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CRYPTOCURRENCY, INTERNATIONAL AID, AND DEVELOPMENT: OPPORTUNITIES AND CHALLENGES

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ABSTRACT: *In this study, the author focuses on how cryptocurrency and blockchain technology can be used to improve delivery of international aid since traditional methods include problems such as corruption, inefficiency and lack of transparency. The main research question addresses the question of how cryptocurrency could enhance efficiency, enhance transparency, accountability, and fight corruption in the dispensation of aid. The authors performed a qualitative content analysis of data collected from multiple articles, reports, and case studies including World Food Programme and United Nations Children's Fund(UNICEF).The study shows that blockchain's distributed digital ledger minimizes misappropriation of funds risk, maintains real-time tracking; cryptocurrencies, specifically stablecoins, are more effective in real and low-cost transactions. Nevertheless, the work also points to the threats evident in legal and regulatory frameworks, low levels of digital literacy, and technological constraints. In conclusion, if all the challenges are solved, the cryptocurrency will enable the complete redesign of the distribution of the funds for aid.*

KEYWORDS: Cryptocurrency, Blockchain, International aid, Corruption, Development.

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INTRODUCTION

The Classical bilateral aid delivery system may be considered to be full of inefficiencies and has been fingered to be corrupt and nontransparent. Often, the aid-reach is delayed, siphoned off, or rerouted before it can get to the targets of the programs, especially in developing nations with corrupt governments. A report of 2020 disclosed by the International Transparency showed that corruption reduced the efficacy of assistance by up to 30% in some areas; more effective and responsible means are therefore needed. Cryptocurrency and blockchain technology therefore are seen as potential remedies for these systemic problems. Blockchain is an innovative public platform which is often used as a base for cryptocurrencies, this platform has a dispersed and open database where everyone can check his transaction without any intermediaries. The decentralized structure also minimizes the interference of middlemen profiting from such transactions while also making such transactions faster and more secure leaving a transparent and immutable record of the transaction. Stablecoins, including USDC (USD Coin), represent the opportunity to send and receive help without intermediaries in the form of a bank structure or through fee-heavy crowdfunding platforms.

Exploration of the use of such technologies was raised in the aid sector due to the upsurge of the COVID-19 global pandemic crisis. A recent submission by the United Nations in 2021 revealed that digital currencies can supplement humanitarian assistance more effectively in situations where traditional systems of finance are insufficient. Projects like the World Food Programme's "Building Blocks" have shown that blockchain can practically be incorporated in order to deal with food aid by applying cryptocurrency tokens for authenticity and effectiveness. The difficulties in the aid allocation on the international level are not only practical and organizational but also financial and political. The financial systems that involve bureaucracy which includes but not limited to banks and government agencies, have time and again been ineffective in transferring cash across borders especially within the crisis and or developing regions. Sometimes aid funds can be tied due to bureaucratic strings, high charges for executing the funds and there is always the need for middlemen which significantly decrease the amount of money which gets to the beneficiaries. A report from the Overseas Development Institute (ODI) stated that money as high as up to 20% of any funds committed to international aid is wasted through bureaucratic costs and time consumed in conventional banking systems (ODI, 2021). As a result of such drawbacks, there is increasing focus on engaging digital financial instruments such as cryptocurrency in order to deliver aid.

Cryptocurrency, especially when based on block chain, presents an opportunity to solve some of these issues. While regular monetary systems involve financial institutions, cryptocurrencies run on distributed platforms, and hence no middleman. This could enable recovery of funding aid more directly for the beneficiaries even when it is in the remote region with very negligible input in the formal banking systems. The United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA) noted that blockchain systems can help optimize the delivery of humanitarian assistance since transaction executions would be faster and more secure; the solution would be especially beneficial in conflict or disaster-stricken areas (UNOCHA, 2022). Another disadvantage from the involvement of intermediaries can be cut off through introduction of such currencies by providing lower transaction costs when compared to the arrangements from the conventional financial systems. Reduced transaction costs improve the amount of money that passes through the hands of these needy persons hence enhancing humanitarian assistance.

