Promise, Power, and Charisma: Evaluating the Realities of Integrating Blockchain Technologies into Humanitarian Contexts

Sumayyah Shah[*]
Faculty of Arts and Science
University of Toronto
Toronto, Ontario, Canada
sumayyah.shah@mail.utoronto.ca

Sahana Prabhu[*]
Faculty of Applied Science and Engineering
University of Toronto
Toronto, Ontario, Canada
sahana.prabhu@mail.utoronto.ca

Madalena P Liougas[*]
Temerty Faculty of Medicine
University of Toronto
Toronto, Ontario, Canada
madalena.liougas@mail.utoronto.ca

Priyank Chandra
Faculty of Information
University of Toronto
Toronto, Ontario, Canada
priyank.chandra@utoronto.ca

Abstract

Blockchain has increasingly been positioned in the humanitarian aid sector as a revolutionary technology that can deliver decentralizing and transparent alternatives to traditional aid systems. Yet examinations of blockchain's practical implementation in humanitarian contexts reveals gaps between what it promises and what it delivers. This paper examines Oxfam's UnBlocked Cash (UBC) project in Vanuatu, a blockchain-enabled cash-and-voucher assistance (CVA) program, to interrogate how such blockchain-based systems are implemented on the ground. Drawing on semi-structured interviews with organizational stakeholders, we show how the allure of "charismatic" technology mobilizes funding, attention, and enthusiasm around promises of decentralization, transparency, and choice, while consolidating control over data and infrastructure amongst non-ni-Vanuatu actors. We analyze how blockchain intertwines with existing power structures, transparency claims, and inclusion in post-disaster aid delivery, highlighting tensions around sovereignty and governance. In addition, we offer insights for HCI practitioners around limitations and considerations for designing humanitarian technologies in low resource settings.

CCS Concepts

• **Human-centered computing** → **Collaborative and social computing**; **Empirical studies in HCI**; • **Applied computing** → *Digital cash*.

Keywords

blockchain, tech-humanitarianism, ICTD, disaster response, data sovereignty, decentralization, localization, dignity, postcolonial computing

[*]These 3 authors contributed equally to this research.

1 Introduction

In April 2020, the small island nation of Vanuatu was struck by Cyclone Harold, a Category 5 cyclone and the second-strongest tropical cyclone in the country's history [15]. As one of the most disaster-prone countries in the world, Vanuatu was no stranger to disaster response. However, in the aftermath of Cyclone Harold, many factors complicated recovery, primarily a highly decentralized population scattered over an archipelago of 83 islands and limited transportation methods between islands. Vanuatu's post-disaster logistics were further strained by the destruction of physical and communication infrastructures and the lack of front-line workers due to COVID-19, compounding the many complex challenges Vanuatu already faced with humanitarian aid distribution [15, 67].

Against this backdrop, Oxfam Australia collaborated with two private-sector companies — fintech start-up Sempo and software developer Consensys — to implement the UnBlocked Cash (UBC) project: a blockchain-powered cash-and-voucher assistance (CVA) program in Vanuatu. Oxfam distributed 'tap and pay' near-field communication (NFC) cards with a preset monetary value to beneficiaries, enabling them to purchase goods and services from a network of vendors equipped with mobile phones that accepted payment [67].

In recent times, the increased frequency, severity, and logistical complexity of humanitarian aid response has paralleled the rise of technological interventions and private-sector partnerships in humanitarian spaces. Such technological deployments have been explored by HCI and design scholarship examining how digital technologies can support vulnerable communities, especially in humanitarian contexts [5, 11, 38, 51, 59, 70, 73, 81, 82]. However, HCI scholarship has also cautioned that some technologies, promising transformative impact in low resource settings, gain popularity and traction primarily because of their promise, rather than

real-world impact. Ames [4] characterizes these as "charismatic technologies," technologies that inspire enthusiasm and mobilize resources through compelling narratives, regardless of how their implementation unfolds.

Since its emergence in 2008, blockchain has been discussed as a revolutionary technology that can transform existing institutions for good [71]. It has also been embraced as one of the most viable, innovative solutions capable of disrupting bureaucracies and inefficiencies in traditional aid systems [18, 34, 46]. UBC employed this rhetoric when implementing its own blockchain-enabled aid distribution system, promoting the project as a tool for transparency, decentralization, and financial inclusion, and marketing it as a sleek, incorruptible alternative to traditional aid [40, 67]. Given the recent hype of blockchain and its active deployment in humanitarian contexts, we ask:

How does the integration of blockchain technologies into humanitarian aid programs, such as the UnBlocked Cash (UBC) project in Vanuatu, mobilize blockchain's promises of decentralization and transparency among implementing organizations, and with what consequences for power distribution in humanitarian contexts?

To answer this research question, we conducted 11 semistructured interviews with organizational stakeholders involved in UBC's design, implementation, and governance in Vanuatu. Our study shows that the deployment of UBC relied on promises of decentralization, transparency, and inclusion to mobilize resources and garner local support. At the same time, there remained centralized controls over data, infrastructure, and key decision-making with non-ni-Vanuatu actors, revealing a gap between rhetorical promise and operational reality. We situate these dynamics within Vanuatu's sociopolitical and regulatory environment and consider their implications for tech-humanitarian initiatives. Building on these findings, we examine how charisma, decentralization rhetoric, and localization efforts intersect with governance arrangements, data sovereignty, and ni-Vanuatu agency, and we offer design considerations for HCI researchers and practitioners working on humanitarian technologies in low resource, postcolonial settings.

2 Related Work

2.1 Tech-Humanitarianism and HCI

Scholarly work on digital technology usage in humanitarian aid has grown significantly over the past decade, reflecting an increasing need to address the growing complexity of humanitarian crises caused by climate change, natural disasters, and conflict. As these crises have increased in frequency and severity, research has focused on how technological innovations can address inefficiencies in humanitarian aid and the proliferation of investments in technologies promising to improve the efficiency, quality, and transparency of aid delivery [8, 77].

Human-computer interaction (HCI), and adjacent fields such as ICT4D/ICTD (Information & Communication Technology for/and Development), have analyzed technology's role in supporting vulnerable populations and stakeholders in various contexts [16]. In the context of humanitarian technology, a prominent thread has been the use of technology to support the social and financial integration of migrants [38, 70] and refugees [5, 81, 86]. Other studies have examined how digital platforms have enhanced the capacity of

humanitarian stakeholders, particularly those in under-resourced environments [11, 21, 51]. These studies highlight localization and how power imbalances between foreign and local aid organizations can shape effectiveness and technological acceptance [51]. In post-disaster information environments, research highlights the complex, collaborative nature of technology's role in humanitarian response and the vital role of accessible information-sharing platforms in supporting the adoption of technology by new users [59, 73]. Furthermore, there is a growing emphasis on co-designing with communities using participatory methods, ensuring that affected populations are actively involved in decision-making processes [26, 68, 82, 83]. This has revealed how stakeholders strive to use digital technologies not just as tools, but as part of decisionmaking loops that build resilience and empowerment among humanitarian aid recipients.

Historically, technology and development initiatives in the Global South primarily had a technology-centric focus. However, scholars have argued that they should instead be considered "a magnifier of human intent and capacity [79]." These works, while diverse, have challenged techno-deterministic narratives, arguing for the inclusion of more critical perspectives that take into account local contexts, social structures, and power dynamics [69].

2.2 Blockchain and Blockchain Humanitarianism

Blockchain, or "distributed ledger technology," operates as a decentralized system combining three key elements: a shared ledger allowing multiple participants to read and write; immutable storage that records all transactions as an unalterable chain of blocks; and consensus algorithms enabling actors to securely verify and agree on the database's state [14]. Recently there has been a growing focus in HCI on specific application areas of blockchain [28], including social and political domains (e.g., rural development [61], governance [14, 35]), along with assessing possible futures through engaging the public [22, 62]. Elsden et al. [22] present a typology of blockchain applications and highlights four key roles for HCI researchers: holding blockchain technologies accountable by scrutinizing their ethics and biases, engaging participants in design through participatory and speculative methods, developing user-centric design methodologies, and expanding the imaginaries around blockchain applications, especially into diverse and inclusive contexts.

Explorations of blockchain technologies in humanitarian applications follow this trajectory, highlighting the potential of these systems to reimagine aid delivery and reduce bureaucratic inefficiencies. Blockchain's application in cash-and-voucher assistance (CVA) during humanitarian response has been noted for enhancing transaction efficiency and security, primarily through smart contracts that automate aid disbursement based on predefined conditions, with claims that it eliminates unnecessary intermediaries and curbs corruption and unregulated transactions [18, 39, 87].

Central to these claims are promises of decentralization and transparency that position blockchain as fundamentally disrupting traditional aid hierarchies. Uwantege Hart, Jones and Carvalho [34] accentuate blockchain's capacity to accelerate disaster response and meet beneficiary populations' diverse needs while creating a safety

net for long-term crises as beneficiaries gain access to financial and technological instruments. Kshetri [46] provides early evidence of blockchain's potential to enhance transparency, financial inclusion, and transactional efficiency in the Global South. These perspectives emphasize blockchain's alleviation of logistical challenges, costs, and intermediaries, and highlight opportunities for scalability and sustainability in developing regions. However, a significant gap exists between the transformative promises of blockchain and how such deployments reconfigure power, sovereignty, and accountability in humanitarian spaces.

2.3 Techno-colonialism and Critiques of Blockchain Humanitarianism

While Zwitter and Boisse-Despiaux [87] recognize blockchain's potential for revolutionizing humanitarian aid, they also highlight risks, such as energy consumption, scalability, and data privacy concerns in field environments. Further, scholars have raised concerns about blockchains' regulation and scalability [2]. A prominent critique is how an overreliance on technology can lead to the 'abandonment' of beneficiaries through remote and de-politicized data management. Duffield [19] critiques how technology shifts the responsibility for the crisis response to beneficiaries and subsequently shifts the focus of aid organizations from sociopolitical and environmental challenges to technological design. Additionally, blockchain systems pose considerable challenges related to digital literacy, stakeholder and private-sector partner conflicts of interest, limited access due to immutability of sensitive data, and regulatory and trust deficits [48, 66]. Finck [25] emphasizes the need for regulatory frameworks to adapt to blockchain's evolving nature, eliminate regulatory uncertainty, and ensure alignment with public policy objectives.

Critiques of blockchain also intersect with broader conversations about power, coloniality, and digital sovereignty in humanitarian aid. For example, Bruder's [8] postcolonial analysis of decentralized technologies identifies the concentration of 'innovative' technology design and funding in the Global North, who often use humanitarian projects in the Global South as strategic pilots to demonstrate proof-of-concept. Through conflating ideals of technological utopia with Indigenous self-determination, foreign actors market the innovative prospects of blockchain while also exploiting Indigenous populations to pilot their technology and profit from the humanitarian space [43], a phenomenon that Burns [10] defines as "philanthro-capitalism." Martin et al. [52] further highlights technology's preservation of power imbalances through a lack of data sovereignty for beneficiaries.

Power imbalances are a significant thread in criticisms of blockchain humanitarianism, where vulnerable communities rely on private and foreign actors to design and maintain digital infrastructures for humanitarian projects [43]. Jutel's critical examination of blockchain humanitarianism in the Pacific is a particularly crucial piece of the literature, positioning blockchain projects as agents of techno-colonialism that erode local governance and Indigenous sovereignty [43, 44]. Martin et al. [52] reference UBC as a project that allows private companies to access and infiltrate financial and technological industries in Global South countries.

Madianou [49] and Cheesman [13] caution that blockchain's potential to reinforce power imbalances may perpetuate techno-colonialism, where external foreign actors control data and critical infrastructure, facilitating surveillance and undermining local autonomy. Projects such as the World Food Programme's blockchain initiatives in Jordan and Yemen exemplify this, where digital vouchers improved aid speed and transparency, but also centralized technological control. Heitlinger [35] further argues that such technological solutions overlook local practices and undermine community autonomy, reinforcing existing power dynamics rather than fostering self-determination.

Despite these criticisms, there remains a gap in empirical examinations of how blockchain technologies are implemented on the ground and the opportunities and challenges of integrating them into humanitarian contexts. While humanitarian aid is often framed as short-term relief, recurring disasters and systemic vulnerabilities demand approaches that also consider long-term resilience and sustainability. Our paper responds to this gap by analyzing blockchain humanitarian efforts in Vanuatu, focusing on its interactions with existing power structures, the tensions between private, public, and NGO stakeholders, and the compatibilities between visions and realities of blockchain and techno-humanitarianism.

2.4 Charismatic Technologies as an Analytical Lens

Drawing on Max Weber's theory of charismatic authority, Morgan Ames [4] conceptualizes "charismatic technologies" as technologies that inspire devotion through utopian promises that persist even when they fail to deliver. Ames argues that technologies derive power not from material form but from the promises that they embody, invoking a faith-like commitment that sustains belief against counterevidence [4]. She argues that charismatic technologies possess a "holding power," maintaining ideological commitments and reinforcing worldviews through promissory rhetoric [4].

