Digital Platform Use for Refugee Crisis Response

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Increases in forced migration crises and the digitalization of humanitarian response require ongoing innovation in information management tools and processes. Our *research-in-progress* examines emergent data aggregation and data quality management methods enabled by a humanitarian data sharing platform from the Global North. Through an international and inter-regional comparison of this platform's use, our team of international faculty will generate insights for humanitarian informatics theory as well as practice. Specifically, our research examines the role of power and control in collaborative humanitarian operations. Given the neocolonial dimensions of the humanitarian system, we also explore potential North/South divides and their effects. Preliminary results provide insight into power exercised in national response, diversity in aggregation procedures related to technology and staff preferences, and the loss of data's meaning due to the centralization processes supported by data aggregation.

CCS Concepts: • **Human-centered computing → Empirical studies in HCI**.

Additional Key Words and Phrases: Humanitarian Informatics, Platforms, Refugees, ICTD

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1 INTRODUCTION

Humanitarian response efforts are underpinned by complex information management systems. These systems manage data ranging from highly sensitive 'case management' information collected from individuals receiving assistance, to the less sensitive, yet still important, operations data.

These operational data systems, designed to manage primarily quantitative data, enable information flows through and across organizational hierarchies. They also ease national, regional, and international aggregation and the transformation of data into publicly available online dashboards as well as field reports, known as SitReps [16]. At headquarters, the aggregated data are used for planning, public relations, and to establish accountability to donors [25].

Increasingly, these data are managed through platforms supporting inter-organizational coordination. In the domain of forced migration or refugee response, such systems enable organizations to upload data on specific assistance programs, which are then aggregated to provide a holistic picture of the response. Further, these platforms offer

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generative benefits: their API often enables the creation of newer, interesting applications [36], thereby contributing to open innovation [20].

To date, platform research primarily focuses on the for-profit and government sectors [4, 5, 7, 17, 36]. Few studies examine the non-profit sector, and studies of platforms in humanitarian relief are rare. An exception is [26] who examine the platformatization of digital identity in refugee crisis response. In this case, platforms join a long list of technologies, including biometrics and digital cash, affecting humanitarian assistance. As inter-organizational technologies, platform design and use reflect and shape the power structures of assistance. Empirical platform research provides additional evidence of the 'datafication' of humanitarian assistance. Further, it can inform critiques of aid data flows, including themes of extraction, where to date the tools of extraction are largely black-boxed.

In this note, we present our work-in-progress setting up and conducting international and inter-regional comparative studies that fill the existing gap. In particular, we describe our initial explorations of how different countries use a single, for-profit platform from the Global North used by humanitarian organizations globally, particularly in the Global South. Among the key questions we explore are: How do organizational users control and exercise power in a global platform? What factors affect data sharing processes, including aggregation and data quality management? What design changes can improve these processes? And finally, to what extent do themes of 'technocoloialism' [25] inform this use?

We examine these questions through an empirical study of platform-based data sharing in two forced migration responses – the Venezuelan crisis in multiple countries in Latin America and the South Sudanese crisis in Uganda. These contexts present unique use cases for the platform but are similar in the platform's widespread use. The research is conducted by a multi-disciplinary and international team of faculty researchers from 5 countries, including one each from the U.S., Panama, Ecuador, and Uganda, and two from Brazil. The team is collaborating with the UN agencies in charge of the humanitarian response as well as the platform vendor.

In the following, we explain how our work contributes to humanitarian informatics and platform scholarship, describe our research contexts, and provide a summary of our methods and discussion of expected results.

2 LITERATURE REVIEW

Our research is informed by and contributes to humanitarian informatics and platform scholarship. The former provides insight on system use in the humanitarian context as well as critical perspectives. The latter shapes the innovation, data management, and systems affordances dimensions. Both contribute insights into neocolonial forces in humanitarian relief and international platform ecosystems.