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Research Objectives

Given the growing interest in digital currencies, the study aims to achieve the following objectives:

1. To discuss the ability of cryptocurrency risk in eradicating corruption in aid delivery processes.
2. To assess the significance of the blockchain technology in increasing the effectiveness of the aid resources getting to the intended end.
3. To describe the implementation issues and concerns applicable to the integration of cryptocurrency into current inter-country aid systems.

Research Questions

1. What role can cryptocurrency play in combating corruption in the provision of international aid and which safeguards exist for transactions?
2. In what way does the use of a blockchain provide for increasing transparency and accountability in the process of showing the distribution and usage of aid resources?
3. What are the main difficulties, threats and constraints connected with integration of cryptocurrency into the conventional systems of international aid, and how can those difficulties be solved?

Significance of the Study

Thus, the importance of this study is founded on the potential of a transformative technology for delivering international aid. Unlike bitcoin, most of the established banking sectors and middlemen have been known to take a chunk of such funds, and as such, cryptocurrency could be useful in democratizing aid delivery to reach the intended users faster. Furthermore, this study provides a further insight to the use of emerging technologies on development work conversance. The revolution of supply chain and financial systems by blockchain has been under discussion in previous research works but the significance of the technology that should be applied to international aid is still understudied.

Scope and Limitations

The study focuses on the use of cryptocurrency and blockchain technology in international aid distribution, particularly in low- and middle-income countries. This includes the exploration of stablecoins, blockchain-based payment platforms, and case studies from organizations such as the World Food Programme and UNICEF, which have piloted blockchain solutions in aid contexts. However, the scope of this study does not extend to an exhaustive analysis of all cryptocurrencies or blockchain technologies. It also does not delve deeply into the broader political and economic implications of cryptocurrency adoption in national financial systems..

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LITERATURE REVIEW

Cryptocurrency

Cryptocurrency is a form of digital or virtual currency that uses cryptographic methods for secure transactions and operates independently of central authorities such as governments or banks (Zohuri et al., 2022). The decentralized nature of cryptocurrency allows for peer-to-peer transactions without intermediaries, making it especially useful for cross-border transfers, which are often time-consuming and expensive in traditional banking systems. Cryptocurrencies like Bitcoin, Ethereum, and stablecoins such as USD Coin (USDC) are gaining traction in various sectors, including finance, e-commerce, and international aid. In humanitarian efforts, cryptocurrency offers the potential to transfer aid funds directly to recipients in a more secure, transparent, and efficient manner. A report by the World Bank (2021) highlighted that cryptocurrency can reduce transaction costs, which are particularly high when sending funds to developing regions using traditional financial systems.

One of the critical advantages of cryptocurrency in international aid is its ability to bypass traditional banking infrastructure. This is particularly beneficial in conflict zones or underdeveloped areas where access to banks is limited. According to a 2022 report by the International Monetary Fund (IMF), the decentralized nature of cryptocurrencies offers faster and lower-cost solutions for transferring funds across borders, significantly reducing intermediaries and the associated delays. Stablecoins, in particular, hold promise in this space due to their lower volatility compared to traditional cryptocurrencies, offering a more stable medium of exchange for aid.

Blockchain Technology

Blockchain is the underlying technology behind most cryptocurrencies as opined by Gamage et al. (2020). It functions as a decentralized, distributed ledger that records transactions across multiple computers in such a way that the records are immutable and transparent. Each transaction is grouped into blocks, which are then added to a chain of previous blocks, creating a chronological and transparent record that cannot be altered retroactively. This characteristic of blockchain is highly valued in international aid settings, where transparency and accountability are critical concerns. The United Nations (2021) emphasized that blockchain's transparency can minimize corruption and fraud in the flow of aid resources, ensuring that funds reach their intended recipients.