However, despite promising transformation, charismatic technologies function conservatively, recycling familiar narratives, affirming existing hierarchies, and obscuring social complexities [4]. When looked through a postcolonial computing lens [41], charisma helps explain how global technological imaginaries perpetuate colonial patterns of domination [17]. While postcolonial computing advocates for design frameworks to prioritize local agency over universal solutions [41], scholars have demonstrated that even when communities appear involved, they often lose meaningful agency while projects are framed uncritically as empowering [24]. This reflects broader techno-colonial patterns where Global North expertise and solutions are imposed on the Global South under narratives of progress. This paper employs Ames' conception of charismatic technologies as a lens for evaluating the deployment of blockchain in Vanuatu, and contributes to existing HCI, decolonial computing, and tech-humanitarian scholarship by assessing the capacity and limitations of blockchain technology to address entrenched structural issues in humanitarian aid delivery.

3 Background

3.1 Natural Disaster Response in Vanuatu

Vanuatu, a small island nation in the South Pacific composed of 83 islands, is highly vulnerable to natural disasters due to its location within the Cyclone Belt and the Ring of Fire. It is regularly affected by earthquakes, volcanic eruptions, cyclones, droughts, tsunamis, landslides, and floods [63]. On average, these disasters result in an estimated annual loss of $48 million USD [23]. Climate change has increased the frequency and severity of these natural hazards, significantly straining the country's recovery capacity and economy [63].

Vanuatu's socioeconomic conditions have exacerbated the difficulties of disaster recovery. The country's population is largely decentralized across remote islands, contributing to a high percentage of the population being unbanked, complicating access to financial resources in times of disaster [30]. Further, it struggles with high poverty levels, limited human resources, and an economy heavily dependent on agriculture and tourism. Both sectors are particularly affected by natural disasters, limiting the ni-Vanuatu[1] (Indigenous population of Vanuatu)'s ability to meet basic needs and rebuild after significant climate events [29].

In response to disasters, Vanuatu's Natural Disaster Management Office (NDMO) leads traditional recovery efforts, working with local authorities, communities, chiefs, churches, and international partners to assess recovery needs and coordinate the distribution of relief items, including food, water, clothing, and shelter materials. However, traditional disaster recovery faces significant challenges [80]. Distribution of relief items takes an average of three weeks after a disaster and saturates local markets, undermining the ability of local businesses to recover. Moreover, relief efforts tend to bypass local economies, disrupting long-term rebuilding efforts and often delivering items that do not match the needs of the affected communities [37]. Traditional recovery frameworks are also rooted in colonial structures, where international aid organizations dominate the process, often sidelining Indigenous knowledge and undermining local communities' agency in decision-making [36]. In recent years, there have been increasing efforts to integrate *kastom* (ni-Vanuatu ways of being, including traditional practices, knowledge systems, and governance) into recovery processes, with the NDMO supporting initiatives that prioritize resilience, self-sufficiency, and reliance on local and natural resources [55].

Recently, cash-and-voucher assistance (CVA) has emerged as a flexible alternative to traditional aid, enabling recipients to purchase goods and services based on their specific needs. This approach also stimulates local economies by directing funds toward businesses within affected communities [50]. CVA has gained traction in Vanuatu, particularly in remote regions where logistical challenges make the distribution of physical aid difficult. However, Vanuatu's cash-based society presents obstacles, as many citizens lack bank accounts and national identification (ID), which are required to access financial resources through banks.

The first CVA program in Vanuatu, launched in 2018 after the mass evacuation of Ambae Island due to a volcanic eruption, distributed paper cheques to affected families. While effective, the cheque-based system was costly, time-consuming, and relied on intermediaries. These challenges, including the exclusion of unbanked individuals and those without national IDs, slowed aid distribution and increased costs, highlighting the need for more inclusive and efficient systems [67].

In 2019, a private fintech company, Sempo, conducted a sample pilot of a blockchain technology CVA program. Sempo surveyed 80 ni-Vanuatu participants to determine their views on autonomous choice in traditional humanitarian aid and blockchain CVA aid, which included the use of near-field-communication (NFC) cards that enabled mobile payments between vendors and beneficiaries. When beneficiaries were asked about their previous disaster experiences regarding "choice" in resource allocation, 85% of participants rated their experience as a 1, indicating a severe lack of autonomy. In contrast, 96% felt they had considerable options with the NFC card system, rating their experience as a 5. Additionally, 86% of participants linked monetary aid with increased choice. Over 98% favoured using NFC cards in future disaster relief [67]. These results legitimized Sempo's decision to more widely administer blockchain CVA in Vanuatu, becoming what was later known as UBC.

3.2 The UnBlocked Cash Project

In 2018, international NGO Oxfam, in partnership with fintech startup Sempo and blockchain developer Consensys, piloted the UnBlocked Cash (UBC) project in Vanuatu to address aid distribution challenges. The initial 2019 pilot was launched in two urban communities in the Efate province, and enrolled 1,209 beneficiaries and 29 vendors, distributing VUV 966,443 ($8,066.46 USD) over one month. Following the pilot's success, UBC scaled up in 2020 to respond to COVID-19 and Tropical Cyclone Harold, distributing VUV 300 million ($2.5 million USD) to 24,000 individuals across 13 islands [33].

UBC operated on Ethereum's blockchain, leveraging smart contracts to automate aid transactions, with program reports claiming it ensured transparency while eliminating intermediaries. Initially, UBC used a stablecoin pegged to the USD during its pilot phase [31]. However, as the project scaled, it transitioned to a local currency stablecoin to better align with Vanuatu's non-dollarized economy and regulatory preferences. This shift involved the use of wrapped tokens to comply with local regulations and integrate with existing financial systems. The project's private implementation aimed to manage regulatory compliance and effectively engage with local banks and stakeholders [2].

3.2.1 Operational mechanics. In UBC, beneficiaries (aid recipients) are given NFC cards with a preset monetary value, enabling them to purchase goods and services from participating vendors without an internet connection. Vendors scan QR codes on the NFC cards to record transactions on a decentralized blockchain ledger. Although the technology can function offline temporarily, vendors must periodically connect to the internet to synchronize and complete transactions [33]. Program-reported metrics [31] claim UBC significantly enhanced aid delivery by reducing enrollment times, lowering distribution costs, and improving transparency. By

---

[1]*Ni-Vanuatu* refers to the Indigenous population of Vanuatu, in contrast with the demonym *Vanuatuan*, which refers to any citizen of Vanuatu, regardless of their origin or ethnicity.
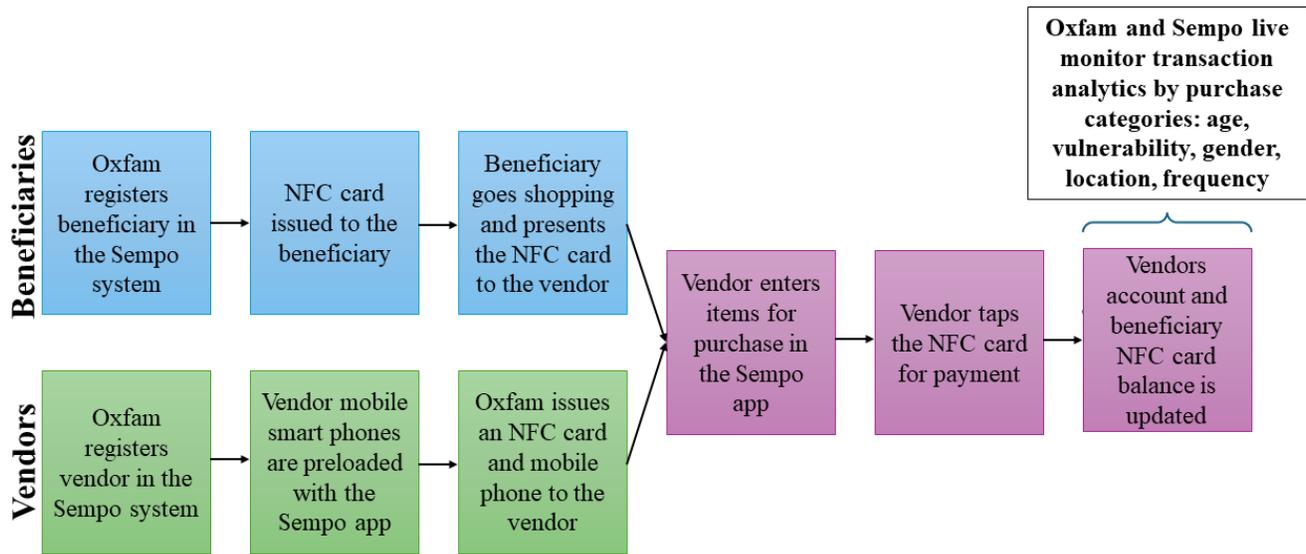
Figure 1: An overview of how the UBC project worked. Blue boxes indicate a beneficiary-specific process. Green boxes indicate a vendor-specific process. Purple boxes indicate beneficiary- and vendor-specific processes. The white box indicates a role specific to Oxfam and Sempo.

2022, UBC had distributed an estimated $2 million USD in aid, reducing delivery times by 96% and cutting costs from $13.40 USD per bank transfer to just $0.067 USD per Ethereum transaction. UBC also expanded beyond Vanuatu, with pilots launched in the Solomon Islands and Papua New Guinea. The project garnered global recognition, winning the European Union's Horizon 2020 Prize for Blockchains for Social Good [40]. However, questions about UBC's long-term sustainability remain, necessitating further evaluation.

4 Data and Methods

4.1 Participants

This study adopts an exploratory qualitative case study approach [32] of the UnBlocked Cash (UBC) project in Vanuatu, focusing on organizational stakeholders directly involved in design and implementation. We conducted semi-structured interviews virtually through Microsoft Teams (n=3) from March to April 2023, and in-person in Port Vila, Vanuatu (n=8) in May 2023.

Between October 2022 and March 2023, we systematically mapped UBC's stakeholder ecosystem through secondary desk research. From this, we purposively sampled a list of key contacts from participating organizations (Oxfam, Consensys, and Sempo). We chose not to interview anyone from Consensys after preliminary conversations with other stakeholders, who indicated that Consensys was not actively involved in the implementation of the project

and would likely not inform our findings. After reaching out to these initial contacts, we used snowball sampling to recruit additional participants, ensuring our sample reflected the diversity of roles from organizations that participated in UBC. We interviewed participants from organizations including Oxfam, Sempo, local NGOs, the Vanuatu government, and the local private sector (see Table 1). Eligibility criteria required direct involvement in UBC's design, implementation, or oversight. To keep the study anchored on implementation and organizational governance (rather than end-user experiences), we excluded anyone not directly involved in the design or implementation of UBC, including beneficiaries, vendors, and any individuals whose exposure was limited to earlier pilots.

We did not fix the number of participants in advance; instead, our approach prioritized significant reflection, detailed dialogue, and in-depth examination of each transcript. By systematically mapping the various stakeholders involved in the process, reaching out to further participants based on reflection, and triangulating perspectives across multiple organizations and stakeholders, we collected adequate data to respond to our research objective. We acknowledge that our recruitment occurred during and directly following Tropical Cyclones Judy and Kevin, which hit Vanuatu in March 2023. This impacted our capacity to communicate with and recruit participants prior to travelling into the field; however, we were successful in recruiting participants in-person in Port Vila,

Table 1: In-depth semi-structured interview participants

ID	Ni-Vanuatu (yes/no)	Role in UBC
NGO1	Yes	Non-governmental Organization
NGO2	Yes	Non-governmental Organization
O1	Yes	Oxfam
O2	No	Oxfam
O3	No	Oxfam
CL	Yes	Community Leader
S	No	Sempo
PS1	No	Local Private Sector
PS2	No	Local Private Sector
PS3	Yes	Local Private Sector
GO	Yes	Governmental Organization

and were able to conduct interviews with all relevant stakeholder groups involved in the implementation of UBC.

Because participants were easily identifiable, we did not collect demographics of participants beyond their identity as ni-Vanuatu, so as to maintain participant anonymity. The study received approval from our research ethics board, and all participants gave informed consent. Upon arriving in Vanuatu, our team received approval from the Vanuatu National Cultural Council to conduct research involving ni-Vanuatu participants, ensuring adherence to local research protocols.

4.2 Method and Analysis

Interview guides were created for each participant with questions that explored the logistics of implementing UBC, short- and long-term impacts of UBC, identification and communication with ni-Vanuatu communities, the implications of using blockchain technologies in populations with low digital and financial literacy, and broader sociopolitical and regulatory contexts. Interviews were individual and were conducted by any two or three members of the research team. Interviews took 30 to 60 minutes and were recorded and transcribed by a notetaker. All interview data was anonymized by the research team.

