up, this section has elicited the different manifestations of digital activism that emerged at MedicineAfrica by exploring individuals’ motivations to be part of the

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OHC. We analysed the philanthropic, moral and reciprocal facets of digital health activism.

6.3 Mechanisms leading to social value creation through digital activism

Having examined the creation of social value as well as evidence of digital activism, in this section, we explore the *how* question of our study by delineating three mechanisms which were found to enable social value creation through digital activism: they are technically (i.e., connective capacity of the platform and collective practices) and socially afforded (i.e., growing commitment).

Connective capacity of the digital platform

MedicineAfrica pride themselves on their vision to improve healthcare education and systems in regions whose healthcare systems were fragmented. Connective capacity constitutes a core technical affordance of any digital platform, though not utilized in the same way by all platforms. PUK1 highlights its pivotal role in bringing together geographically dispersed individuals from across different areas in line with MedicineAfrica's aims:

"The [initiative was about] using technology to increase access to a place that didn't have much in the way of capacity. I decided that it would be a good idea to try to use some of that technological, kind of, interest and know how that I had acquired to enable a bigger exchange in terms of capacity between the partners in [East Africa], and the partners in the UK." (PUK1)

As such, the digital platform itself and its affordance to offer connectivity among dispersed individuals and groups played a significant role in developing a coherent and strong OHC. It is not only the 'bringing together' that affords social value creation, but also the unique opportunity the platform provides for scaling this value up. This opportunity stands in sharp contrast to what medical science can do in terms of the volume of its impact on the community:

"Technology [is] the most powerful medium for impact at scale... Becoming great at surgery is not going to impact anything at scale. Becoming great at research,

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bio-medical research, it may do... You might be lucky that your research is fruitful and you can bring a drug to the clinic. But nothing in our modern day and age has impact at scale like technology... negative and positive as we've seen."
(PUK12)

Collective Practices emerging on the platform

Though each individual's contribution is immensely valuable, opportunities were created for improving medical practice through online collaborative action and consultations among the different clinicians involved. Collective practices emerged whereby medical practitioners from across countries (tutors and tutees) discuss together specific patient cases leading to collective diagnoses and decisions about treatment and therapy. We define collective practices as the platform's affordance to unite individuals under shared objectives and values. We thus see below the potential of the platform to bring together a community of experts and generate possibilities for crowd-medicine, another potentially emerging form of telemedicine:

"... at the last session we had, there was a trainee from [region in Western Asia], which is the north of [different region in Western Asia], the more affluent, you know, secure area of the country. And then, there were two from the south of [region in Western Asia], and there were two from [another region in Western Asia]. And then we had a psychiatrist from Scotland, a retired consultant, who also joined us online, and another UK-based psychiatrist. And they were all participating in this case-based discussion about post-traumatic stress disorder in a patient [from one of the above regions] who is being treated in [region in Western Asia], in one of the hospitals there." (PUK9)

The emergence of collective practices gave rise to a sense of identification with the wider community of MedicineAfrica, enabling participants to gain exposure to practices unknown to them, and build on their diverse sets of experiences to support the needs of fragile and under-resourced local communities.

"It was fresh, it was something that we thought that it can help us career wise and also help us in our internship programme. We go through an internship

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programme once we graduate. So, it, kind of, was very [exciting] to have an online programme that we could share our cases, also sharing the procedures over there in the UK, how they do things, and then here how we, in a low setting country with low resources, how the difference it is.” (PPS3)

The aforementioned example illustrates how individuals at MedicineAfrica were orientated toward developing collective practices in order to address health inequality by means of online education and training.

Members’ Growing Commitment

MedicineAfrica’s connective capacity and the participants’ collective practices discussed above were both technically afforded. These, however, did not contribute to either digital activism or social value alone. Our analysis revealed a third mechanism, growing commitment, presented here. For most tutors, what enhanced their commitment was that they found their involvement in MedicineAfrica meaningful:

“It’s something that I enjoy. It’s something that I create the time for and it’s something that I’m dedicated to do... Simply being passionate about training and teaching medical education and helping people in need” (PUK10).

This sense of fulfilment was to be strongly linked to the idea of contribution to a greater good via the generation of social value for the OHC remote members of the OHC:

“I could tell through the interactions that the tutees were learning a lot, and they were really grateful for the time that I’d given to them. ... If patients are going to get better care as the result of what the students are learning, then that’s very rewarding” (PUK7).