2.1 Humanitarian Informatics

Here we delineate humanitarian informatics from the broader field of crisis informatics due to the involvement of international organizations, often funneling resources from the Global North to the Global South. The field is informed by the scholarship on humanitarianism [2, 3], with implications for information management ranging from the pragmatic to the problematic. Pragmatic challenges and benefits include multi-lingual systems and networks of combined national and international information workers, creating the potential for mutual learning and joint innovation. Problematic is the neocolonial underpinnings of the overall humanitarian system, generating the potential for technology use resulting in power abuses, continued marginalization, and exacerbating vulnerability [24, 25]. Humanitarian informatics scholarship examines crisis assistance in both remote and geographically proximate modes. Analyses of remote assistance include, for example, research on volunteer engagement in mapping [13, 14] information processing [28], direct support to survivors from abroad [15] and providing information about missing persons [1]. Occupying a middle-ground is [32], an

analysis of tweets within Bangladesh, by both local and international users, during a dengue outbreak. Geographically proximate work, the focus of our endeavor, tends to place a greater emphasis on context, methodologically is less likely to use large-scale datasets, and is conducted at individual and organizational scales. Studies at the individual level have examined, for example, (UN) World Food Program digital food aid in Lebanon [34], earthquake damage assessment in Nepal [33], and refugee autonomy in collecting and managing data [38, 39]. These studies recognize the complex relationship between local and international response efforts, highlight local communal or cooperative activities, and implicitly or explicitly critique the lack of attention paid to these efforts by the international humanitarian system. Organizational level analyses in the proximate realm examine factors critical for aid agency technology and information management. These factors include inter-organizational coordination [30, 35**?**], competition for funding among aid organizations [25], ongoing digitalization [21], sensemaking [9, 10], the challenges of collectively analyzing data [18], and the labor involved in their creation and use [16, 37]. Our analysis contributes to the organizational humanitarian informatics scholarship by providing a rare inter-regional and international comparison of use of a single system. As such, it unpacks international differences in software use, the role of international organizations in promulgating data management practices and standards, and local versus international organization perspectives. As the platform's aggregated outputs are primarily used by coordination bodies, our research also provides a case study of cooperative technology use in what is often characterized as a competitive atmosphere.

2.2 Digital Platforms in Humanitarian Response

Digital platforms are technologies embedded in organizational processes and standards [12]. In platform research parlance, we are studying a 'hybrid' form [11], which supports innovation through APIs as well as transactions in the form of data sharing. Our research is informed by the rich literature on 'platforms for development.' While the humanitarian context differs with its foundation in crises, shorter timeframes for projects, and frequent staff changes, similarities exist such as resource scarcity, institutional challenges, and staff skills. Research in both contexts highlights platforms' potential for harms as well as benefits [5, 17, 26]. The 'platform for development' literature covers diverse processes and challenges as well as scale of analyses, with relevance for humanitarian contexts. Processes and challenges include platform evolution [23], institutionalization and its effects [17], the tensions in providing a global public good in the form of a platform [27], and decision making, data management, and specific components (e.g., dashboards) [22]. Analyses range from high-level investigations of managing global platforms to more granular analyses of design. An analysis of DHIS2 health information platform, used in over 70 countries, identifies tensions including serving those who can pay for functionality versus those who cannot, supporting the platform core versus innovation in the fringes, global versus local accountability, and how to pay for maintaining the core [27]. More granular analyses highlight challenges, such as a lack of data visualization competence in a project designing dashboards for an Indonesian health management system [8]. Humanitarian platform scholarship examines platform design and governance, as well as use. A recent analysis of an emergent platform-based identity system, for use in forced migration crises finds a lack of attention paid to NGO workflows and refugee preferences in the design [26]. The authors also critique the underlying framing of the platform, which intends to impose notions of social identity constructed in the Global North on refugees in the Global South. The authors recommend differences in institutional and social conceptualizations of identity be accommodated in the platform. Earlier humanitarian platform research examined the use of Skype for data sharing and collaborative analytics in the West African Ebola crisis [18, 19] and finds flexible institutionalization and governance are shaped by expertise and articulation work. Governance was also the focus of earlier research on a bespoke information sharing platform designed for newly arrived refugees in Germany [31]. The study finds, in