International Aid

International aid refers to the transfer of financial, technical, or material assistance from countries or organizations to those in need, often in response to crises such as natural disasters, conflict, or poverty (Xu et al., 2020). Aid is a key mechanism through which developed countries and international organizations support developing nations in their efforts to achieve sustainable development. However, traditional aid systems are fraught with challenges such as delays in fund transfers, high transaction costs, and corruption. According to a report by the Overseas Development Institute (2021), traditional aid distribution channels often involve multiple intermediaries, each taking a percentage of the funds for operational costs, which reduces the amount of aid reaching beneficiaries.

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Cryptocurrency offers a way to mitigate some of these challenges. By using blockchain-based platforms to track and transfer aid funds, the risk of corruption can be significantly reduced. A report by Transparency International (2021) revealed that blockchain's tamper-proof ledger can help ensure that every transaction in the aid process is transparent and verifiable, which is crucial in regions with high levels of corruption.

Theoretical Underpinning

Blockchain Technology

A blockchain is an open, distributed register that can record transactions by many companies in one place without any changes' possibility. Its primary use in the international context is to improve transparency, accountability and managing fraudulent activities. Due to decentralization in applying the concept of distributed ledger, involving the use of blockchain technology, the elimination of all the middlemen, which often act as an impetus for corruption, the financial resources of donors are transferred strictly for the needs of the recipients (Kshetri, 2021). In the Building Blocks initiative performed by the WFP, blockchain can be used to track how funds and commodities reach the intended recipient, where every transaction is transparent and cannot be altered (Kshetri, 2021). In this study, the implication of blockchain technology is aligned to the objective of increasing the efficiency of aid distribution.

Institutional Theory

In this context, Institutional Theory pays attention to legal requisites, regulations, and other organizational standards that define how fresh technologies are integrated (Heeks & Renken, 2020). As to cryptocurrency in international aid, institutional aid becomes essential to apply and eliminate regulatory concerns. They also argued that many developing countries do not have appropriate legal architecture to regulate cryptocurrencies – a problem that may limit its use in the distribution of aid. To transition blockchain and cryptocurrency in structures of aid delivery, policy makers and other governments and international organizations must formulate harmonized policies that would answer concerns arising out of security, data protection, and frauds. Thus, Institutional Theory pays attention to the appropriate regulation of cryptocurrency for its application in international development efforts.

Transparency Theory

According to Transparency Theory, public access to information and status updates helps cut back on corruption and increase accountability (Bastagli et al., 2020). Transparency Theory is highly intimate with Blockchain technology since it ascribes to offering a clique of transactions that is openly and unalterably available to the public. This saves the noble cause of international aid from being embezzled or misappropriated in one way or another (Reinsberg, 2020). In the study, the use of blockchain ensures that every transaction is traceable, promoting accountability and trust in the aid system, thereby mitigating corruption risks.

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REVIEW OF PREVIOUS RESEARCH

Over the last few years, scholars have made some efforts in exploring the role of blockchain in making development assistance more accountable and transparent. For example, World Food Programme's "Building Blocks" involves the use of blockchain to monitor food aid delivery, funds and resources to targeted beneficiaries do not pass through some middlemen (Kshetri, 2021). In a pilot done in Jordan's refugee camp, this proved that blockchain would lower fraud and leakage in the distribution process. Reinsberg (2020) focuses on how the use of blockchain solves the issue of corruption in foreign assistance especially in the conflict zones. This paper will argue that, because of the technology's capability to present a shared single view, blockchain's ledger can help to prevent some actors from embezzling money. This increased transparency can help restore trust between donors and their counterparts which usually is eroded in the traditional aid systems due to perceived opaque nature of the processes involved.

