


NFTs¹ Are Unwanted here! Impact of Blockchain Technology on Elevating Tanzania's Art Scene

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Abstract

The integration of blockchain technology and Non-Fungible Tokens (NFTs) into Tanzanian art signifies a pivotal moment with transformative potential for artists, drawing on Everett Rogers' Diffusion of Innovations Theory. This discussion explores the implications of merging blockchain and NFTs, focusing on themes like technological decentralisation, cultural empowerment, and associated challenges. Blockchain empowers artists by facilitating direct engagement with a global audience and eliminating the need for intermediaries. It also creates unalterable ownership records, giving artists greater control over their work. NFTs contribute to digitally preserving and sharing Tanzanian cultural heritage, increasing visibility and influence for previously marginalised voices on the international stage. Despite these promising opportunities, integration faces obstacles such as limited technological access and complex legal frameworks, which hinder wider adoption. Addressing these issues requires collaboration to reduce digital inequalities, promote understanding of blockchain technology, and strengthen legal protections. Ultimately, combining blockchain and NFTs could transform the Tanzanian art scene by amplifying cultural voices and protecting heritage in an increasingly digital world. Success depends on effectively managing challenges and capitalising on emerging opportunities.

Keywords:

NFT, Art Scene, Blockchain Technology

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Introduction

In Tanzania's primary education curriculum, students are exposed to a narrative featuring a rabbit endeavouring to attain ripe fruits. Faced with the inability to reach them, the rabbit vocalises, "I do not want these unripe fruits," signifying a desire unfulfilled, prompting the need for

¹ NFT is an abbreviation for Non-Fungible Tokens



the rabbit to calm its ego. This children's story forms the foundational premise upon which the argument of this scholarly article is constructed. It is reasonable to consider this uncertainty when evaluating the advancement of the Tanzanian visual arts domain towards technological integration through the establishment of a robust blockchain² Framework. It is fair to direct stakeholders' attention to the metaphorical rabbit, as they express a desire for the sector's expansion. However, a prevalent reluctance prevails, with individuals merely attributing obstacles rather than taking proactive steps to facilitate the assimilation of this promising digital currency paradigm. Therefore, the assertion that NFTs are unwelcome in this context does not refute the demand in Tanzania. Instead, akin to the rabbit analogy, it may be rooted in a lack of desire due to potential inaccessibility. Before deliberating on its desirability, a pivotal question arises: "What constitutes an NFT?"

Non-Fungible Tokens (NFTs) are digital assets that are unique and cannot be exchanged one-for-one, making them suitable for identifying something or someone in a distinctive way (Wang, Li, & Chen 2021). NFTs are becoming increasingly common, especially in the creative and artistic sectors. They are based on blockchain technology, with Ethereum³ being the most commonly used platform for NFT transactions (Merk 2023). NFTs are uniquely identifiable digital representations of physical or digital items. The idea behind NFTs originated from an Ethereum token standard that aimed to assign a unique signature to each token. NFTs have brought up tax and legal concerns. Therefore, an operational description and justification of their technical viewpoint are necessary. The commerce of NFTs has experienced a substantial surge in recent years, indicating a burgeoning market within the digital asset landscape (Meyns & Dalipi,

² Blockchain is a secure and decentralised digital ledger technology that records transactions across multiple computers in a way that is transparent, tamper-resistant, and resistant to any modification.

³ Ethereum is a decentralised blockchain platform founded by Vitalik Buterin in 2015, enabling smart contracts and decentralised applications.

2022). All things considered, NFTs have significantly transformed the digital asset market by providing distinct and irreplaceable digital assets that have profound consequences for a wide range of industries. An additional inquiry that emerges after formulating a hypothesis regarding the meaning of NFT is "What is an art scene?".