Interestingly, MedicineAfrica members did not just retain their initial roles, but that most of them changed roles over the years, from students to course leads or from course leads to programme coordinators and managers. Some talked to us

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enthusiastically about their growing commitment to MedicineAfrica and the possibilities that this affords in terms of expanding their portfolio of activities:

“What keeps me going and keeps me motivated is those volunteer doctors that are giving their time, giving their efforts, giving their knowledge, giving 100% of their commitment. And seeing that commitment makes me more committed to make those students get the best of the MedicineAfrica tutorial and never give up” (PPS3).

Tutors see themselves growing with the platform over time. We thus define growing commitment as some members’ ongoing participation in the OHC over time involving their own development in it together with the platform’s further success and sustainability.

Here, we have seen that it is not the platform’s core (and technically afforded) characteristics alone (i.e., its connective capacity and its potential to allow collective practices to emerge), but it is its members’ (socially afforded) growing commitment that triggers the emergence of digital health activism in its different forms presented earlier.

7. Discussion

We offer theoretical contributions to the literatures on (a) digital health platforms and OHCs (Barrett et al., 2016; Bernardi, 2016; Goh et al., 2016; Kallinikos & Tempini, 2014; Saukko, 2018; Tempini, 2015; Vicari & Cappai, 2016); and (b) forms of digital activism (Bennett & Segerberg, 2012; George & Leidner, 2019; Petersen et al., 2018; Stewart & Schultze, 2019; Vicari & Cappai, 2016).

Problematizing a largely economic view of value in OHCs, and recognizing that OHCs have the potential to create social value by bridging urban and rural disparities in healthcare (Barrett et al., 2016; Goh et al., 2016), we first contribute to the literature on OHCs by identifying three types of social value—*cognitive*, *professional* and *epistemic*—which are both reciprocal and transformative in nature.

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Due to the reciprocal nature of social value, we found that it was not only the tutees and their local communities that benefitted from social value, but also the individual tutors involved as well as the wider medical field. For example, tutors elicited value in giving up their time to voluntarily teach on MedicineAfrica by developing skills that may prove useful for their careers as medical professionals, and also by identifying opportunities to conduct research on populations that would otherwise be out of reach to them. In this way, the platform provides space for research value to flourish by setting up a knowledge base where medical cases can be presented, discussed, analysed and further investigated. Our findings also point to numerous opportunities the platform provides for professional development, including career progression and gaining of more holistic experience for medical doctors and students in the UK. Despite scholarly concerns about the potential exploitation of individuals who offer their data-labour (in all the different forms it can take, e.g., paid, unpaid) for free whilst covering business purposes (Howcroft & Bergvall-Kåreborn, 2018; Kallinikos & Tempini, 2014; Lupton, 2014; Saukko, 2018), our study demonstrates that highly skilled individuals offer their knowledge for free in order to fulfil other philanthropic and moral needs or to reciprocate back to their home countries. We therefore argue that platforms can potentially play a significant social role given the non-economic value they generate.

Social values are also transformative. We have explored how tutees learn about medical practice in western countries, transforming their own understandings about (and subsequent treatment of) diseases that are stereotyped, including in particular mental health conditions and sexual health issues. MedicineAfrica and similar initiatives should not be treated as examples of digital colonialism, or data colonialism according to Couldry and Mejias (2019), that impose westernized norms and codes of practice in under-developed societies. Instead, these types of initiatives are an opportunity to intervene and improve regions facing significant health issues, including lack of or limited medical education. MedicineAfrica therefore as a platform could in this sense become an idealized form of telehealth.

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Our second contribution reveals that social value is created through digital health activism. The latter relies heavily on individuals undertaking voluntary work and is manifested as *philanthropic, moral* and *reciprocal activity*. Digital activism in the OHC was realized through individuals' motivation to use their knowledge and expertise for free in order to improve the quality of health in regions with limited human, clinical and financial resources. Their activity in the OHC aimed to change and improve the current health inequalities participants observed in post-conflict states almost through a re-distribution of cognitive resources from developed countries to post-conflict states. Participants' rationale did not originate from personal interests but rather from a sense of morality that directed them toward the production of a common good. Migrant medical workers were also triggered to contribute to the OHC in order to reciprocate to their home countries. In light of recent calls for new ways of conceptualizing activism in the digital age (Bennett & Segerberg, 2012; George & Leidner, 2019; Petersen et al., 2018; Stewart & Schultze, 2019; Vicari & Cappai, 2016), our study offers evidence of how digital platforms create opportunities for activist behaviour that is both individualistic, in the sense that it starts off with the individual's will to offer cognitive labour for free, and over time it becomes collective. Our study also offers an example of digital activism that is not oriented around (and, worse even, reduced to) data activism. The forms of digital health activism that we observed were all practices directed to a certain purpose—e.g., to help the other, to do the right thing, to give back—and they all involved voluntary work including giving time and sharing expertise. This form of activism contradicts other more data-oriented forms of activism where the activity is reduced to producing data for their own sake by following, liking, retweeting, e-petitioning, data hacking etc. (George & Leidner, 2019).