Interview data was analyzed using thematic analysis [6] and coded using Dedoose v9.0.17 [1]. Open coding was performed independently by at least two independent coders for each transcript. Initially, a subsample of three interviews from varying stakeholders was selected to develop an initial coding framework. The research team discussed this coding framework during scheduled meetings and any discrepancies between codes were discussed until agreement was reached. The coding framework was applied to subsequent interviews and was iteratively refined throughout. Following the coding of transcripts, codes were grouped into themes, and sub-themes. Researchers met regularly to collectively define the themes and sub-themes. During these meetings, researchers often referred to their reflexive journals and memos they created throughout data collection and analysis. Thematic maps were created by the research team to illustrate the relationships between the codes, themes and sub-themes. Each theme and sub-theme was defined and supported by interview quotes.

As reflexive thematic analysis following Braun and Clarke [6] was used, the results emphasize interpretive depth and researcher reflexivity rather than statistical reliability. Consistent with reflexive thematic analysis, we did not calculate inter-coder reliability metrics or produce a formal codebook, as these practices assume coding uniformity rather than reflexive engagement. Instead, credibility was established through double independent coding, collaborative theme development, and maintaining an audit trail of analytic decisions, supported by reflexive memos and thematic maps.

4.3 Reflexivity

The research team consisted of three researchers with backgrounds in engineering, social science, and rehabilitation science, supervised by a senior researcher with expertise in HCI and CSCW in low resource contexts. Collectively, the team brought prior experience in qualitative research and humanitarian technology, which informed our sensitivity to power asymmetries and ethical considerations in post-disaster settings. The study was approached with the assumption that blockchain technology's application in humanitarian aid is complex, shaped by sociopolitical and financial interests. Recognizing that positionality could influence interpretation, the team engaged in reflexive practices throughout the study, including maintaining journals, memoing, and regular group discussions to critically examine assumptions and analytic decisions. The team also adhered to local research protocols and ensured informed consent. These steps, combined with iterative mapping and collaborative analysis [7], supported credibility and trustworthiness [57].

5 Findings

Our analysis examines UBC's implementation on the ground and the project's evolution from initial piloting as a paper-based CVA to an NFC-mediated, blockchain-enabled system. We describe how implementation hinged on ni-Vanuatu actors, generating enthusiasm around increased agency and decentralization while pushing for "localization" primarily as operational delegation to ni-Vanuatu employees amid tensions with state institutions and data sovereignty. Finally, we analyze organizational centralization in data access and governance despite technical ledger-level decentralization and program narratives about the removal of intermediaries.

5.1 The Logistics of Implementing UBC

5.1.1 From paper-based CVA to blockchain-based UBC. Prior to UBC, traditional paper-based CVA methods were used, and UBC was introduced in response to the logistical challenges and inefficiencies observed during early implementation. Earlier voucher and paper-based transfer systems, introduced following the 2018 Ambae volcano eruption, were widely perceived as cumbersome: they required physical monitoring, were easily damaged in humid or cyclone-prone environments, and excluded participants who lacked ID cards. As one Oxfam staff member explained,

> "With paper vouchers, it was slow, it was expensive, and it didn't reach everyone it needed to. People lost their papers, and the most vulnerable were often left out." — O1

Further, as Vanuatu is an archipelago, physical delivery is time- and cost-intensive. An Oxfam employee noted,

"[It is] geographically and logistically expensive to deliver aid in any form [...] Assistance organizations spent lots of money in delivering aid. 1 dollar of rice [requires] 3 dollars in delivery." — O2

By digitizing CVA, UBC streamlined the logistical organization of aid distribution for Oxfam, eliminating challenges that arose with paper-based CVA systems. Participants described the digital component of UBC as reducing logistical costs for Oxfam by distributing humanitarian aid funds directly to recipients, eliminating the need for expensive intermediaries. Additionally, Sempo designed the NFC cards to work in remote geographic areas where there was poor, or an absence of, internet connectivity, as long as a mobile network was present. As an Oxfam employee stated,

"Mobile networks are accessible even if it's not the best on most islands [...] Digital infrastructure reaching farther than brick-and-mortar infrastructure [...] CVA is difficult and technically very complicated – humanitarian assistance, financial transfers, handling multiple databases [...] Something automated is best." — O2

In participants' accounts, the allure of UBC as a CVA mechanism seemed to rely on the logistical ease of cash distribution that digital transfers and NFC cards offered. However, stakeholders appraised blockchain for its promises of decentralization, transparency, and financial inclusion. While digital CVA could have been delivered through other technologies, stakeholders reported that blockchain technology was deliberately chosen for its *promise* of decentralization, and for limiting the role of local financial institutions in transaction management. Sempo further noted that by identifying eligible humanitarian aid recipients through the recommendations of local community leaders rather than those with government-issued national IDs, enrollment times were minimized and the program was accessible to beneficiaries that were otherwise difficult to reach due to lack of banking or ID. A Sempo employee discussed how UBC was able to streamline enrollment of beneficiaries:

"From a programmatic standpoint, it was also easier for technology. Made it easy to integrate into workflow [...] Enroll beneficiaries very seamlessly." — S

Stakeholders emphasized that, unlike mobile money systems tied to government infrastructures, blockchain-based tokens could circulate outside traditional financial institutions, thereby reducing the need for coordination with the central government. As one Sempo employee stated,

"The challenge of setting up in a new country is not on technology. Barriers are due to financial partnerships and how the program is run." — S

In these narratives, blockchain addressed perceived institutional barriers, while digital CVA and NFC cards addressed logistical ones. Overall UBC conflated the two, providing cash distribution to hard-to-reach populations and reducing logistical delays and obstacles stakeholders encountered when reliant on centralized banking and government infrastructures. A ni-Vanuatu community leader corroborated how UBC addressed roadblocks created by coordination with central government after a disaster, stating,

"My goal is to cut down the time going back and forth to connect with the disaster office [NDMO] and the community [...] The area council is across the peninsula, so cutting down on time, making use of the time for other activities. In 2015 there was chaos with [Cyclone] Pam disaster. It was hard. With the cash voucher, it makes things easier and faster." — CL

Across accounts, the obstacles in the way of UBC meeting its promises were stated to be organizational — in relation to coordination with local actors and partnership constraints — rather than inherent technical limitations of the system.

5.1.2   Reliance on local NGOs and community stakeholders. Because Oxfam, Sempo and Consensys originated outside of Vanuatu, building relationships with ni-Vanuatu stakeholders across government, private sector, and community levels was imperative for program acceptance. In Vanuatu, a small country where strong interpersonal relationships are important, participants repeatedly emphasized that this relational work was critical to the acceptance of UBC's method of humanitarian aid delivery. This relational work included engagement with ni-Vanuatu chiefs, whose authority within village governance structures shaped whether new programs were viewed as legitimate. Chiefs acted as cultural gatekeepers, and participants explained that in some regions, UBC needed to be introduced through established chiefly protocols to be accepted at the community level:

"There is not a great amount of government on each island, but chiefly authorities have power." — PS1

As the ni-Vanuatu population has been learning to adapt to extreme weather conditions, the Vanuatu government and NGOs have focused on designing humanitarian aid programs that promote resilience, with specific efforts made to integrate *kastom* and Indigenous knowledge systems into recovery processes. They described traditional aid as unreliable due to operational inefficiency and dependence on foreign entities; instead, they emphasized the need for "localization" — designing programs through local organizations and employing ni-Vanuatu staff. However, one implementer also noted that the pressure to localize staff was a result of regulatory and health mandates during the COVID-19 pandemic, including shortened work visas, visa denials, and COVID-19 restrictions, rather than from a purely voluntary redistribution of power.

Nevertheless, UBC continued to depend on local chapters of NGOs and community leaders, who were responsible for identifying and enrolling beneficiaries, distributing NFC cards, and training recipients (beneficiaries and vendors). Trust-building with local communities through local organizations was integral to technological acceptance and program success. Oxfam's approach to localized technological training was aimed at empowering ni-Vanuatu community leaders to operate UBC at the ground level. A private sector stakeholder stated,

"We had people living in the community. For the first month, 2 full-time staff were in Santo, so if the users had any issues, they could meet face-to-face. For the beneficiaries themselves, they were supported by the NGO they were affiliated with [...] We liked that it was a localized response using global standard technology,

and it worked really, really well because of that." — PS2

Oxfam localized technological training by simplifying descriptions of how UBC's technology worked and making training materials available in Bislama, one of the Vanuatu's official languages. An Oxfam employee described the simplified training,

> "They [Oxfam] tried to simplify it. The partners would get trained, go to the field, and teach the vendors. Assisted directly by Oxfam in each area of vendors on how to use the phones. They got advice and were registered. On a one-to-one basis, individual beneficiaries who may have lost their cards or had their cards stolen were talked to and reported so that a new card could be put in the system. Minor but important things." — O3

Network mapping of UBC (see Figure. 2) illustrates the complex web of actors involved. While the technological backbone was designed and controlled by Oxfam Australia, Sempo, and Consensys, the program's success on the ground relied on a network of ni-Vanuatu NGOs and community leaders, who carried out identification, training, and distribution. This organizational structure highlights the primary implementers of UBC as Oxfam (the lead organization), Sempo & Consensys (the technology designers), and several international NGOs, whose local Vanuatu branches were led by ni-Vanuatu employees who bore the operational burden of implementation. While Sempo retained full control over the technical architecture and operational parameters, they acknowledged:

> "Trying to run programs in communities is not Sempo's area of expertise [so] they therefore partnered with NGOs to deal with the ethics and people." — S

5.1.3 Enthusiasm from local NGOs and ni-Vanuatu stakeholders. ni-Vanuatu staff at Oxfam and other international NGOs expressed strong enthusiasm for UBC, framing it as more "empowering" than previous aid distribution programs. For Oxfam's ni-Vanuatu staff, the CVA component in UBC symbolized a shift towards "dignity and choice": the term "dignity" was invoked on multiple occasions to describe beneficiaries' ability to make their own purchases. This was in contrast to traditional aid programs where foreign aid providers would often send disaster recovery resources without consulting local community leaders, causing resources to be unnecessarily and poorly distributed. A ni-Vanuatu Oxfam employee stated,

> "With UBC, we had the freedom to choose what was best for our families. It made us feel respected and empowered." — O1

Oxfam stakeholders claimed that, in contrast to traditional humanitarian aid, where there is a dependence on foreign entities, a localized approach built resilience and "decolonized humanitarian aid." Both non-ni-Vanuatu and ni-Vanuatu Oxfam employees stated that hiring ni-Vanuatu employees was evidence of localization (and therefore decolonizing) aid delivery:

> "Oxfam is moving forward to decolonize some ways NGOs work in regard to humanitarian aid and long term development. Our niche is around networking

and partnership with local partners on the ground to support and implement interventions." — O1

Participants offered concrete illustrations of perceived benefits. For example, an NGO participant reflected that UBC was tailored according to the circumstances and needs of aid recipients:

> "There was one man on Efate – he had a child with a disability and was given a card. [It] helped to build and extend the house for the child to play outside. It had a really big impact on their homes. A lot of them also built little canteens or shops after the program ended — it provided them with financial income after the program ended." — NGO1

We note that these accounts reflect organizational and NGO perspectives on empowerment and dignity — as our data did not include direct testimony from beneficiaries or vendors, and thus speaks to how 'dignity' of choice was narrated by implementers rather than how it was actually experienced by aid recipients.

5.1.4 Resistance from state institutions and tensions around sovereignty. Enthusiasm among NGOs contrasted sharply with caution and resistance from certain Vanuatu state institutions. Since blockchain technology and digital infrastructure used by UBC were new to Vanuatu, Oxfam was required to obtain permission through a memorandum of understanding (MOU) from Vanuatu's Council of Ministers and a no-objection letter from the Reserve Bank of Vanuatu (RBV) prior to UBC's implementation. The Reserve Bank of Vanuatu (RBV) initially rejected UBC, expressing concern over introducing a parallel currency (at the time the RBV only allowed the local Vatu currency as the legal tender). UBC only received approval from the RBV once Oxfam and Sempo agreed to tokenize the Vatu and route all funds through the Bank, which allowed regulators to retain control. An Oxfam employee recounted,

> "The Reserve Bank had to verify and approve the project. A presentation was made for the financial intelligence office. There was an absence of laws around cash transfers in general but especially involving blockchain. But that in itself does not make it not okay. It was not illegal, but it complicated the ability to cash out money since these systems do not already exist in Vanuatu." — O2

From implementers' accounts, these negotiations unfolded as negotiations between foreign actors (Oxfam and Sempo) and the RBV. Technical changes — moving from an initial dollar-pegged stablecoin to a tokenized version of the Vatu that the RBV could treat as a voucher rather than as a new currency — were framed as necessary steps for regulatory compliance. Ni-Vanuatu NGOs and other state agencies were not involved in these design decisions, and UBC implementers described the wrapped-token solution as an adjustment required to make the project work, rather than as an opportunity to redistribute technical control or build local capacity around the new infrastructure [67].