An "art scene" encompasses a dynamic and interconnected network of artists, institutions, and audiences, reflecting the cultural and creative vibrancy of a particular locality or community (Graif 2018). It extends beyond simple artistic representation and is often intertwined with the art market, reflecting the dynamics of global capital. An art scene plays a pivotal role in shaping and defining the legitimacy and boundaries of artistic expression within various genres and creative domains (Vaughn 2019). It is a domain where various artistic genres, including narrative, figurative, and contemporary art, converge to create a complex and diverse cultural tapestry. Additionally, an art scene facilitates the digital transmission and communication of regional art, which helps to maintain and develop traditional artistic forms in urban environments (Zhang et al. 2022). An art scene is an intricate and varied ecosystem that both shapes and reflects the social, cultural, and political dynamics of a particular community or society. An imperative undertaking involves a comprehensive exploration of the technical intricacies inherent in blockchain technology and its significant role in facilitating NFTs. Such an endeavour is indispensable for a thorough comprehension of the contextual framework explained in this article.

Blockchain technology ensures security, traceability, and transparency by functioning as a decentralised digital ledger (Saber et al. 2018). Given that it enables data sharing in decentralised networks, it can be utilised for various purposes, including real-time transparency and cost savings in the manufacturing sector, healthcare record exchange, and supply chain management. The security and flexibility of the technology enable the integration of entire systems and offer decentralised defence against unwanted access (Tanwar et al. 2022). It has been noted that blockchain technology has the potential to transform supply chains and impact business models and value through operational improvements. Moreover, it provides a distributed and decentralised environment without requiring

a central authority, which makes it suitable for various fields, including business process management, art, education, and accounting.

Sung, Kwon, and Sohn (2023) argue that blockchain technology facilitates NFTs by providing a secure and transparent platform for verifying the authenticity and ownership of digital assets. Blockchain technology is utilised by NFTs, which are unique digital identifiers, to ensure the preservation of ownership rights. Information can be securely stored and tokenised using blockchain technology in NFTs, ensuring the security of digital assets (Behl et al. 2023). Additionally, blockchain technology enables the creation of digital assets and certificates that are equivalent to real-world objects, such as gemstones, providing a mechanism for provenance and traceability. Additionally, blockchain technology enables the creation and management of NFTs, leveraging its potential in various industries, including supply chain tracking, art, and healthcare (Sitaru, Kaczmarczyk & Zink 2022). Having laid the groundwork by contextualising the visual art scene, NFTs, and blockchain technology, this article proceeds to examine the consequences of blockchain technology in the realm of NFTs. It endeavours to explain how these technological innovations can potentially enhance the artistic landscape in Tanzania.

Theoretical Framework

This article is grounded in Everett Rogers⁴ Diffusion of Innovations Theory (IDT), which explains how new ideas, products, or technologies spread within a social system over time (Franceschinis, et al. 2017). Rogers centred his ideas on understanding how innovations propagate through social systems and the elements that impact people's and communities' acceptance or rejection of novel concepts, goods, or technologies. To comprehend the acceptance and adoption of innovations, this theory has

⁴ Everett Rogers was a prominent sociologist and a scholar in the field of communication. He first introduced the theory in his groundbreaking work "Diffusion of Innovations," which was published in 1962 and later revised in subsequent editions.

been widely used in a variety of fields, including online commerce⁵ (Agag & El-Masry 2016), agriculture (Dissanayake et al. 2022), education (Menzli et al. 2022), and healthcare (Amiri, Rahimi & Khalkhali 2020). The elements impacting the adoption process, such as relative benefit, compatibility, trialability, complexity, and observability, are described in this theory, along with the many groups of adopters⁶, ranging from innovators to laggards⁷. The Diffusion of Innovations theory has been utilised in this article to comprehend why certain artists, collectors, or stakeholders within the Tanzanian art scene might either accept or reject NFTs.

Findings and Discussion

Presenting and analysing the data acquired for this study is the focus of this section. It is comprised of three interconnected pillars: (1) Technological Decentralisation, (2) Cultural Empowerment, and (3) Challenges and Adaptation.