The third contribution of the study is that digital activism was both technically and socially afforded through three specific mechanisms, depicted in our theoretical framework (Figure 1). Although all platforms have the technical capacity to connect people, this affordance is only realized when connectivity aligns with the platform's nature and purpose. MedicineAfrica brought together individuals from across geographical boundaries and united them under a single purpose, that is to offer clinical education that would improve clinical practice and health outcomes, and

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further medical knowledge in post-conflict states. Individuals had a long-term commitment to their collective purpose and participated on a voluntary basis (despite the individual professional and cognitive benefits they could get). Contrary to what George and Leidner (2019) suggest that digital technology transforms activism away from collectivity and toward connectivity, our case illustrates the inseparability of connectivity and collectivity in the context of digital health. The connective capacity we elicited does not sacrifice either the potential of collective action or the level of individuals' commitment to a common purpose (Stewart & Schultze, 2019), but it instead facilitates the emergence of collective practices, a unique form of 'collectivity' (George & Leidner, 2019) we witnessed in our study, by connecting individuals under a shared objective. Tim et al. (2018) have shown how the affordances of social media platforms can enable community mobilization (such as a community-driven environmental sustainability). Our study illustrates that it is not so much the technological affordances of digital platforms—namely to inform, to network and to organize (Tim et al., 2018)—but it is primarily their potential to set up an online collectivity of like-minded individuals that allows this form of digital activism to emerge. Our paper contributes to the literature on digital activism by showing how activism can maintain some of its 'traditional' characteristics, namely its collective nature and transformational purpose in online spaces (George & Leidner, 2019). Digital activism therefore needs to be examined in all the different forms it can take in different settings and sectors. We believe healthcare is an inviting sector for these forms of activism to emerge given that health constitutes a value in itself.

Figure 1 depicts this co-constitutive relationship between the connective capacity and the emerging collective practices of the platform that—in tandem with members' growing commitment (Arrows 1 and 2)—give rise to digital health activism in its different forms. Digital activism then feeds back to the platform's characteristics (Arrow 3) which, with commitment growing additionally (Arrow 4), this time lead to social value creation (Arrow 5). Arrows 4 and 5 are purposely dotted to highlight the dynamic nature of our model, with commitment growing even further before it leads to social value creation. The three mechanisms are prerequisites for the creation of social value.

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Figure 1. Mechanisms enabling social value through digital activism in OHCs

We need however to highlight that social value is not a necessary effect of digital health platforms and neither does every type of social value created through a platform presuppose some form of activism. Social value can also be created among other economic values in for-profit platforms by attracting more users and data (e.g., Barrett et al., 2016; Tempini, 2015). In order to argue for digital activism, there needs to be evidence of a *collective* online activity, which aims to challenge and change an existing status quo, ultimately generating social value.

Finally, our study offers a paradigmatic example of what form and what implications platforms may have in developing settings for social value creation. The literature on OHCs and platforms has largely focused on platforms where interactions take place between patients (e.g., PatientsLikeMe, 23andMe; Saukko, 2018; Tempini, 2015). These studies have taken place in western settings and reflect the values, purposes and needs of more developed countries, such as the need to share peer experiences or to contribute to clinical knowledge through citizen science initiatives. Developing

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countries have different, more rudimentary, needs and priorities. Our case is exceptional not only because the platform users are healthcare professionals, but also because its user base spans across developed and developing settings. Insofar as we know, this constitutes a unique setting that enriches the bibliography that has largely focused on patient-driven platforms.