Sempo further attributed the resistance to institutional path-dependence, i.e., local actors not wanting to adapt to new systems, as well as divergent financial incentives:

> "There is a lot of work with local governments. Governments don't want to use the new system. [They
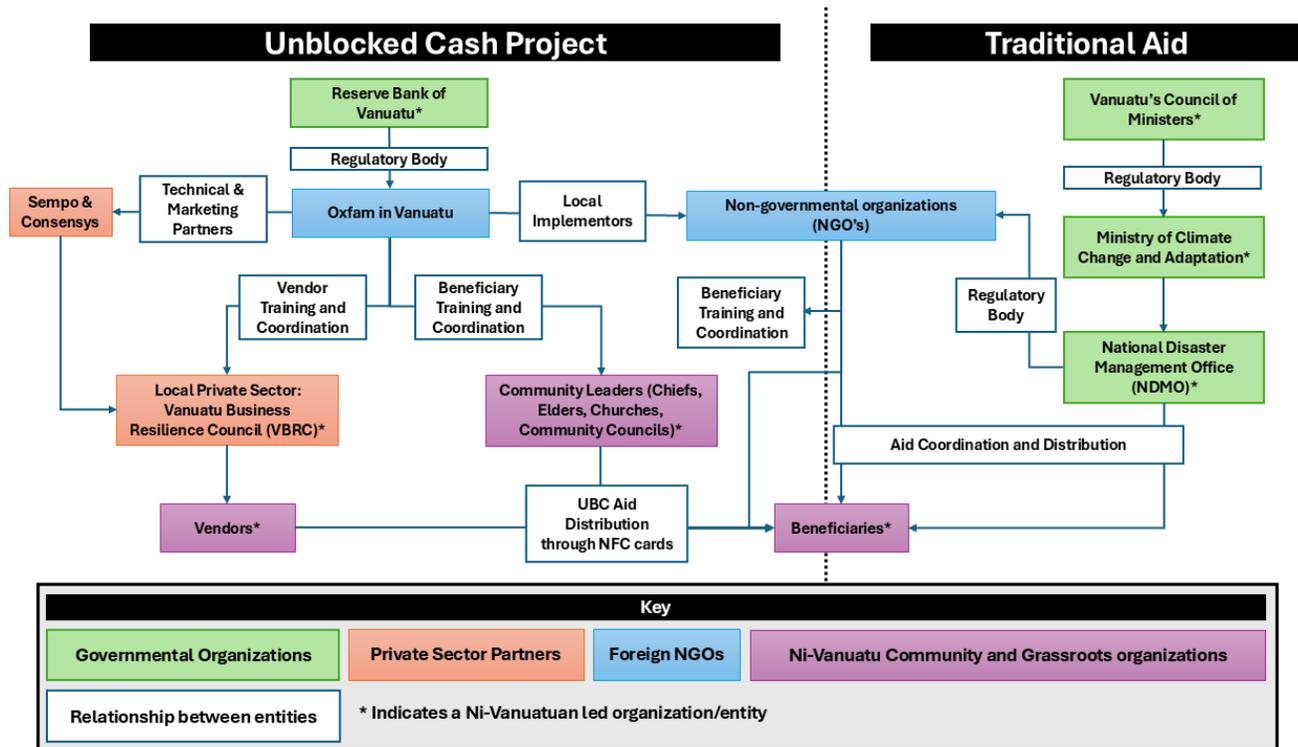
Figure 2: Mapping the network of organizations involved with UBC, including organizations where tensions were negotiated.

want UBC to] just adapt [to] the old system. Technology is not bottlenecking aid distribution, but it is more murky, different people are working together, and different stakeholders are involved, bringing different incentives." — S

The National Disaster Management Office (NDMO), the governmental agency responsible for the coordination of response to emergencies and disasters across Vanuatu, was amongst those that voiced skepticism. In traditional disaster recovery, the NDMO works with NGOs in Vanuatu to implement disaster recovery efforts on the ground. While both the NDMO and NGOs acknowledge the importance of collaboration, tensions can arise post-disaster, particularly when the established structure of disaster recovery is perceived as being bypassed. This was described by a ni-Vanuatu government employee:

> "Working with partners is really good in Vanuatu. When it comes to response, some partners want to go quickly out there, and it causes many complications of activities. People are asking to do their own stuff and don't really fall into the structure anymore. We try our best to keep everyone together." — GO

UBC disrupted the structure of traditional disaster recovery by introducing many unfamiliar concepts, including a market-based approach and blockchain technology. Under particular scrutiny was

blockchain's decentralized approach and lack of reliance on traditional banking and logistical infrastructures. Government stakeholders at the NDMO claimed that the exclusion of local government from such projects would undermine program effectiveness as community resilience was rooted in long-term relationships and reciprocity. NDMO officials expressed discontent that Oxfam did not appropriately consult with the government prior to UBC's roll-out, which they felt undermined historic relationships and the central coordination of state institutions in traditional Vanuatu aid delivery:

> "I didn't hear from them, instead only from the locals. Asked the local government official and asked why they weren't involved in it. I approached them [Oxfam] and asked what they were doing here, anything you do will affects what we do, it's best we are all involved in the process. They didn't really explain everything and didn't really explain the project." — GO

The NDMO officials believed that UBC's reliance on large international donations and advanced technology like blockchain risked overshadowing local authorities' efforts to develop sustainable disaster recovery solutions. A government official argued that,

> "This community, we need them to be resilient, we need them to have the land to grow crops... we can't have them asking us to pay them to go grow their own food [...] I don't want NGOs coming and taking my people's resilience. We want people to take initiative

to do something for themselves. We want them to build for themselves." — GO

Further, during a state of emergency — for e.g. right after a natural disaster — a cluster system is activated and NGOs are expected to "fall into the structure." The failure of Oxfam to consult prior to the roll-out was viewed negatively by the NDMO, and also reflects a major gap in localization efforts. Although NGOs such as Oxfam were not legally required to consult the NDMO, excluding the government agency undermined existing response systems. In traditional disaster recovery practice in Vanuatu, the NDMO initiates programs to encourage local communities to develop their own disaster response plans and implement community-led recovery, such as providing land for farming and organizing labour programs for displaced individuals. However, with UBC, many ni-Vanuatu individuals were less willing to participate in the NDMO's initiatives, preferring the cash provided by Oxfam.

Notably, due to UBC's infrastructural complexity, the project relied on non-ni-Vanuatu implementers for the design, maintenance, and governance of the technical system. This reliance raised concerns from the NDMO about the long-term effectiveness of UBC as a sustainable recovery model:

"My worry is the long-term response for the people - what happens when cash runs out? How can we sustain this cash transfer program?" — GO

The NDMO also strongly advocated for the integration of Indigenous ni-Vanuatu knowledge in disaster recovery efforts, emphasizing the importance of locally rooted practices in rebuilding, resource distribution, and recovery processes.

5.2 Organizational Centralization and Power Dynamics

5.2.1 Decentralization and data transparency. Oxfam and Sempo stakeholders framed blockchain as delivering decentralization via real-time, granular monitoring of NFC card financial transactions without relying on local banks or government agencies as intermediaries. In their accounts, every purchase made with an NFC card was represented on a blockchain ledger, where financial transactions were entered into a series of interconnected 'blocks' that formed a chronological chain. Each block was cryptographically linked to the previous one, creating an unalterable transaction history. Further this system was claimed to be transparent: the information surrounding the source and location of monetary funds was traceable and auditable.

In practice, this transparency was operationalized through Sempo's web-based dashboard. Each transaction made with an NFC-card was logged and visualized there, segmented by factors such as age, vulnerability, gender, location, and frequency, providing program staff with detailed visibility into activity flows. Multiple interviewees mentioned that this enabled detailed oversight into spending patterns and vendor activity near real-time without reliance on centralized intermediaries.

However, access to this visibility was tiered. While Oxfam and Sempo stated that the data was accessible to all "project partners," none of the ni-Vanuatu NGO stakeholders we interviewed indicated they had access to the dashboard. A Sempo technology designer

described the system's layered access controls and how they were balancing transparency with data governance,

"You can have view level (only transactions), enroller level (can add new info), admin level (effectively do anything), and owner level (senior program manager, legally responsible for user access management)." — S

Oxfam described using live monitoring data provided by Sempo's dashboard to help identify and address implementation gaps. For example, a local Oxfam staff described arranging a shuttle service to vendor shops for recipients with mobility or transport constraints that were a consequence of this monitoring (CL). The dashboard monitoring also included tracking 'taboo' purchases such as alcohol, cigarettes, and firearms. While this was not intended to restrict beneficiary agency, it addressed concerns about potential misuse of aid funds. Interviewees reported that less than 1 percent of transactions were flagged as taboo, which they interpreted as evidence that beneficiaries largely exercised responsible control over their purchases.

Despite this optimism about the distributed blockchain ledger, identifiable beneficiary information, including associated demographic attributes, were not written into the ledger but instead stored off-chain on conventional Amazon Web Services (AWS) cloud servers hosted in Australia, under the control of Oxfam Australia and Sempo. The blockchain ledger recorded only wallet-level transaction histories, while the off-chain databases maintained the mappings between program card or wallet identifiers and beneficiary profiles, enabling web dashboards to join transaction histories with demographic attributes. In practice, Sempo's dashboards — which integrated data from the ledger chain and off-chain databases — were administered by a relatively small group of Oxfam and Sempo staff with higher-tier permissions, concentrating real-time visibility and configuration authority rather than distributing it across local partners. 'Transparency' was therefore one-way — implementers could monitor beneficiaries' spending patterns in real time, while ni-Vanuatu stakeholders and beneficiaries had limited visibility into how their data was stored, combined, or accessed. Implementers also reported that beneficiaries did not receive communication prior to enrollment about what data would be collected, where it would be stored, or who would have access, highlighting the limited transparency around the data implications of participation.

5.2.2 Limitations of data sovereignty and knowledge asymmetries. Despite claims made by stakeholders that UBC was decentralizing aid and empowering local communities, significant challenges remained in terms of data sovereignty and knowledge asymmetries between non-ni-Vanuatu and ni-Vanuatu stakeholders. All ni-Vanuatu stakeholders stated that they had a limited understanding of blockchain technology, including its functionality, what data was collected, and where data was stored. Although ni-Vanuatu stakeholders often used key terms frequently cited by Oxfam and Sempo such as 'transparency,' 'efficiency,' and 'decentralization' to describe UBC, they were unable to provide explanations of these concepts. A ni-Vanuatu private sector employee conceded,

"The [blockchain] itself, it's about the digital, how you can make the money align. This is the tricky part, I don't understand the concept itself." — PS3

These gaps in understanding may be attributed to Oxfam and Sempo's simplified training process for ni-Vanuatu stakeholders, which omitted any technical descriptions about the program. These gaps in understanding were not accidental but the result of deliberate design choices by foreign implementers. Training sessions were designed to provide ni-Vanuatu stakeholders with an understanding of key concepts and equip them to use phones and NFC cards, but "avoided" technical terms. Although the rationale for this omission is unclear, ni-Vanuatu stakeholders iterated that training was simplified so that it was digestible for audiences of all digital literacy levels.

While ni-Vanuatu stakeholders did not express any discontent regarding their limited understanding of the technology, their ignorance regarding this vital component highlights significant challenges in the sustainability and localization of the project. As local ni-Vanuatu stakeholders had limited knowledge, they were unable to lead or manage any technological component of UBC that involved blockchain, including the collection and storage of data transferred through financial transactions. Despite Oxfam and Sempo's assertion that they were committed to a localized approach, this did not extend to governing or maintaining the technical infrastructure, arguably the central piece of UBC. This left a major gap in the capacity of ni-Vanuatu stakeholders to lead or sustain UBC without dependence on foreign entities. Figure 3 summarizes the distribution of decision-making power and data access rights across stakeholders.

These knowledge asymmetries were compounded by uncertainties around data access and control. While blockchain provided traceability of individual transactions, the transparency concerning who had access to this data, how it was controlled, and under what conditions, remained unclear to ni-Vanuatu stakeholders — and also to us, as researchers. Without the ability to fully comprehend or manage this data, ni-Vanuatu stakeholders only obtained partial knowledge of the blockchain system. The use of blockchain also presented limitations to local data ownership. Data collected by UBC was stored in Australia under the ownership of Oxfam Australia and Sempo. Non-ni-Vanuatu NGO stakeholders indicated this was due to Vanuatu's lack of data security, where digital infrastructures are much weaker than in Australia. Non-ni-Vanuatu private sector stakeholders echoed these concerns, citing the vulnerability of Vanuatu's digital systems to cyberattacks and the frequent natural disasters that threaten the stability of its infrastructure,

> "[It's a] lot safer to store in Australia than in Vanuatu... smaller sovereign states keep getting hacked." — PS2.

This arrangement was justified through comparative assessment of regulatory frameworks. Foreign implementers contrasted Australia's "extremely stringent" data protection regulations with Vanuatu's perceived weaknesses, claiming that "the data protection is only going to be as good as it has be to according to the local law" (O2). While citing valid infrastructure risks, this perspective reinforced the narrative that ni-Vanuatu institutions were deficient, thereby legitimizing foreign actors' retention of data custody.