Technological Decentralisation

The global art community is currently absorbed in discussions and inquiries regarding the integration of blockchain technology and the emergence of NFTs, and Tanzania's artistic sphere is participating in this discourse. The blockchain art market, which gained momentum in 2021 with notable sales facilitated by auction houses such as Christie's and Sotheby's, has seen digital artworks linked to NFTs reach record-breaking prices (Franceschet & Libera 2023). According to O'Dwyer (2018), this trend denotes a substantial shift towards the financialisation of digital art, wherein

⁵ Electronic business transactions carried out via the internet are referred to as online commerce, or just "e-commerce" for short.

⁶ "Adopters" refers to individuals or groups who choose to accept, implement, and use a new idea, product, technology, or innovation.

⁷ "Laggards" is a term used in the context of the Diffusion of Innovations theory. Laggards are individuals or groups who are the last to adopt an innovation or technology. They are characterised by their resistance to change and their preference for traditional methods or practices.

stakeholders speculate on the potential value propositions of artworks in the future.

i. Direct Artist Engagement

Primarily, by providing artists with a direct conduit to a global audience, NFTs, as evidenced by empirical data, can significantly influence Tanzania's art landscape. Historically, Tanzanian artists have faced obstacles in accessing international art markets due to multifaceted financial, geographical, and infrastructural limitations (Severa, 2020). The arrival of NFTs has revolutionised the artistic landscape, enabling creators to commercialise and showcase their work on digital platforms accessible to anyone with internet connectivity. Consequently, Tanzanian artists stand to experience heightened levels of global acknowledgement and prominence through their direct involvement in this innovative paradigm. The emergence of NFTs has catalysed a paradigm shift within the realm of art, affording artists new avenues to navigate the intricacies inherent in the NFT art domain.

This domain encompasses a multifaceted landscape characterised by diverse platforms⁸, cryptocurrencies⁹, dynamic price fluctuations, and unpredictable trends. The evolution of societal perceptions and valuation of art is discernible through the discerning approach adopted by collectors within the NFT market towards art transactions (New artistic value in the NFT market analysed through first-person research, 2023). Moreover, the expansiveness and profundity of creative expression have undergone augmentation consequent to the capacity of NFT artworks to engender social interaction and evoke emotive responses among observers (Tie 2022).

⁸ NFT platforms include OpenSea, Rarible, SuperRare, Foundation, Nifty Gateway, NBA Top Shot, Axie Infinity Marketplace, Decentraland Marketplace, Zora, and Async Art.

⁹ A cryptocurrency is a digital currency in which transactions are verified and records maintained by a decentralised system using cryptography, rather than by a centralised authority such as a bank.

This transition towards heightened audience involvement mirrors the overarching trend within the arts towards the democratisation and commercialisation of artistic endeavours in the digital era (Bengtsson & Edlom 2023).

In summary, the empirical evidence from the field suggests that the arrival of NFTs has signalled a transformative era for Tanzanian artists, providing them with avenues to overcome conventional obstacles and establish direct connections with a global audience. Through the strategic utilisation of NFTs, artists are empowered to exhibit their creative endeavours, garner acclaim on a transnational level, and engage within the dynamic sphere of digital art commerce. Applying Everett Rogers' Diffusion of Innovations Theory to the use of NFTs in Tanzania's art scene reveals their transformative potential. Rogers' theory highlights key components: innovation, communication channels, time, and social systems (Franceschinis et al. 2017). NFTs represent innovation, offering Tanzanian artists direct access to global markets and bypassing traditional barriers. Digital platforms facilitate the rapid adoption of NFTs among artists and collectors. As awareness and use of NFTs grow, widespread adoption is likely. The global art market and local communities benefit from NFTs through increased visibility and commercial opportunities.