8. Limitations, Future Research & Practical Implications

Due to the geographical dispersion of the platform users, it was difficult for the research team to interview users in all areas wherein MedicineAfrica operates. Our interviews with those who started as students and currently continue to support the platform by acting as instructor-volunteers allowed us to capture learners' experience; however, more could be done if empirical research took place in those post-conflict areas to capture the local participants' perspectives. Future research could also examine social value creation in different types of online communities and platforms beyond the healthcare sector, and confirm the role of social value creation in the long-term success and sustainability of digital initiatives. Longitudinal studies will be needed for this purpose. In relation to this, it would also be useful to explore whether social value, as opposed to other types of value (e.g., financial), has an impact on online community membership, growth and retention. Finally, future research could explore further the use of digital activism in the wider field of IS and the impact that this may have on the design of a variety of different online environments (e.g., virtual worlds), including the potential for social value creation in different sectors. For example, there is research examining the emergence of online social movements (McKenna, 2020) and it would be interesting to explore the possibility of social value creation for different purposes and in different contexts.

OHC founders and managers need to be aware that it is not only a technological solution's connective capacity, but it is also its participants' form of collectivity (such as the collective practices we identified here) and growing commitment over time that are required in order for social value to be created. Contrary to other studies and other

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types of online communities that see growing membership as an indicator of their success (e.g., Ma & Agarwal, 2007), our study has indicated that growing commitment of a small number of active and enthusiastic members contributes to community success and sustainability. Platform designers should therefore embed functionalities that support the emergence of such collectivities. In view of these findings, we have developed dissemination materials to inform practitioners working in such environments (Anonymous et al. 2018¹) and we have organized workshops bringing together academics and practitioners working in digital health (Anonymous and anonymous 2019²). These initiatives have been used to further explore the potential that different types of digital health environments have for improving healthcare delivery.

Though context-specific, our findings extend to other types of digital platforms and online communities both within and beyond the healthcare sector. For example, there are other similar organizations who—although not oriented toward improving healthcare delivery in post-conflict states—may use our findings to enhance the transformative potential of their patients' stories online (as it could be the case with organizations like 'Care Opinion'). Digital activism and social value creation extend beyond the healthcare sector and therefore platform and community managers should establish a process which is likely to generate social value.

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¹ Brochure prepared by the research team for practitioners working in digital health environments

² Funded workshop, organized by part of the research team to bring together academics and practitioners working in digital health

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Appendix A: Interview guides

First interview guide

The first interview guide was used for the second and third interviews (with PUK1 and PUK2) only, and it helped us understand what MedicineAfrica does and thus develop a more detailed focus and interview guide for the remaining interviews.

Background

- Tell me a few words about yourself, e.g., what is your educational and professional background?
- How long have you worked at the organization and what has been your role in it?

The organization

- What does the organization's general objectives and how does it work?
- Can you explain to me how does the MedicineAfrica platform work?
- Can you give me a couple of examples of recent or current projects and explain to me how they work?
- Do you experience any cases of emergencies at MedicineAfrica? Can you describe them?

Teamwork and context

- How many teams do you lead (or are a member of) and what is your role in them?
- What is the lifespan of the teams and what do you think is unique about these teams?
- Does your team involve subgroups, geographically isolated members or both?

Management and coordination

- What are the typical challenges you face in your experience with the organization?
- What do you think could be done for these challenges to be addressed?

Conclusion

- Is there anything else you need to add in relation to our discussion that we haven't covered so far?

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Second interview guide

The second interview guide was used for all interviewees after the first three interviews (a discussion-based one with PUK2, and two interviews with PUK1 and PUK2) had already taken place. It was developed when our understanding of MedicineAfrica improved and our focus and aims became clearer. PUK1 and PUK2 were interviewed again using the second interview guide too.

Background

- Tell me a few words about yourself, e.g., what is your educational and professional background?
- How long have you worked at the organization?
- Can you describe your role in MedicineAfrica?

MedicineAfrica and social value creation

- How would you define MedicineAfrica? How do you personally see it?
- What are your views about MedicineAfrica?
- What is the social value of MedicineAfrica?
- What do you like about MedicineAfrica?
- Any challenges you have faced with MedicineAfrica?
- What is the future of MedicineAfrica in your opinion?
- Is MedicineAfrica sustainable?

Personal motives

- Why did you get involved? What was the main motive? Other motives?
- What is the value of this community to you?
- Do you see yourself participating in the long run? Why or why not? If yes, what role would you anticipate having?

Virtual interactions

- What would you say about your interactions with others at MedicineAfrica, e.g., the admin team, the other volunteers, and also the learners?

Conclusion

- Is there anything you would like to add that we haven't covered?

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Appendix B: Documents

Table A1 outlines the materials used for document analysis. The ones referred to explicitly in our paper are also included as in-text citations and on the list of references.