Non-ni-Vanuatu stakeholders also argued that it was nearly impossible for Vanuatu to entirely localize UBC as Vanuatu does not have the data servers necessary for storing UBC data and, even if they did, substantial energy demands are required for hosting and storing blockchain data. As a result, Vanuatu cannot retain ownership over data collected on their own Indigenous population, making them dependent on foreign actors to manage the blockchain. Oxfam and Sempo indicated that this was a significant challenge to scaling UBC as it would require the Vanuatu government and local organizations to collaborate with foreign entities and relinquish Indigenous data ownership — an arrangement that sat uneasily with program narratives of decentralization, empowerment, and long-term local autonomy. It also reflected a contradiction in organizational implementation: although digital CVA could have been implemented through simpler systems that integrated existing mobile connectivity and less infrastructural dependency, blockchain was touted for its promises of decentralization and transparency — even though, in practice, it necessitated the very opposite.

6 Discussion

Drawing from stakeholder accounts, we show how the implementation of UBC leveraged blockchain's charisma — promises of decentralization, transparency, and localization — to mobilize resources and garner support from local organizations and communities. At the same time, there remained centralized controls over data, infrastructure, and decision-making. Our analysis focuses on these complexities with respect to the implementation and operation of UBC according to organizational narratives and stakeholder perspectives, without claims about the actual implications for beneficiary populations. We discuss how blockchain's charisma shaped organizational narratives of success and legitimated UBC as innovative despite limited redistribution of technical authority. We then trace how decentralization rhetoric intersected with governance arrangements, showing how localization was framed as procedural inclusion rather than control over data and decision-making. Additionally, we offer design considerations for future humanitarian technologies in low resource postcolonial settings.

6.1 Charisma of Blockchain in UBC's Implementation

Across interviews, stakeholders narrated UBC through the language of decentralization, transparency, and localization. UBC's *charisma* [4] — its ability to invoke visions of socioeconomic and bureaucratic transformation alongside technological adoption — was central to how stakeholders framed and interpreted the project's success. There was also a conflation of blockchain's technical decentralization with organizational disintermediation (i.e. UBC getting around the government and other intermediaries and directly reaching beneficiaries). Charisma, in this context, was less about the delivery of measurable technological change than its capacity to *mobilize belief* — as with prior charismatic projects [4], this belief was sustained by moral narratives of autonomy and empowerment rather than by shared technical authority.

Much of UBC's attractiveness relied on ideological commitments common in digital humanitarianism, which included principles of agency, inclusion, and empowerment. As Jutel [44] argues, digital technologies in humanitarian projects succeed because they are synonymized with ideas of "individual empowerment" and ethical practices, allowing designers to make grand promises of their technology's capacity to generate both material and social change.

Key Actors and Decision-Making Authority

| Oxfam Australia, Sempo, ConsenSys, key donors | Sempo | Oxfam Australia, select Oxfam Vanuatu Staff | Ni-Vanuatu staff of Partner NGOs and Oxfam Vanuatu CVA team |

LAYER 4: Strategic Governance

- Define overall technical architecture and program design
- Decide data-hosting location and legal jurisdiction
- Negotiate with regulators (e.g., Reserve Bank of Vanuatu) and donors

LAYER 3: Technical Infrastructure

- Operates backend servers, databases, smart-contract integration with blockchain, dashboards
- Designs and enforces role-based access controls (view / enroller / admin / owner)

LAYER 2: Dashboard

- Access near real-time, segmented transaction and spending data
- Make decisions about program adjustments

LAYER 1: Local implement and Operation

- Conduct enrolment, training, troubleshooting, and vendor support
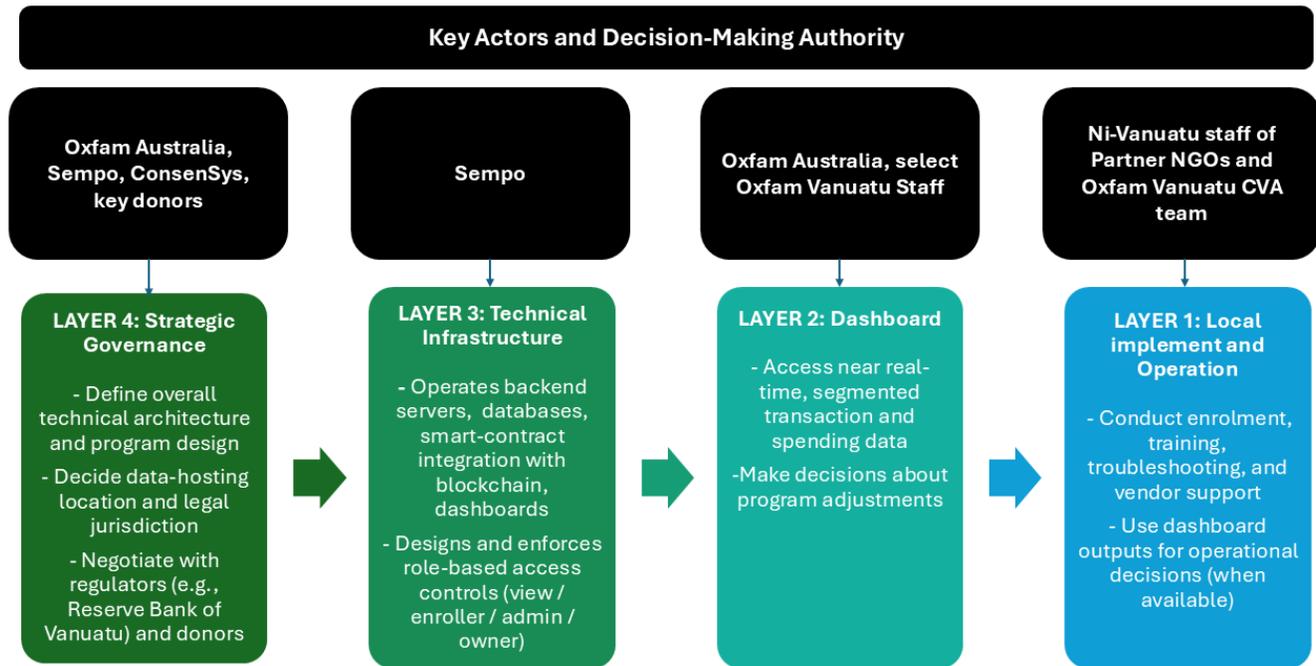- Use dashboard outputs for operational decisions (when available)

Figure 3: The governance layers of the UnBlocked Cash program, including the distribution of decision-making power and data access rights.

Ames [4] describes the "uncanny holding power" of such technologies, where optimism is sustained by "utopian promise [...] and connection to a greater purpose." In UBC, implementers heralded blockchain as a transformative tool that would fix not just the humanitarian supply chain in Vanuatu, but the existing socioeconomic infrastructure, remove intermediaries, empower ni-Vanuatu stakeholders to retain greater autonomy over the recovery process, and instill economic empowerment into local communities through decentralization.

As we have discussed, many ni-Vanuatu stakeholders working in local branches of international NGOs expressed negative views of traditional (and bureaucratic) aid delivery, referencing its deprivation of choice, neglect of local resources, and how it fostered a reliance on foreign organizations. In contrast, they idealized UBC as a solution that promised "localization" and maintained their optimistic view of the project, even as our data described the lack of local data access, off-shore storage, and simplified training that "avoided technological terms." Without this technical training, ni-Vanuatu participants repeated the vocabulary of "transparency" and "efficiency" while lacking material or procedural knowledge of how those features operated in practice, demonstrating charisma's faith-like effect. However, unlike other charismatic projects like OLPC [4] — which were highly visible failures — UBC's charisma persisted through partial successes and asymmetric legibility: faster enrolment and mobile reach were read as evidence of success, even as permissions remained centralized and data off-shore. Here, belief

was sustained not by demonstrated decentralization but by the affective appeal of a forward-looking technology and its liberationist narrative of freeing aid from bureaucracy.

Charismatic technologies can also reproduce existing power asymmetries by preserving the worldviews and hierarchies that enable their implementation [4]. Oxfam approached local communities through a deficit lens, viewing the absence of digital and technological literacy as an innate flaw that had to be rectified [36]. Jutel [43] highlights how the use of blockchain techno-solutionism relies on assumptions that Indigenous populations require "liberation" through technology, while Ames [4] similarly notes the "irony" that charisma often depends on power relations that valorize Global North donors and their tools [4]. Rather than dismantling humanitarian power asymmetries, blockchain's promises were mobilized to stabilize them — rendering UBC legible as "innovative" while leaving core asymmetric governance structures intact. In this sense, blockchain's ideology of 'techno-liberation' reproduced the very dependencies it sought to overcome: on-the-ground gains coexisted with reliance on foreign data centers and expertise. Our study suggests that much of UBC's perceived success were largely effects of digitization itself along with mobile-network coverage — rather than from blockchain.

Beyond shaping how participants narrated UBC, charisma mattered for what counted as 'success' and whose interests were advanced. For example, integrating blockchain helped private sector

partners position the pilot as innovative to donors, attract funding, and garner awards (e.g., EU Horizon 2020 'Blockchains for Social Good'), enhancing organizational reputation [13]. We have found no reports or public updates about UBC after 2022 and participant stakeholders also indicated the project stalled that same year, further suggesting that UBC was a proof-of-concept for mobilizing attention for blockchain applications, rather than a long-term, sustainable solution. Following UBC, one of its implementers co-founded a blockchain technology start-up focused on crypto-enabled payments purpose-built for informal markets, and another private sector implementer leveraged their experience in UBC into blockchain-focused consulting in the Pacific islands. Both implementers were non-ni-Vanuatu, exemplifying how UBC was used to enhance reputation and opportunities for its foreign stakeholders.

We also see the unevenness of charisma as regulatory bodies such as the RBV and NDMO resisted this enchantment. Their insistence on consultation indicates charisma's limits within institutional arrangements that are oriented toward local accountability and sovereignty. UBC's eventual stalling demonstrates that while charisma can mobilize projects, their sustainability is shaped by infrastructural and institutional realities, echoing the NDMO's concerns about resilience and consultation: "What happens when the cash runs out?"

6.2 Decentralization and Power Structures

In UBC, decentralization was a central narrative: real-time transparency over NFC-card transactions and reduced reliance on incumbent financial infrastructures were narrated as delivering transparency and efficiency. Yet interview accounts locate control over real-time visibility, data custody, and platform configuration with a small set of actors (e.g., Australian data hosting, those with owner-level access). Further, government and community leaders emphasized continued dependence on foreign organizations and limited use of local resources, thereby preventing ni-Vanuatu stakeholders from taking the lead in recovery efforts. This gap echoes scholarship observing that technology pilots in aid frequently advance the development and visibility of the technology itself, attracting resources and recognition, even when simpler systems might suffice [13, 20].

The rhetoric of "removing intermediaries" also had its limits. Despite a decentralized ledger, strategic control over UBC's core systems rested with non-ni-Vanuatu partners. Energy and infrastructure constraints, along with perceived security concerns, were cited to justify offshore data custody and external technical stewardship — arrangements that left local actors managing operational risks while foreign partners retained strategic control over core systems [3]. Further, the implementation of new technologies such as blockchain necessitates the involvement of private sector technology companies, leaving the humanitarian space vulnerable to stakeholders who exploit philanthropic projects as a means of legitimizing their tech [44]. Thus, non-ni-Vanuatu stakeholders from Oxfam and Sempo retained decision-making and data ownership authority, with critical data infrastructures managed physically and administratively outside Vanuatu — a dynamic obscured by feel-good narratives of decentralization and inclusion. This retention of power by non-ni-Vanuatu stakeholders also reflects a deficit in the

sustainability of projects like UBC, where technological solutions cannot be maintained by local stakeholders in low resource settings.

In practice, decentralized technologies do not, on their own, reduce dependency and promote localization. These blockchain systems still require centralized human oversight and expertise for implementation, maintenance, and data management [34]. These dependencies intersect with asymmetric North-South relations, the disproportionate power of stakeholders (and aid donor markets), and the entry of private actors. Even when local communities are involved, projects marketed as 'empowering' hide how locals' agency is limited, subject to the authority of more powerful, foreign parties [24].

6.2.1   The limits of localization. While UBC showcased the potential of technology to amplify community stakeholder responses, it also exposed a paradox in the quest to localize aid. Our interviews suggest that "localization" in UBC was often equated with procedural inclusion — e.g., hiring ni-Vanuatu staff and channelling operational tasks to local offices — rather than a redistribution of technical control or decision rights. In UBC, the idea of "localization" largely collapsed into the inclusion of ni-Vanuatu stakeholders (e.g., employment) and with aims of financial empowerment and independence (from a beneficiary perspective), without corresponding structural change. This left ni-Vanuatu stakeholders as passive recipients of an (albeit innovative) aid system, replicating characteristics of traditional aid that non-ni-Vanuatu stakeholders claimed to disrupt. As Egger [20] argues, technological 'innovation' in aid often serves as a tool for the "continuation" of existing humanitarian practices.