ii. Disintermediation

The emergence of blockchain technology and NFTs has sparked a profound transformation within the art commerce realm, granting artists an unprecedented avenue to exhibit and market their creations autonomously, thereby obviating the need for conventional intermediaries such as galleries, agents, and dealers (Merk 2023). Within the Tanzanian context, where the artistic landscape may not boast the same maturity as more established art hubs¹⁰, the integration of blockchain technology and NFTs stands poised to offer substantial empowerment to local artists. Through the strategic utilisation of these technological innovations, Tanzanian artists stand to avoid the constraints imposed by intermediaries, thereby asserting greater autonomy over their creative output and potentially augmenting

¹⁰ The term "Art Hub" refers to a virtual marketplace that allows artists to sell and share their works.

their revenue streams derived from artwork transactions. The inherent decentralised architecture of blockchain technology serves as a cornerstone, ensuring a realm of transparency and fortified security within transactions (Wang, Han, & Beynon-Davies 2019). This innovative framework empowers artists to authenticate and tokenise their artistic creations seamlessly. Through the medium of NFTs, artists craft distinct digital assets, the authenticity and ownership of which are easily **traceable** through the blockchain ledger.

This direct linkage between creator and collector eliminates the need for intermediaries in validating the provenance of artworks, thereby reducing operational costs and expediting the sales cycle (Vasan, Janosov, & Barabási 2022). Furthermore, the strategic utilisation of blockchain technology and NFTs transcends geographical barriers for artists residing in Tanzania. The digitised essence of NFTs facilitates instantaneous, borderless transactions, enabling artists to showcase their oeuvre¹¹ to a diverse global audience of collectors and aficionados (Vasan et al. 2022). This increased visibility creates new opportunities for Tanzanian artists, helping them gain international recognition and become part of the global art scene. As they expand their reach, using blockchain technology and NFTs offers Tanzanian artists a way to increase their earnings. Eliminating intermediaries ensures that artists receive direct payments from patrons, thereby avoiding the typical fees that galleries and other intermediaries impose on agents (Franceschet et al. 2021).

Moreover, this direct-to-consumer paradigm not only amplifies artists' monetary gains but also confers upon them the agency to dictate pricing structures and regulate the dissemination of their creations (Kräussl &

¹¹ The meaning of "Oeuvre" is a substantial body of work constituting the lifework of a writer, an artist, or a composer.

Tugnetti 2022). Collectively, the adoption of blockchain technology and NFTs signals a paradigm shift for artists in Tanzania, offering a solution to the challenges arising from a nascent art market. Embracing these cutting-edge technologies empowers artists to assert autonomy over their creative endeavours, transcend geographical confines, and optimise their financial returns, thereby fostering an art ecosystem in Tanzania that is both inclusive and sustainable. Applying Rogers' Diffusion of Innovations to blockchain technology and NFTs in Tanzanian art commerce reveals that early adopters in the local art community see significant advantages, including greater autonomy and financial gains from eliminating traditional intermediaries. The compatibility of these technologies with the artists' need for secure, direct transactions, combined with the simplicity of digital platforms, makes them appealing. Through social networks, Tanzanian artists can learn and experiment with these innovations, leading to gradual adoption. Blockchain and NFTs reduce costs and open access to global markets, thus aligning with Rogers' principles and potentially accelerating the growth and international integration of Tanzania's art market.

iii. Ownership and Authenticity

NFTs offer a distinctive remedy to the age-old challenges surrounding the verification of origin and authenticity. These tokens (NFTs) serve as digital assets, epitomising ownership or authentication of specific items or artworks through the utilisation of the blockchain, a decentralised, transparent digital ledger¹² (Nadini et al. 2021). This technology has garnered remarkable attention within the art sphere for its unparalleled capacity to furnish undeniable evidence of ownership and lineage. In locales like Tanzania, where the art market may lack robust infrastructure and grapple with issues of forgery and credibility, NFTs emerge as a beacon of hope (Hartwich et al. 2023). Empirical evidence from the field suggests that Tanzanian artists can benefit by leveraging NFTs to authenticate and preserve the heritage of their creations. By tokenising their artworks on the