Type of document	Document title	Further information
Published articles on MedicineAfrica	The use of social-networking sites in medical education	Cartledge, C. Miller, M. & Phillips, B. (2013) The use of social-networking sites in medical education, <i>Medical Teacher</i> , 35 , 847-857.
	Clinical leadership and management in the NHS—Paired Learning	Klaber, R.E. & Lee, J. (2011) Clinical leadership and management in the NHS—Paired Learning. <i>Journal of the Royal Society of Medicine</i> , 104 , 436-436.
	Global health partnership for student peer-to-peer psychiatry e-learning: Lessons learned Globalization and Health	Keynejad, R. C. (2016) <i>Global health partnership for student peer-to-peer psychiatry e-learning: Lessons learned Globalization and Health</i> , 12 (82).
	Diffusion of e-health innovations in 'post-conflict' settings: a qualitative study on the personal experiences of health workers	Woodward, A., Fyfe, M., Handuleh, J., Patel, P., Godman, B., Leather, A. & Finlayson, A. (2014) Diffusion of e-health innovations in 'post-conflict' settings: a qualitative study on the personal experiences of health workers. <i>Human resources for health</i> , 12 , 22.
	The Palestinian territories: barriers to healthcare and medical education and the strategic role of distance-learning partnerships in education systems strengthening	Ali, M.A., Penfold, R.S., Patel, I., MacGregor, T., Cahill, T.J., Ali, A.M., Shankar, S., Nguyen, M., Finlayson, A.E.T. & Mahmud, I. (2014). The Palestinian territories: barriers to healthcare and medical education and the strategic role of distance-learning partnerships in education systems strengthening. <i>Medicine, Conflict and Survival</i> , 30 , 11-18.

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MedicineAfrica's published reports	Telemedicine for Peer-to-Peer Psychiatry Learning Between U.K. and Somaliland Medical Students	Keynejad, R., Ali, F.R., Finlayson, A.E., Handuleh, J., Adam, G., Bowen, J.S., Leather, A., Little, S.J. & Whitwell, S. (2013) Telemedicine for peer-to-peer psychiatry learning between UK and Somaliland medical students. <i>Academic Psychiatry</i> , 37 , 182-186.
	Improved attitudes to psychiatry: a global mental health peer-to-peer e-learning partnership	Keynejad, R., Garratt, E., Adem, G., Finlayson, A., Whitwell, S. & Sheriff, R.S. (2016) Improved attitudes to psychiatry: a global mental health peer-to-peer e-learning partnership. <i>Academic Psychiatry</i> , 40 , 659-666.
Unpublished studies	Perceptions of UK tutors delivering interactive elearning to undergraduates in Somaliland	N/A
	Synchronous Online Clinical Education in Fragile States: An Activity Theory Perspective	Fyfe, M. (2017) Synchronous Online Clinical Education in Fragile States: An Activity Theory Perspective. PhD thesis, King's College London, 1-372.
Newsletters	Teaching Global Health at Home and Abroad	Keynejad, R.C., 2015. Teaching global mental health at home and abroad. <i>The Lancet Psychiatry</i> , 2 , e1-e2.
	MedicineAfrica platform designed to improve healthcare training	Available: https://www.designweek.co.uk/issues/november-2014/medicineafrica-platform-designed-to-improve-healthcare-training/
Documents, reports and media from MedicineAfrica's partnership with King's Somaliland Programme	King's Somaliland Partnership Report: Who we are and how we work	N/A
	Who we are	N/A

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	King's in Somaliland: Strengthening the healthcare system through partnership	King's Health Partners (n.d.-a) <i>King's in Somaliland: Strengthening the healthcare system through partnership.</i>
	MedicineAfrica: A Tool for Health Partnership	King's Health Partners (n.d.-b) <i>MedicineAfrica: A Tool for Health Partnership.</i>
	MedicineAfrica's Pedagogical Value.	King's Health Partners (n.d.-c) <i>MedicineAfrica's Pedagogical Value.</i>
	Breaking the taboo: Sexual Health in Somaliland	King's Health Partners (n.d.-d) <i>Breaking the taboo: Sexual Health in Somaliland.</i> Available at: https://www.youtube.com/watch?v=RCcJ7WXILmo
	MedicineAfrica: a Somaliland-focussed technology assessment report	King's Health Partners (n.d.-e) <i>MedicineAfrica: a Somaliland-focussed technology assessment report.</i>
Media coverage	MedicineAfrica founder's media interview	Available: https://www.ndm.ox.ac.uk/alexander-finlayson-medicineafrica

Table A1. Materials used for document analysis

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Appendix C: Methods adopted to assess the rigour of the study

Here, we start by using Lincoln and Guba's (1985) assessment criteria for qualitative research (Table A2).