Stable coins and other cryptocurrencies are now widely considered as enshrinements of financial structures in the developing economy where conventional banking networks are usually incomplete or non-existent. Pegged stablecoins, such as USDC, or DAI, can help avoid the volatility problems related to classic cryptocurrencies like Bitcoin and thus become more effective in delivering the aid (Frost et al., 2021). According to Frost et al., decentralization can keep transfer costs low, and help get the aid to the intended recipients faster and more efficiently especially in areas where the traditional banking system is weak. Another report by the International Monetary Fund (IMF, 2021) provides an understanding of how cryptocurrency can eliminate the high cost of remittance transfer services which is the main impediment in the implementation of financial inclusion in the developing world. Through its key feature of excluding the middlemen like banks, cryptocurrency entails lower transaction charges, meaning that a larger amount of the collected funds can be utilized to fund developmental projects instead of being spent on services such as banking fees. Among the strength of cryptocurrency, weakness opportunities on the other hand pose a great threat. This is in regards to the instability of the traditional cryptocurrencies like Bitcoin which is a major factor. The authors Gabor and Brooks (2021) explain that such cryptocurrencies can be characterized by volatile prices, which might be unduly risky for aid recipients and the flows that they rely on. However, stable coins and central bank digital currency (CBDCs) present some level of hedge against such volatility, and they offer better stability regarding delivery of aid.

One of the key challenges therefore is regulatory risk in that the legal use of cryptocurrency is not yet well defined across the world and this is particularly a challenge for aids. Houben and Snyers (2020) rightly mention that across the several emerging market economies, there is little or no clear legal backing for cryptocurrency. This lack of regulation can put the aid organizations in legal operations risks and complications on legal compliance especially when dealing with several countries. Last of all, technological infrastructure is also considered a limitation. Several challenges are pertinent to the effectiveness of cryptocurrency-based aid solutions in low income countries due to the following reasons: charity organizations and businesses in many low income countries may not have internet access, or the people that they are targeting for their aid may not be very literate in the use of the Internet, and so on (Scott & Ling, 2019). However, the question is that the energy consumption of blockchain networks – especially for the POW like Bitcoin – is an issue in areas of unpredictable or expensive energy sources (Truby, 2020)

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Critical Analysis

The emerging literature demonstrates the potential that cryptocurrency and blockchain can bring about in enhancing aid delivery, through enhanced transparency and minimized transaction costs in fundraising for international aid. However, the problem of volatility, regulation, and infrastructure creates major barriers to expansion for such a type of contract. From 2019, research shows that blockchain can play a role in enhancing transparency in international aid. Despite the presented evidence, some issues remain neglected, including lack of comprehensive accounts of large-scale empirical research and results of studying cryptocurrency impact on aid effectiveness at a longer time horizon. Besides, stablecoins provide the solutions to the volatility issue meanwhile their utilization in the aid context is still rather moderate and requires further investigations to be completed.

METHODOLOGY

This paper uses qualitative research methodology, under the broader category of content analysis. Content analysis is a research approach adopted to study qualitative data drawn from formal texts, reportage, and case studies to decipher trends, themes and significance concerning the adoption of cryptocurrency in international aid. This research information was obtained from academic articles, institutions' reports, case studies, and documentation from the United Nations, the World Food Programme and other NGOs implementing cryptocurrency or blockchain into their aid delivery systems. For the collected data, content analysis was done in order to analyze the collected data.

RESULTS

Based on the analysis of different types of reports, case-studies, and academic articles, this paper provides several findings symbolizing the strength and weakness of cryptocurrency in International Aid and Development.

Table 1: Findings

Findings	Opportunities	Challenges
Reduction in Corruption	Blockchain's immutability ensures tamper-proof records	Lack of legal and regulatory frameworks
Enhanced Transparency	Real-time, public access to transaction records	Digital illiteracy and lack of internet access
Lower Transaction Costs	Direct, peer-to-peer transfers bypass intermediaries	High energy consumption for some blockchain networks
Faster Transfer Speeds	Instantaneous cross-border payments	Volatility of traditional cryptocurrencies
Stablecoin and CBDC Viability	Stablecoins reduce volatility risk	Stablecoins are still in the early adoption phase
Technological Barriers	Blockchain innovations continue to expand	Low digital infrastructure in developing countries