It is important to note that power asymmetries are not only a product of the implementation of blockchain projects but instrumental to their very design. The synonymizing of blockchain with innovation means that stakeholders can use promises of technological transformation to hide the actual inner workings of the technology itself. As Cheesman [13] states, blockchain is commonly referred to as "something nearly everyone has heard of [...] yet at the same time essentially no one understands." While ni-Vanuatu stakeholders from NGOs praised the blockchain technologies as 'transparent' and 'efficient,' they showed no discontent or concern over having no knowledge of how the technology operated or where data was collected and stored. Instead, they were excited about being involved in an innovative and futuristic project. This highlights a key part of blockchain humanitarianism — the illusion and ignorance surrounding blockchain was used to promote its transformative potential. Although it is unclear whether greater blockchain literacy among ni-Vanuatu stakeholders would have changed the trajectory of the project, it should be questioned what the goals of localization really are when ni-Vanuatu stakeholders are completely excluded from ownership over the project's central feature (in this case — blockchain).

The initiative's localization push was often framed as an ideological commitment to redistributing power within humanitarian aid systems. However, as the findings indicate, this shift was significantly accelerated by external geopolitical constraints, especially the COVID-19 pandemic. Localization was thus, in part, a response to regulatory necessity, rather than a purely voluntary commitment to power redistribution. This distinction matters — when

localization is framed as ideological progress but driven by external constraints, it obscures the fragility of the arrangement and the underlying continuity of foreign control.

Despite localized training and the participation of ni-Vanuatu NGOs and community leaders, UBC ultimately did not mitigate or disrupt power asymmetries. UBC's 'innovative approach' reinforced a form of digital neocolonialism where local actors remained dependent on foreign expertise and systems [43, 44]. Blockchain's alignment with a techno-saviour narrative, wherein foreign implementers position themselves as indispensable actors 'rescuing' local communities from their perceived deficiencies, further obscures structural inequalities perpetuated by these projects. Responding to calls in HCI to interrogate the ethics of decentralized technologies [14], our analysis suggests looking beyond the dispersion of data storage to the redistribution of decision-making power: who holds access to dashboards, who governs data, and who sets program rules.

6.3 Designing For and With Dignity

Participants from local NGOs frequently framed UBC as restoring "dignity of choice," emphasizing the freedom of households to purchase whatever they wanted through NFC card funds, aligning with presumptions in the literature surrounding cash-based aid [18, 39, 54]. However, conditions for sustained dignity need to extend beyond purchase choice. There is a need to acknowledge that dignity is a context and culture-specific term [54] — for example, how does authority, data, and institutional coordination shape the agency of ni-Vanuatu stakeholders? Mosel and Holloway [54] argue that dignity in humanitarian responses can only be attained if the response is open, transparent, fair, respectful, and accountable to the local population. In UBC, ni-Vanuatu stakeholders were not fully aware of what data was collected, where it was stored, and how it was used. This raises ethical concerns around whether ni-Vanuatu participants were fully equipped to engage with blockchain technology in a meaningful and autonomous way that enhanced dignity of choice at a systemic level.

The colonial histories of Vanuatu are particularly relevant here — colonized jointly by the British and French until independence in 1980, the ni-Vanuatu population were drawn into coercive and semi-coercive labour circuits in the 19th and early 20th centuries, at the height of which, more than half the male population served on plantations in Australia and other settler-polities [75]. The social, economic, and political fabric of Vanuatu has been and remains irrevocably tied to these colonial histories [42] — for e.g. ni-Vanuatu continue to provide low-wage labour to Australia to this day, a phenomenon that was frequently mentioned in our interviews with ni-Vanuatu stakeholders [60].

As an independent nation-state, Vanuatu has been grappling with how to align or transform externally imposed political structures with their own Indigenous ni-Vanuatu structures [56]. This connects, more broadly, with the rise of modern humanitarianism that — entangled with colonial histories — has purposefully sought to sideline the sovereignty of postcolonial states [72]. Morgan [53] recognizes that a key challenge in modern Vanuatu is enacting governance within a postcolonial state regulated by both Indigenous and state authorities — as reflected in the existence of government bodies (such as the NDMO and RBV) alongside chieftain leadership systems in local communities.

During independence, ni-Vanuatu identity became closely intertwined with *kastom* — a term used to describe ni-Vanuatu ways of life in contrast to practices and belief systems introduced through colonization [27, 64]. Contemporary scholars conceptualize *kastom* as a worldview and framework for evaluating behaviours, relational obligations, and the legitimacy of authority. In the early 2000s, Vanuatu cultural centers began to promote the "*kastom* economy," which advocated "national self-reliance" and the use of natural resources and Indigenous economic practices to build wealth, rather than reliance on external entities [65].

Within the context of Vanuatu — where *kastom* has become increasingly essential to how state government and ni-Vanuatu communities operate — UBC did not consider how its lack of compliance with local authorities challenged *kastom* principles of consultation and self-reliance, thereby inviting resistance from the NDMO. While UBC's operating model sought to streamline delivery by reducing dependence on local intermediaries, including state institutions, in order to reach beneficiaries directly and efficiently, it also reconfigured governance: who gets to make decisions about program rules, data access, and operational adjustments, and who gives them the mandate? From the perspective of the NDMO, heavy reliance on international donations, cash transfers, and advanced technology risked overshadowing the work of local authorities to build sustainable recovery efforts. When local authorities are not substantively involved, community initiatives that tie recovery to land, subsistence practices, and *kastom* can be displaced by short-cycle financial interventions that are shaped by foreign donors and charismatic technologies.

However, we also see partial successes in UBC's consideration of local context, primarily in their inclusion of chiefly authority to support implementation. UBC's ni-Vanuatu NGOs and community leaders appraised the role of chiefs as critical intermediaries who could legitimate the program: they helped build trust with local communities and supported the identification of beneficiaries. This engagement could be read as a gesture signifying respect for *kastom* governance [53, 85] but also as a condition for on-ground adoption. At the same time, the NDMO resisted UBC over concerns that it undermined efforts to strengthen resilience, self-sufficiency, and Indigenous subsistence practices. We see how UBC both failed and succeeded to consider *kastom* in its implementation (i.e. avoiding consultation with the NDMO vs. the inclusion of chiefly authority), and how this affected charisma's uneven effects across stakeholder groups. Within HCI, this raises critical questions about how technological interventions can cohesively account for local epistemologies across multiple governing institutions, and the importance of considering how context and culture informs whether a technology can plausibly meet the criterion for dignified design.

HCI researchers have highlighted technology's amplification of existing human capacity and how the absence of strong institutional support can reinforce, rather than resist, inequities [79]. Researchers have also argued for dignity to be embedded within technological design, particularly humanitarian tech [9, 45, 76]. In the face of asymmetric power relations, both autonomy and dignity are compromised and humanitarian tech risks exploiting and undermining the populations it claims to support. For future designs

of humanitarian technology to support dignity, technologies must be transparent and accountable to all stakeholders, while fostering autonomy and dignity at every level of decision-making.

We argue that dignity is inseparable from governance and sovereignty: a design that maximizes immediate purchase choices but centralizes control over the underlying rules, data, and infrastructure can inadvertently narrow community agency. Designing *for and with dignity* would mean two commitments: (1) maintaining recipient choice and responsiveness in the short term, and (2) embedding co-governance arrangements — with state bodies such as the NDMO and with ni-Vanuatu organizations — that enable local oversight, data sovereignty, and continuity after external implementers step back in the long term.

6.3.1 Implications for humanitarian technology design. UBC's practical achievements were built on digitizing the CVA process, the use of local councils to identify recipients, and mobile connectivity, rather than on properties unique to distributed ledgers. In this context, blockchain's complexity and resource intensity were not a necessity but a design choice that amplified foreign infrastructural and technical dependence. Infrastructural and regulatory gaps were used to justify offshore data custody and external governance. Implementers contrasted Australia's "extremely stringent" data protection regime and robust infrastructure with Vanuatu's minimal legal framework, limited technical capacity, perceived vulnerability to cyberattacks, and the energy demands of hosting and storing blockchain data. The pattern of "operational delegation" we document is structurally linked to the introduction of complex, externally owned technical infrastructures (e.g. blockchain) into low resource environments. In contrast, alternate digital voucher systems, built around existing mobile infrastructure and alternative databases, could plausibly lower the technical barrier to local administration and reduce the need for permanent reliance on a foreign technology vendor.

Existing scholarship [47] on Indigenous Data Sovereignty [84] has emphasized Indigenous peoples' collective rights in relation to who sets rules, controls access, and decides how their data is used. Meaningful ni-Vanuatu data sovereignty in humanitarian technologies would entail avoiding infrastructures that cannot be governed locally, and instead prioritizing systems whose technical and institutional complexity is compatible with local capacity and institutions. In practice, this would mean designing CVA systems where ni-Vanuatu institutions, such as the NDMO, RBV, and local NGO actors, can hold primary decision rights over data use, access rules, and retention policies, even if physical hosting remains offshore in the short term. To make such co-governance plausible would entail a move away from blockchain-based architectures in favour of simpler digital CVA infrastructures. This would also mean approaching consultative processes according to context, culture, and existing governance systems — in the case of Vanuatu, recognizing the importance of *kastom* (e.g. consultation, sovereignty, self-reliance) to humanitarian response, and considering how dignified design can meaningfully address these principles.

Indigenous data governance frameworks, such as the CARE Principles and Māori data sovereignty models, emphasize that communities retain ultimate decision-making authority over data affecting them [12]. In the Pacific, analogous commitments to local control are visible through the partnership between the Pacific Islands Association of NGOs (PIANGO) and Humanitarian Advisory Group (HAG) which was explicitly aimed at promoting localization initiatives that are led by Pacific researchers and partners [58]. In the Solomon Islands, local NGO umbrella body Development Services Exchange (DSE), has excluded international NGOs from its board to ensure local self-reliance, while advocating with the government on NGO policy and local civil society participation in humanitarian governance [58].

Building on these approaches, humanitarian programs should mandate technical training and institutional capacity-building as a core design requirement, ensuring that local stakeholders are equipped to act as data stewards rather than data subjects. Beyond training, introducing tiered governance structures in which ni-Vanuatu institutions hold veto power over decisions such as data retention, vendor selection, or program rule changes ensures these roles become legally enforceable rather than merely consultative. Regular community data audits, convened by local organizations could provide a forum for beneficiaries and local leaders to examine how their data is used, by whom, and for what purposes, countering the one-way transparency that characterized UBC.

Finally, instead of accepting offshore data storage as inevitable, there is potential in exploring hybrid models that separate physical infrastructure location from governance control. This could include regional data partnerships — for example, the Pacific Data Hub [74], which is a regional initiative that manages shared infrastructure around data management, sharing, and use across Pacific Island countries and territories. This aligns with recent Pacific regional digital initiatives that explicitly frame "digital sovereignty" and regional cooperation as strategic priorities [78]. In such models, service-level agreements would separate infrastructure from governance and clearly define which functions are outsourced (for example secure data hosting) and which remain with local institutions (for example data policy and access decisions), along with pathways for renegotiation and transition.

The goal is not immediate infrastructural self-sufficiency but a trajectory that maps a path towards ni-Vanuatu sovereignty. As UBC shows, in the absence of such pathways, charismatic technologies will continue to lock humanitarian programs into enduring dependencies that limit sustainability and scalability of projects, while making claims of decentralization and empowerment.

7 Conclusion and Limitations

This paper examined Oxfam's UnBlocked Cash (UBC) project in Vanuatu to interrogate how blockchain-enabled cash-and-voucher assistance (CVA) is implemented in practice, and with what consequences for power, sovereignty, and data governance in humanitarian contexts. Our analysis traces how decentralization rhetoric and claims of localization often translated into "operational delegation" without corresponding transfers of technical authority or data sovereignty, reinforcing colonial dependencies despite local enthusiasm. In response, we argue that designing humanitarian technologies "for dignity" in postcolonial, low resource settings requires going beyond purchase choice to embed co-governance, data sovereignty, and trajectories toward ni-Vanuatu institutional control into the sociotechnical architecture of CVA systems.

As an exploratory single-case study, we acknowledge limitations in our work. First, our interviews were limited to stakeholders directly involved in UBC's design, implementation, and governance. We did not interview beneficiaries or vendors, and therefore cannot make strong claims about recipients' lived experiences or their perspectives on UBC or blockchain technology. Second, our sample size (n=11) was constrained by available funding and logistical challenges. Our ability to conduct virtual interviews was limited due to compromised internet connectivity following Tropical Cyclones Judy and Kevin, which occurred two months before we arrived in Vanuatu. However, our results reflect the diverse perspectives of each primary foreign and ni-Vanuatu stakeholder group involved in implementing UBC. Third, our analysis is grounded in self-reported accounts and public-facing documents rather than technical audits of infrastructure, and is specific to Vanuatu's sociopolitical and regulatory context. As such, we do not claim generalizability, but rather analytic transferability to other sites where similar humanitarian, regulatory, and infrastructural conditions prevail. We recommend that future computing research engage with multi-sited comparative studies of blockchain and non-blockchain CVA programs and include the perspectives of vendors and aid beneficiaries. This would add valuable insights into the lived experiences of those whom humanitarian technologies are purported to serve.