Criterion	Application
Credibility	We conducted the study over a period of two years ensuring extended interaction with research participants, in particular senior managers who also helped us identify participants and also answered our questions as the research process went on.
Transferability	Transferability in qualitative research (comparable to external validity which features as a criterion in positivist quantitative research) is achieved by providing a transparent and detailed account of the characteristics of the empirical context; in our case, MedicineAfrica (see Section 4).
Dependability	We ensured the research process was clearly documented throughout; this was done with the use of an audit trail involving documentation of all communications with research participants, completion of interview logs after each interview to enable reflection, consistency in terms of interview guides used (Appendix A), and finally, engagement with MedicineAfrica's senior management to discuss findings, thus involving external individuals not directly involved with data analysis.
Confirmability	Analysis was conducted by the lead author who kept frequent contact with the rest of the research team to ensure that each step of the analysis process depicted everyone's interpretations. The use of NVivo helped to ensure that the analysis was not product of fragmented quotes but representative of the identified themes.

Table A2. Application of Lincoln and Guba's (1985) assessment criteria for qualitative research

Following, we use Klein and Myers' (1999) principles developed to assess the rigour of interpretive research in the IS field in particular (Table A3).

Principle	Application
The fundamental principle of the hermeneutic circle	This principle suggests that to achieve understanding of a phenomenon under study, one needs to <i>"to understand a complex whole from preconceptions about the meanings of its parts and their interrelationship"</i> (Klein & Myers, 1999, p. 71). In other words, this requests interpretive researchers to get engaged in a continuous dialogue and in an interpretive exercise where our own assumptions and understandings are challenged and changed as we get engaged with the object of our study. To ensure the accuracy of our interpretations, we considered the individual parts of our study within the 'whole' that they form. Methodologically, we achieved this by using different methods, namely interviews and document collection, as a way of understanding better our research questions, i.e., what types of social value MedicineAfrica generates and how. Our pre-existing understandings that came from the analysis of the documents we collected was refined as a result of the interviews we conducted. We further aimed to unpick the different parties (essentially parts of the

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	whole) that are involved in MedicineAfrica, including tutors and tutees' voices; founder, directors and managers.
The principle of contextualization	Using the documents, we have collected and analysed, we have offered an overview of the historical context within which MedicineAfrica emerged together with a description of its values and mission. We have gone back to this context to interpret some of our findings showing a clear connection between MedicineAfrica's mission and how this gets translated into certain types of social value.
The principle of interaction between the researchers and the subjects	This principle deals with the issue of distance between the 'researcher' and the 'researched'. Contrary to positivist research in which there is distance between the two, here we immersed ourselves into the study ensuring ongoing interaction with our research participants, particularly those interviewed more than once; we were close to them throughout the study and we asked for their input too where it was needed.
The principle of abstraction and generalization	We did not aim to generalize across contexts but to understand the phenomenon under study within its natural context (Cavaye, 1996). One of our study's contributions is to build a framework that explains how OHCs can generate social value through the emergence of digital health activism, which initially served as a 'sensitizing device' in our effort to conceptualize (part of) the process by which social value is generated in our selected context. We think this framework could of be transferable to other platforms and OHC.
The principle of dialogical reasoning	To mitigate issues of prejudices, the research team spoke extensively about the data analysis process as it happened and held meetings with MedicineAfrica's senior management for over a period of two years to familiarize themselves with the esoteric language and consider perspectives external to the analysis.
The principle of multiple interpretations	As discussed in Section 5, we adopted multiple data sources in order to achieve 'completeness' by considering different 'versions of reality' (Symon et al., 2018, p. 136) or 'allow[ing] multiple voices to speak' (Welch & Piekkari, 2017, p. 721).
The principle of suspicion	Although the study did not take a critical perspective per se, we questioned our own assumptions as interpretive researchers as our engagement with the hermeneutic circle evolved. This is evidenced by the fact that we went beyond our original research question and discovered emergent concepts—i.e., that of digital health activism—which we did not seek to study upfront, but rather was a result of our reflective approach as the analysis went on.

Table A3. Application of Klein and Myers' (1999) principles for interpretive research