contrast to for-profit ventures, trust is key for decentralized governance, due to the inability to use strict control and standardized boundary resources for managing information. Humanitarian platform research also can glean insights from research on technical dimensions of single-organization data management systems from the development literature. In particular, implementation studies of the DHIS2 health information platform provide technical insight, including identifying key requirements such as data's potential to affect operations, provide accountability for staff in their work, or enhance knowledge of the operational context [37]. A study of an internationally deployed system in Médecins Sans Frontières found templated analytics and standardization are key to use [21]. Templated analytics ease system use by structuring inputs to generate automated outputs via a dashboard. Standardization limits the data input burden by culling indicators to include only those used systematically in reports. Our granular analysis will extend these findings by investigating multi-organizational standardization in data formats, aggregation, and data quality management, as well as analytics. The multi-organizational humanitarian context spans international and local organizations, potentially involving governments as well. Each type has particular cultures of information sharing, and historical relationships within which information management is embedded. Also, the publicly available, for-profit platform is managed in the Global North. As such, we examine whether and, if so, how this affects use among organizations operating in or from the Global South.

3 BACKGROUND AND METHODS

3.1 Background

We address our questions of data control and the exercise of power through comparative analyses of the same data sharing platform in four national refugee crisis response operations. The analyses include Ecuador, Colombia, and Brazil, as well as the national response in Uganda (see Figure 1). We focus on these particular responses due to their key differences in data management and platform use as well as their comparable size. Due to the large, cross-country impact of the Venezuelan crisis and the historical relationship amongst Latin American countries, it is the UN offices in Panama the one managing the entire Latin American response. Despite the regional nature of the South Sudanese refugee crisis, regional cooperation in East Africa is comparatively limited. In each country's case study, we examine the response effort at the national level as well as through sub-national or 'local' responses.

In terms of the size of the responses, diverse criteria suggest that the Ugandan program, while a single nation, is comparable in size to that of Ecuador, Colombia and Brazil combined. Table 1 provides a sense of the size of the various national responses as reflected in the budget of the UN Refugee Agency, hereafter referred to as UNHCR or its Spanish equivalent – ACNUR. We also include comparisons of the numbers of the number of 'persons of concern' (PoCs) - forced migrants together with those having obtained refugee status–supported in each country. The comparable sizes of these responses allows for a fairer comparison of regional platform use and data flow magnitude.

To understand the nature of control and power we examine four specific domains: processes of data aggregation, control over data aggregation, data quality management, and North-South relations in these domains. A key function of the platform is data sharing enabling aggregation. However, given the context-specific nature of aggregation it is challenging to design standardized tools and processes. For instance, the Venezuelan response in Colombia is informed by institutional infrastructure developed during its own armed conflict and differs from Brazil and Ecuador. Consequently, data aggregation processes can be idiosyncratic, with different organizations performing aggregation in unique ways. Several factors are likely to shape organizational data aggregation processes, including staff preferences and skills, but also the need or desire to maintain control over data. Digital platforms present humanitarian operations with

a conundrum. Their geographically widespread web-based availability enables data collection closer to the source, creating the possibility to more accurately capture the relief context. Yet, their role in data aggregation is designed to whisk these data into centralized systems, removed from that context. Information management staff may struggle with a loss of accuracy in the data aggregation operation. Accuracy is a critical component of data quality. Humanitarian operations struggle with data management controls due to the crisis context and short project timeframes. Formal data quality management processes are being instituted and our research will investigate ways platform designs can help. We also analyze the roles of control and power, as reviews often are conducted by those in authority. Finally, we examine the extent to which data management in these contexts invoke a North-South divide. The humanitarian system itself is critiqued for its neocolonial basis. Embedded within this system are information systems together with international organizations' international as well as local staff, as well as national and local organizations as well. These relations, and their inter-cultural dimensions, can shape technologies and processes, foster exchange of ideas, and provide access to new technologies and approaches.