Acknowledgments

References

[1] 2024. *Dedoose Version 9.0.107, cloud application for managing, analyzing, and presenting qualitative and mixed method research data.* Los Angeles, CA, USA. http://dedoose.com/

[2] Foluke Eyitayo Adediran, Beatrice Adedayo Okunade, Rosita Ebere Daraojimba, Ololade Elizabeth Adewusi, Bukola A. Odulaja, and Justice Chika Igbokwe. 2024. Blockchain for social good: A review of applications in humanitarian aid and social initiatives. *International Journal of Science and Research Archive* 11, 1 (Feb. 2024), 1203–1216. https://doi.org/10.30574/ijsra.2024.11.1.0184

[3] Tammam Aloudat and Themrise Khan. 2022. Decolonising humanitarianism or humanitarian aid? *PLOS Global Public Health* 2, 4 (Apr. 2022), e0000179. https://doi.org/10.1371/journal.pgph.0000179

[4] Morgan G Ames. 2019. *The Charisma Machine: The Life, Death, and Legacy of One Laptop per Child.* MIT Press, Cambridge, MA, USA.

[5] Joseph G. Bock, Ziaul Haque, and Kevin A. McMahon. 2020. Displaced and dismayed: How ICTs are helping refugees and migrants, and how we can do better. *Information Technology for Development* 26, 4 (Feb. 2020), 670–691. https://doi.org/10.1080/02681102.2020.1727827

[6] Virginia Braun and Victoria Clarke. 2008. Using thematic analysis in psychology. *Qualitative Research in Psychology* 3 (July 2008), 77–101. https://doi.org/10.1191/1478088706qp063oa

[7] Virginia Braun and Victoria Clarke. 2022. Conceptual and design thinking for thematic analysis. *Qualitative Psychology* 9, 1 (2022), 3–26. https://doi.org/10.1037/qup0000196

[8] Maximilian Bruder and Thomas Baar. 2024. Innovation in humanitarian assistance: A systematic literature review. *Journal of International Humanitarian Action* 9, 2 (Jan. 2024). https://doi.org/10.1186/s41018-023-00144-3

[9] Richard Buchanan. 2001. Human dignity and human rights: Thoughts on the principles of human-centered design. *Design Issues* 17, 3 (Summer 2001), 35–39. https://doi.org/10.1162/074793601750357178

[10] Ryan Burns. 2019. New frontiers of philanthro-capitalism: Digital technologies and humanitarianism. *Antipode* 51 (Apr. 2019), 11–22. https://doi.org/10.1111/anti.12534

[11] Isabelle Vonèche Cardia, Adrian Holzer, Ying Xu, Carleen Maitland, and Denis Gillet. 2017. Towards a principled approach to humanitarian information and communication technology. In *Proceedings of the 2017 International Conference on Information and Communication Technologies and Development (ICTD '17), November 16–19, 2017, Lahore, Pakistan.* ACM, New York, NY, USA, 1–5. https://doi.org/10.1145/3136560.3136588

[12] Stephanie Russo Carroll, Ibrahim Garba, Oscar L. Figueroa-Rodríguez, Jarita Holbrook, Raymond Lovett, Simeon Materechera, Mark Parsons, Kay Raseroka, Desi Rodriguez-Lonebear, Robyn Rowe, Rodrigo Sara, Jennifer D. Walker, Jane Anderson, and Maui Hudson. 2020. The CARE principles for indigenous data governance. *Data Science Journal* 19 (Nov. 2020), 43. https://doi.org/10.5334/dsj-2020-043

[13] Margie Cheesman. 2024. Conjuring a Blockchain Pilot: Ignorance and Innovation in Humanitarian Aid. *Geopolitics* 0, 0 (2024), 1–28. https://doi.org/10.1080/14650045.2024.2389284

[14] Nazli Cila, Gabriele Ferri, Martijn De Waal, Inte Gloerich, and Tara Karpinski. 2020. The blockchain and the commons: Dilemmas in the design of local platforms. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20), April 15–20, 2020, Honolulu, HI, USA.* ACM, New York, NY, USA, 1–14. https://doi.org/10.1145/3313831.3376660

[15] Jennifer Day, Margaretha Wewerinke-Singh, Susanna Price, Sam Tabawa, Renata Netaf, Anne Pakoa, and Jack Ulas. 2021. Trust in cash assistance programming: Addressing mega trend changes through disaster management and impact assessment. *Impact Assessment and Project Appraisal* 39, 4 (Apr. 2021), 348–351. https://doi.org/10.1080/14615517.2021.1916264

[16] Nicola Dell and Neha Kumar. 2016. The ins and outs of HCI for development. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16), May 7–12, 2016, San Jose, CA, USA.* ACM, New York, NY, USA, 2220–2232. https://doi.org/10.1145/2858036.2858081

[17] Paul Dourish and Scott D. Mainwaring. 2012. Ubicomp's colonial impulse. In *Proceedings of the 2012 ACM Conference on Ubiquitous Computing (UbiComp '12), September 5–8, 2012, Pittsburgh, PA, USA.* ACM, New York, NY, USA, 133–142. https://doi.org/10.1145/2370216.2370238

[18] Rameshwar Dubey, Angappa Gunasekaran, David J. Bryde, Yogesh K. Dwivedi, and Thanos Papadopoulos. 2020. Blockchain technology for enhancing swift-trust, collaboration and resilience within a humanitarian supply chain setting. *International Journal of Production Research* 58 (Feb. 2020), 3381–3398. https://doi.org/10.1080/00207543.2020.1722860

[19] Mark Duffield. 2016. The resilience of the ruins: Towards a critique of digital humanitarianism. *Resilience* 4, 3 (Mar. 2016), 147–165. https://doi.org/10.1080/21693293.2016.1153772

[20] Clara Egger. 2024. The politics and spaces of public-private partnerships in humanitarian tech innovations. *Environment and Planning C: Politics and Space* 42, 5 (Oct. 2024), 708–724. https://doi.org/10.1177/23996544231206822

[21] Cansu Ekmekcioglu, Priyank Chandra, and Syed Ishtiaque Ahmed. 2023. A matter of time: Anticipation work and digital temporalities in refugee humanitarian assistance in Turkey. *Proceedings of the ACM on Human-Computer Interaction* 7, CSCW1 (Apr. 2023), Article 22, 36 pages. https://doi.org/10.1145/3579455

[22] Chris Elsden, Arthi Manohar, Jo Briggs, Mike Harding, Chris Speed, and John Vines. 2018. Making sense of blockchain applications: A typology for HCI. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18), April 21–26, Montreal, QC, CA.* ACM, New York, NY, USA, 1–14. https://doi.org/10.1145/3173574.3174032

[23] Simone Esler. 2015. *Vanuatu post-disaster needs assessment.* Government of Vanuatu. Retrieved January 2, 2025 from https://www.dfat.gov.au/sites/default/files/post-disaster-needs-assessment-cyclone-pam.pdf

[24] Pedro Ferreira. 2024. Examining the local in ICT4D: A postcolonial perspective on participation. In *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (CHI '24), May 11–16, 2024, Honolulu, HI, USA.* ACM, New York, NY, USA, 1–13. https://doi.org/10.1145/3613904.3642748

[25] Michele Finck. 2018. *Blockchain Regulation and Governance in Europe.* Cambridge University Press, Cambridge, UK, 210–212. https://doi.org/10.1017/9781108609708

[26] Karen E. Fisher. 2022. People first, data second: A humanitarian research framework for fieldwork with refugees by war zones. *Computer Supported Cooperative Work (CSCW)* 31, 2 (Mar. 2022), 237–297. https://doi.org/10.1007/s10606-022-09425-8

[27] Miranda Forsyth. 2009. *A Bird That Flies with Two Wings: Kastom and state justice systems in Vanuatu.* ANU Press, Canberra, AU, Chapter 3. Tradition and transformation in leadership structures and conflict-management mechanisms, 61–94. https://doi.org/10.22459/BFTW.09.2009

[28] Michael Fröhlich, Franz Waltenberger, Ludwig Trotter, Florian Alt, and Albrecht Schmidt. 2022. Blockchain and cryptocurrency in human-computer interaction: A systematic literature review and research agenda. In *Proceedings of the 2022 ACM Designing Interactive Systems Conference (DIS '22), June 13–17, 2022, Virtual Event, Australia.* ACM, New York, NY, USA, 155–177. https://doi.org/10.1145/3532106.3533478

[29] International Monetary Fund. 2018. *Vanuatu: 2018 Article IV Consultation – Press Release and Staff Report.* International Monetary Fund. Retrieved February 2, 2025 from https://www.imf.org/en/Publications/CR/Issues/2018/04/26/Vanuatu-2018-Article-IV-Consultation-Press-Release-and-Staff-Report-45821

[30] World Bank Group. 2024. *Inside Vanuatu's resilience revolution: A blueprint for small island states.* World Bank Group. Retrieved September 2, 2025 from https://www.worldbank.org/en/news/feature/2024/05/22/inside-vanuatu-s-resilience-revolution-a-blueprint-for-small-island-states

[31] Melanie Hardman. 2019. *Unblocked cash pilot full report.* Sempo. Retrieved February 20, 2025 from https://www.calpnetwork.org/publication/unblocked-cash-pilot-full-report/

[32] Susan W. Hardwick. 2017. Case study approach. In *International Encyclopedia of Geography: People, the Earth, Environment and Technology.* John Wiley & Sons, Hoboken, NJ, USA, 1–6. https://doi.org/10.1002/9781118786352

[33] Sandra Uwantege Hart. 2023. *Going digital: What's next for Vanuatu in blockchain innovation?* Pacific Advisory. Retrieved February 24, 2025 from https://www.calpnetwork.org/wp-content/uploads/2023/04/going-digital-whats-next-for-vanuatu.pdf

[34] Sandra Uwantege Hart, Catherine Jones, and Beatriz Carvalho. 2024. Anticipate, automate, accelerate: A framework for blockchain in anticipatory action. *International Journal of Disaster Risk Reduction* 112 (Oct. 2024), 104644. https://doi.org/10.1016/j.ijdrr.2024.104644

[35] Sara Heitlinger, Lara Houston, Alex Taylor, and Ruth Catlow. 2021. Algorithmic food justice: Co-designing more-than-human blockchain futures for the food commons. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21), May 8–13, 2021, Virtual Event, Japan.* ACM, New York, NY, USA, 1–17. https://doi.org/10.1145/3411764.3445655

[36] Dorothea Hilhorst. 2018. Classical humanitarianism and resilience humanitarianism: Making sense of two brands of humanitarian action. *Journal of International Humanitarian Action* 3 (Sept. 2018), 12 pages. Issue 15. https://doi.org/10.1186/s41018-018-0043-6

[37] Candice Holt and Sandra Hart. 2019. *Vanuatu cash transfer feasibility assessment.* Oxfam in Vanuatu. Retrieved February 24, 2025 from https://www.calpnetwork.org/publication/vanuatu-cash-transfer-feasibility-assessment/

[38] Joey Chiao-Yin Hsiao and Tawanna R. Dillahunt. 2018. Technology to support immigrant access to social capital and adaptation to a new country. *Proceedings of the ACM on Human-Computer Interaction* 2 (Nov. 2018), 1–21. https://doi.org/10.1145/3274339

[39] Kyle Hunt, Adithya Narayanan, and Jun Zhuang. 2022. Blockchain in humanitarian operations management: A review of research and practice. *Socio-Economic Planning Sciences* 80 (Mar. 2022), 101175. https://doi.org/10.1016/j.seps.2021.101175

[40] Oxfam International. n.d.. *UnBlocked Cash Project: Using blockchain technology to revolutionize humanitarian aid.* Oxfam. Retrieved February 20, 2025 from https://www.oxfam.org/en/unblocked-cash-project-using-blockchain-technology-revolutionize-humanitarian-aid

[41] Lilly Irani, Janet Vertesi, Paul Dourish, Kavita Philip, and Rebecca E. Grinter. 2010. Postcolonial computing: A lens on design and development. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '10), April 5–10, 2010, Atlanta, GA, USA.* ACM, New York, NY, USA, 1311–1320.