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DISCUSSION

The findings from the content analysis reveal a dual-sided narrative regarding cryptocurrency's role in international aid: as it simultaneously provides such a great potential but at the same time denotes certain greatest risks and threats. Specifically, blockchain and cryptocurrencies' application in international aid has become a topic of discussion, where the efficiency of cryptocurrency can improve transparency and accountability and effectiveness in global aid. The structured system of the blockchain means that the records of the aid transactions are safe, between the giver and the receiver are irreversible; this makes it impossible for fraudsters and embezzlers to cheat in the same way they always have in the traditional aid system (Kshetri, 2021). Moreover, through decentralization, cryptocurrencies offer a selvage solution where the solution gets delivered faster than through the help of financially intermediated institutions, especially in developing countries. Once adopted, it is likely to unlock a skewed cost of transactions and remove bottlenecks, thereby making it easier and quicker to deliver aid to the intended beneficiaries (Frost et al., 2021). For example, stablecoins can be used to make sure that the amount of money provided does not lose its value and is received whole, without special rates of inflation or high conversion costs, which are the biggest troubles associated with actual money transactions in the framework of aid (IMF, 2021).

However, the research will also reveal immense gaps that pose a challenge to the adoption of cryptocurrency in international aid. Among them the randomness of many cryptocurrencies is significant as this brings a relative risk to aid funds that may not be tenable in if not already shaky circumstances. Cryptocurrencies, in particular stablecoins and central bank digital currencies (CBDCs), suggest solutions for this problem, but their usage in cooperation with aid stakeholders is still not vast (Gabor & Brooks, 2021). However, implementation infrastructure to support blockchain-based aid systems is not present in all states, and especially; unreliable electrical power and internet access historically characterizes many states (Truby, 2020).

IMPLICATIONS OF THE FINDINGS

The implications of these findings are far reaching for aid agencies, policymakers and donor governments. Aid agencies introducing Blockchain based systems, and cryptocurrencies could dramatically shift from the current conventional methods of disbursing, managing and monitoring aid. Adopting these technologies, the aid agency can develop more openness with higher levels of accountability that give less space for corruption and leakage. However, any such change would mean that such fundamental changes would demand investment into both technology and human capital to ensure readiness to meet the demand of such skills and resources (Heeks & Renken, 2020).

To policymakers, these findings serve as a reminder of the need to establish strong legal instruments which shall help in incorporating cryptocurrency in its aid delivery system with the least risk. Legal certainty is crucial for the crypto actors, including the aid organizations and donors so they can carry out their actions within the context of the provided public goods without violating laws that apply on cryptomarkets, especially in cases of cross-border transfers. Furthermore, noise around cryptocurrency fluctuations might be dampened through clear rules on the use of stablecoins or CBDCs in humanitarian contexts (Houben & Snyers, 2020).

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Comparison with Previous Research

The conclusions of this paper support the preceding work done on the relevance of blockchain and cryptocurrency in redressing some of the major drawbacks in international aid. Similar to the prior research (Kshetri, 2021; Reinsberg, 2020), this research also provides evidence that blockchain technology can minimize corruption and increase transparency by creating an immutable open record for the aid transactions. For instance, the "Building Blocks" project by the World Food Programme shows how transparency of blockchain technology can help with the problem of local humanitarian organizations that are either impersonating or charging refugees for the food they were given by global humanitarian organizations. However this paper further contributes to the existing literature by talking of the other issues arising out of proliferation of cryptocurrencies into different facets of aid. Unlike previous research concerned with analyzing the potential benefits of cryptocurrency for international aid, this paper underscores the practical challenges including fluctuation, operational legal frameworks and technology limitations that need to be addressed to realize the use of cryptocurrency in international aid. It also draws a line between innovative cryptocurrencies including that of Bitcoin and more conventional currencies like stablecoins or CBDCs which can reduce some of the associated risks as presented in earlier studies by Frost et al. (2021), and Gabor and Brooks (2021). Furthermore, this paper focuses on the need for regulation as Houben and Snyers (2020) suggested the need for legal frameworks for use of cryptocurrency in aid. Otherwise, one may never be able to experience a fully optimized version of the main positive attributes associated with cryptocurrencies like, minimization of transaction costs, or maximalism of transparency.