3.2 Methods

We use qualitative methods [6], namely comparative national case studies [40] informed by online interviews (Zoom, Teams) and secondary sources. Interview subjects are recruited through organizational contacts and snowball sampling. The organizations are those involved with the Venezuelan or South Sudan refugee crisis response, including UN agencies, international, national, and local NGOs, and local and national government agencies. Subjects are information managers, including staff in IT, information management, monitoring and evaluation staff, public information, and community outreach. The organizational contacts are seeded by a list provided by the UNCHR/IOM regional information management office in Panama and the national information management office in Uganda. The Latin American list includes contacts for each of the three countries (Ecuador, Colombia, and Brazil). The digital platform firm may also provide contacts for its customers. The research received university-level ethics clearance as well as the permission of UN authorities and the platform provider. Initial recruitment occurs primarily via email, although subsequent communication may occur via phone or WhatsApp. Potential subjects are informed of the research goals, protections, and data management plans for informed consent. Given their employer's involvement, staff are assured their participation is voluntary and names of those who decline are held confidential. Subject's identities are masked using codes identifying only their organization and office location (e.g., national or field office). Where consent is granted, interviews are recorded for note taking purposes. In some cases, screen sharing may occur, particularly when initiated by participants eager to demonstrate system use or challenges. Once notes are developed, video recordings are deleted. Interviews are conducted in English, Spanish or Portuguese, depending on the country, researcher, and subject. Notes from the interviews are translated into English by the bilingual faculty researchers. The research team meets bi-weekly via Zoom to analyze the collected data through iterative, inductive and deductive cycles, identifying and discussing emerging themes. During the project, the research team is meeting with platform and UN staff to share results and gain further insight. At the conclusion of the project, the research team will also share results with interviewees and response organizations from each country.

4 PRELIMINARY AND EXPECTED RESULTS

From interviews conducted in Latin America and Uganda, we offer the following preliminary results. First, power derives from organizational size and, relatedly, budgets, with implications for data processing. In multi-organizational response, this power is used to shape data reporting processes and formats when defined through coordination structures

among peers. In Latin America, power also derives from the hierarchical regional response, which provided data format standards for a limited set of indicators. Data aggregation processes vary significantly, as do the tools used. This diversity is largely influenced by staff skills and interests. For instance, aggregation may entail the use of R scripts, scripting supported through proprietary software (e.g., STATA), or no scripting at all. The need for scripting in aggregation depends, in part, on database structure, as well as willingness to endure manual methods. In all cases, aggregation is influenced by hierarchy, with more powerful actors responsible for generating final reports mediating between donors and response organizations. Aggregation is associated with a loss of the data's meaning, not only in the aggregated data but those remaining outside the system. The humanitarian systems' elements of flexibility and autonomy enable local organizations to use a combination of purely local and standardized indicators intended for higher level aggregation. Local indicators are considered useful and important to all local partners. However, the aggregation system fails to capture their meaning and insights. These circumstances raise questions as to the validity of the status of the overall response generated by the aggregation system. Finally, in terms of quality assurance, the platform is seen as perpetuating the terms, concepts, and expectations on data input that make sense to the larger structure of humanitarian work but less so for local actors. For instance, platform use skills are developed through training sessions offered by UN organizations, rather than through targeted assistance offered through the platform at the time and point of data entry. For local actors, facing greater resource constraints, the platform is perceived as lacking support on proper data entry approaches. In conclusion, our research aims to provide insights for theory and practice of humanitarian informatics. With an international research team, and collaborative relations with humanitarian organizations and the platform provider, we expect our research will provide unique insights as well as lasting impact.

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