[42] Margaret Jolly. 1987. The forgotten women: A history of migrant labour and gender relations in Vanuatu. *Oceania* 58, 2 (Dec. 1987), 119–139. https://doi.org/10.1002/j.1834-4461.1987.tb02265.x

[43] Olivier Jutel. 2021. Blockchain imperialism in the Pacific. *Big Data & Society* 8, 1 (Feb. 2021), 2053951720985249. https://doi.org/10.1177/2053951720985249

[44] Olivier Jutel. 2022. Blockchain humanitarianism and crypto-colonialism. *Patterns* 3, 1 (Jan. 2022), 100422. https://doi.org/10.1016/j.patter.2021.100422

[45] Os Keyes, Josephine Hoy, and Margaret Drouhard. 2019. Human-computer insurrection: Notes on an anarchist HCI. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19), May 4–9, 2019, Glasgow, Scotland, UK.* ACM, New York, NY, USA, 1–13. https://doi.org/10.1145/3290605.3300569

[46] Nir Kshetri. 2017. Blockchain's roles in strengthening cybersecurity and protecting privacy. *Telecommunications Policy* 41, 10 (Nov. 2017), 1027–1038. https://doi.org/10.1016/j.telpol.2017.09.003

[47] Tahu Kukutai and John Taylor (Eds.). 2016. *Indigenous Data Sovereignty: Toward an Agenda.* Vol. 38. ANU Press, Canberra, AU. https://doi.org/10.22459/CAEPR38.11.2016

[48] Cara Lapointe and Lara Fishbane. 2019. The blockchain ethical design framework. *Innovations: Technology, Governance, Globalization* 12 (Jan. 2019), 50–71. https://doi.org/10.1162/inov_a_00275

[49] Mirca Madianou. 2019. Technocolonialism: Digital innovation and data practices in the humanitarian response to refugee crises. *Social Media + Society* 5, 3 (July 2019), 2056305119863146. https://doi.org/10.1177/2056305119863146

[50] Amin Maghsoudi, Russell Harpring, Wojciech D. Piotrowicz, and Damian Kedziora. 2023. Digital technologies for cash and voucher assistance in disasters: A cross-case analysis of benefits and risks. *International Journal of Disaster Risk Reduction* 96 (July 2023), 103827. https://doi.org/10.1016/j.ijdrr.2023.103827

[51] Carleen Maitland, Marisol Wong-Villacres, Roberto Pereira, Elba Del Carmen Valderrama Bahamóndez, Leticia Peres, and Rehema Baguma. 2023. Digital platform use for refugee crisis response. In *Proceedings of the 2022 International Conference on Information and Communication Technologies and Development (ICTD '22),* Vol. 9. ACM, Seattle, WA, USA, 1–5. https://doi.org/10.1145/3572334.3572376

[52] Aaron Martin, Gargi Sharma, Siddharth Peter de Souza, Linnet Taylor, Boudewijn van Eerd, Sean Martin McDonald, Massimo Marelli, Margie Cheesman, Stephen Scheel, and Huub Dijstelbloem. 2022. Digitisation and sovereignty in humanitarian space: Technologies, territories and tensions. *Geopolitics* 28, 3 (Mar. 2022), 1362–1397. https://doi.org/10.1080/14650045.2022.2047468

[53] Wesley Morgan. 2013. Overlapping authorities: Governance, leadership, and accountability in contemporary Vanuatu. *Journal of South Pacific Law* 2013 (Jan. 2013), 1–22.

[54] Irina Mosel and Kerrie Holloway. 2019. *Dignity and humanitarian action in displacement.* Humanitarian Policy Group. Retrieved February 26, 2025 from https://media.odi.org/documents/Dignity_synthesis_paper.pdf

[55] Anna Naupa, Vanessa Organo, and Elise Huffer. 2024. *Wokbaot wetem kalja: culture and disaster management in Vanuatu.* Devpolicy Blog. Retrieved January 20, 2026 from https://devpolicy.org/wokbaot-wetem-kalja-moving-with-culture-while-managing-disasters-in-vanuatu-20240711/

[56] Gregoire Nimbtik. 2016. *Worlds in collision: An inquiry into the sources of corruption within Vanuatu government and society.* Ph. D. Dissertation. RMIT University.

[57] Lorelli Nowell, Jill Norris, Deborah White, and Nancy Moules. 2017. Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods* 16 (Oct. 2017), 1–13. https://doi.org/10.1177/1609406917733847

[58] Pacific Islands Association of NGOs and Humanitarian Advisory Group. 2021. *Walking together in partnership: Exploring the impact of localisation of humanitarian action research in the Pacific.* Technical Report. Pacific Islands Association of NGOs and Humanitarian Advisory Group, Suva, Fiji and Melbourne, Australia. https://humanitarianadvisorygroup.org/wp-content/uploads/2021/03/HAG-PIANGO_Walking-Together_Final.pdf

[59] Leysia Palen, Robert Soden, T. Jennings Anderson, and Mario Barrenechea. 2015. Success and scale in a data-producing organization: The socio-technical evolution of OpenStreetMap in response to humanitarian events. In *Proceedings of the 2015 Annual ACM Conference on Human Factors in Computing Systems (CHI '15), April 18–23, 2015, Seoul, Republic of Korea.* ACM, New York, NY, USA, 4113–4122. https://doi.org/10.1145/2702123.2702294

[60] Kirstie Petrou and John Connell. 2018. "We don't feel free at all": Temporary ni-Vanuatu workers in the Riverina, Australia. *Rural Society* 27, 1 (Feb. 2018), 66–79. https://doi.org/10.1080/10371656.2018.1443415

[61] Larissa Pschetz, Billy Dixon, Kruakae Pothong, Arlene Bailey, Allister Glean, Luis Lourenço Soares, and Jessica A. Enright. 2020. Designing distributed ledger technologies for social change: The case of CariCrop. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20), April 25–30, 2020, Honolulu, HI, USA.* ACM, New York, NY, USA, 1–12. https://doi.org/10.1145/3313831.3376416

[62] Larissa Pschetz, Kruakae Pothong, and Chris Speed. 2019. Autonomous distributed energy systems: Problematising the invisible through design, drama and deliberation. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19), May 4–9, 2019, Glasgow, Scotland, UK.* ACM, New York, NY, USA, 1–14. https://doi.org/10.1145/3290605.3300640

[63] Tony Rey, Loic Le De, Frédéric Leone, and David Gilbert. 2017. An integrative approach to understand vulnerability and resilience post-disaster: The 2015 cyclone Pam in urban Vanuatu as case study. *Disaster Prevention and Management* 26 (Jun. 2017), 259–275. Issue 3. https://doi.org/10.1108/DPM-07-2016-0137

[64] Benedicta Rousseau. 2008. "This is a court of law, not a court of morality": Kastom and custom in Vanuatu state courts. *Journal of South Pacific Law* 12 (2008), 15–22. Issue 2.

[65] Benedicta Rousseau. 2011. Shifting others: Kastom and politics at the Vanuatu Cultural Centre. In *Working Together in Vanuatu: Research histories, collaborations, projects and reflections,* John Taylor and Nick Thieberger (Eds.). ANU Press, Canberra, AU. https://doi.org/10.22459/WTV.10.2011

[66] Aiste Rugeviciute and Afshin Mehrpouya. 2019. Blockchain, a panacea for development accountability? A study of the barriers and enablers for blockchain's adoption by development aid organizations. *Frontiers in Blockchain* 2 (Oct. 2019), 15. https://doi.org/10.3389/fbloc.2019.00015

[67] Björn Rust. 2019. *Unblocked cash: Piloting accelerated cash transfer delivery in Vanuatu.* Oxfam Australia. Retrieved February 4, 2025 from https://policy-practice.oxfam.org/resources/unblocked-cash-piloting-accelerated-cash-transfer-delivery-in-vanuatu-620926/

[68] Manika Saha, Tom Bartindale, Delvin Varghese, Stephen Lindsay, Dan Richardson, Syed Ishtiaque Ahmed, and Patrick Olivier. 2023. Community voice as data: Affordances of participatory videos for international program development. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23), April 23–28, 2023, Hamburg, Germany.* ACM, New York, NY, USA, 16 pages. https://doi.org/10.1145/3544548.3581458

[69] Laura Schelenz and Maria Pawelec. 2021. Information and communication technologies for development (ICT4D) critique. *Information Technology for Development* 28, 1 (June 2021), 165–188. https://doi.org/10.1080/02681102.2021.1937473

[70] Joshua Paolo Seguin, Delvin Varghese, Misita Anwar, Tom Bartindale, and Patrick Olivier. 2022. Co-designing digital platforms for volunteer-led migrant community welfare support. In *Proceedings of the 2022 ACM Designing Interactive Systems Conference (DIS '22), June 13–17, 2022, Virtual Event, Australia*. ACM, New York, NY, USA, 247–262. https://doi.org/10.1145/3532106.3533544

[71] Silvia Semenzin. 2023. 'Blockchain for good': Exploring the notion of social good inside the blockchain scene. *Big Data & Society* 10, 2 (Oct. 2023), 20539517231205479. https://doi.org/10.1177/20539517231205479

[72] Rob Skinner and Alan Lester. 2012. Humanitarianism and empire: New research agendas. *The Journal of Imperial and Commonwealth History* 40, 5 (Nov. 2012), 729–747. https://doi.org/10.1080/03086534.2012.730828

[73] Robert Soden and Leysia Palen. 2016. Infrastructure in the wild: What mapping in post-earthquake Nepal reveals about infrastructural emergence. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16), May 7–12, 2016, San Jose, CA, USA*. ACM, New York, NY, USA, 2796–2807. https://doi.org/10.1145/2858036.2858545

[74] The Pacific Community (SPC). 2020. *Pacific Data Hub*. The Pacific Community (SPC). Retrieved December 3, 2025 from https://pacificdata.org/

[75] Victoria Stead and Lucy Davies. 2021. Unfree labour and Australia's obscured Pacific histories: Towards a new genealogy of modern slavery. *Journal of Australian Studies* 45, 3 (July 2021), 400–416. https://doi.org/10.1080/14443058.2021.1942955

[76] Reem Talhouk, Kyle Montague, Andrew Garbett, Vera Araújo-Soares, Chaza Akik, Hala Ghattas, Balsam Ahmad, and Madeline Balaam. 2019. A call for embedding dignity in humanitarian technologies. In *Proceedings of the 2019 International Conference on Communities & Technologies – Transforming Communities (C&T '19), June 3–7, 2019, Vienna, Austria*. ACM, New York, NY, USA, 1–4. https://doi.org/10.1145/3328320.3328373

[77] Matthew Tickle and Claire Hannibal. 2022. The use of technological innovations in promoting effective humanitarian aid: A systematic review of the literature. *International Journal of Technology and Human Interaction* 18, 1 (Jan. 2022), 14 pages. https://doi.org/10.4018/IJTHI.293204

[78] Island Times. 2025. *Pacific pushes for digital sovereignty and unity at ICT dialogue*. Island Times Palau. Retrieved December 3, 2025 from https://islandtimes.org/pacific-pushes-for-digital-sovereignty-and-unity-at-ict-dialogue/

[79] Kentaro Toyama. 2015. *Geek Heresy: Rescuing Social Change from the Cult of Technology*. PublicAffairs, New York, NY, USA.

[80] Yumi Everiwan Tugeta. 2020. *Vanuatu Recovery Strategy 2020–2023*. Government of Vanuatu. Retrieved February 12, 2025 from https://recovery.preventionweb.net/media/83169/download?startDownload=20240911

[81] Bilgen Turkay and Selen Turkay. 2019. Understanding Turkish NGOs' digital technology use in helping refugees in Turkey. In *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems (CHI EA '19), May 4-9, 2019, Glasgow, Scotland, UK*. ACM, New York, NY, USA, 1–6. https://doi.org/10.1145/3290607.3312984

[82] Delvin Varghese, Patrick Olivier, Tom Bartindale, and Matt Baillie Smith. 2020. Towards participatory video 2.0. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20), April 15–20, 2020, Honolulu, HI, USA*. ACM, New York, NY, USA, 1–13. https://doi.org/10.1145/3313831.3376694

[83] Arnav Verma, Luiz Morais, Pierre Dragicevic, and Fanny Chevalier. 2023. Designing resource allocation tools to promote fair allocation: Do visualization and information framing matter?. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23), April 23–28, 2023, Hamburg, Germany*. ACM, New York, NY, USA, 1–16. https://doi.org/10.1145/3544548.3580739

[84] Maggie Walter, Tahu Kukutai, Stephanie Russo Carroll, and Desi Rodriguez-Lonebear (Eds.). 2020. *Indigenous Data Sovereignty and Policy*. Routledge, Oxford. https://doi.org/10.4324/9780429273957

[85] Peter Westoby. 2010. "We have plenty": Re-thinking custom and community economic development within Vanuatu. *Journal of Development Support* 20 (Jan. 2010), 20–38.

[86] Eiad Yafi, Katya Yefimova, and Karen E. Fisher. 2018. Young hackers: Hacking technology at Za'atari Syrian refugee camp. In *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems*. Association for Computing Machinery, Montreal, QC, CA, 1–8. https://doi.org/10.1145/3170427.3174363

[87] Andrej Zwitter and Mathilde Boisse-Despiaux. 2018. Blockchain for humanitarian action and development aid. *Journal of International Humanitarian Action* 3 (Oct. 2018), 7. https://doi.org/10.1186/s41018-018-0044-5