Risk and Opportunity for Future Research

Although this paper offers general knowledge over the possibility of cryptocurrency adoption and its drawbacks concerning international aid, there are numerous questions which deserve further investigation. Based on the findings presented above, one of the significant methodological difficulties noted is the dearth of knowledge on lasting consequences of cryptocurrency–funded humanitarian projects. Many of the studies done before, including this paper, are based on case studies of short-term pilot projects or theoretical conceptualization, which limits the understanding of the ability of cryptocurrency to be used as a means of distributing aid in the long run (Kshetri, 2021; Reinsberg, 2020). Future studies should attempt to follow the development and impact of cryptocurrency-based aid projects for several years, especially in areas where there is little development in information technology or where political conditions may show so. More research would offer useful insights into the actual experience of applying blockchain systems in large scales and the effects these systems have on aids' effectiveness, not to mention the impact they may have on the recipients.

CONCLUSION

In this paper, an attempt has been made to understand how cryptocurrency and blockchain might help to improve the efficiency of aid organizations, tackle fraud and increase transparency. From a review of the literature and cases based on qualitative analysis the following conclusions have been deduced: More so, blockchain technology has a clear, safe and unalterable way of recording the distribution of the aid, a factor that has in the past been characterized by fraud and misappropriation. The World Food Programme's Building Blocks

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is one good example of how blockchain has been used most effectively in reducing corrupt risks by ensuring that each transaction can be traced publicly. Second, by minimizing transaction fees and speeding up cross border settlements, cryptocurrency, especially stablecoins offer a potential solution to the existing supply chain finance systems. This can enhance aid effectiveness by making certain that more funds actually get to reach the intended beneficiaries, than be used up in transactions or overhead expenses. However there is high volatility accompanied by cryptocurrencies, high ambiguity of regulations, as well as some technical requisites to establish the base for realization of cryptocurrencies remain to be critical issues that have to be solved for further implementation.

Course of Action for Practice, Policy or Future Study

In the perspective of practical application, applying cryptocurrency and block chain of aids in international aid has the advantages and disadvantages as follows. Donors, aid organizations and policymakers should also consider whether the advantages of transparency, cost and time over other approaches outweigh the risks associated with volatility, physical infrastructure, regulation for sustainability, and politics. Developmental initiatives such as Building Blocks therefore show that all those considering that blockchain technology cannot be scaled up need to know that this will only be possible if there is increased investment on infrastructure, human resources and technology literacy of human ARP in the regions of most need.

Authorities also ought to focus on designing sound legal guidelines that would define proper use of cryptocurrency in the foreign aid. It is also important to note that in the absence of proper rules or guidelines there will be a legal hazard and operational challenge to humanitarian organizations especially where operations cross country borders that have different legal measures. We recommend that governments and international organizations address the problem of cryptocurrency in aid distribution by developing and adopting the same procedures.

Limitations and Suggestions for Future Research

A major weakness of this study is that it depended on literature and case studies most of which are recent and/or limited in applicability. The effects of pilot projects such as Building Blocks seem more positive for decentralizing the aid distribution process, however, these types of techniques by the use of cryptocurrencies require more real-world studies to evaluate the future consequences. Future research should consider how the wide-ranging benefits of blockchain and cryptocurrency hold up during the long run and across various set geographical and socio-economic environments

Therefore, it is imperative to note that both cryptocurrency and blockchain technology have vast opportunities to redefine international aid, but the accomplishment of such opportunities will highly depend on the unearthing of cogent regulatory, technical and operational issues. If highlighted challenges above could be addressed, cryptocurrencies would help improve efficacy, transparency and effectiveness of humanitarian operations and provide better protection and fair distribution of funds to the desired destinations.

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