¹² A digital ledger is a computerised file containing financial information, usually organised by account. Essentially, all computerised financial accounts are digital ledgers. However, the term gained public recognition after cryptocurrencies, such as Bitcoin, emerged in the 2010s.

blockchain, artists can create a tamper-proof, unalterable record of ownership, thereby ensuring the authenticity of their artistic endeavours. The integration of NFTs holds promise not only in assuring the trustworthiness of Tanzanian art but also in attracting a greater pool of collectors and investors to its burgeoning scene. Concerns regarding the authenticity and provenance of artworks often dissuade potential buyers from engaging with markets lacking established frameworks (Jia 2023).

By embracing NFTs, Tanzanian artists gain the means to instil confidence in buyers, thereby broadening their horizons and captivating a more diverse audience within the local art domain (García-Monleón et al. 2022). Moreover, NFTs represent a novel avenue for artists to commercialise their digital creations. Through the process of tokenisation¹³ Artists can market limited-edition or one-of-a-kind pieces directly to collectors, sidestepping conventional mediators and extending their global market presence (Qiu et al., 2023). In summary, the adoption of NFTs presents a paradigm-shifting opportunity for Tanzanian artists to overcome hurdles associated with authenticity and provenance, ultimately fostering confidence in the local art scene and attracting a broader cohort of collectors and investors. By embracing this technological innovation, Tanzanian artists are poised to lead the charge in the digital art renaissance, thereby unlocking new avenues for artistic expression, collaborative endeavours, and socioeconomic advancement within the Tanzanian artistic community.

In the context of NFTs addressing ownership and authenticity in the Tanzanian art market, Rogers' Diffusion of Innovations framework suggests that adoption of NFTs follows these stages: knowledge, persuasion, decision, implementation, and confirmation (Behkami & Daim 2016). Tanzanian artists learn about NFTs through global trends, become convinced of their benefits for authenticity, and decide to experiment with them, implementing the technology to create secure ownership records. As

¹³ Tokenisation is simply the process of converting physical or virtual assets (art) into digital units that can be purchased and sold.

the benefits such as increased buyer confidence and market access become clear, widespread adoption is confirmed. This process underscores the significance of relative advantage, compatibility, complexity, trialability, and observability in the adoption of new technologies (Sai 2018).

Cultural Empowerment

A thorough examination of how blockchain technology influences the Tanzanian art scene through cultural empowerment involved delving into various facets. These encompass redefining narratives and challenging stereotypes, amplifying marginalised voices, and preserving cultural heritage in the digital realm.

i. Redefining Narratives and Challenging Stereotypes

Blockchain technology has emerged as a groundbreaking tool, empowering artists to create and disseminate their work free from censorship or restrictive barriers. Through the innovative utilisation of NFTs, Tanzanian artists are poised to challenge prevailing stereotypes and misconceptions surrounding African art, thereby providing a platform for the expression of diverse narratives and experiences. This has the potential to enhance global comprehension of Tanzanian culture and artistry significantly. The decentralised and transparent nature of blockchain technology was initially developed as the backbone of cryptocurrencies such as Bitcoin ¹⁴has garnered substantial attention for its manifold applications beyond the realm of finance (Joy et al. 2022). Among its defining characteristics is the ability to securely and immutably record transactions. This transformative technology has gained increasing resonance within the art sphere, notably through the integration of NFTs (Razi 2024).

For Tanzanian artists, harnessing the power of NFTs represents a significant means to dismantle stereotypes and misconceptions that have long

¹⁴ Bitcoin (BTC) is a cryptocurrency, or virtual currency, designed to function as money and a form of payment independent of any single person, group, or entity, thereby eliminating the need for third-party involvement in financial transactions.

encumbered African art. By establishing direct connections with collectors and aficionados worldwide, Tanzanian artists can illuminate their distinctive perspectives and lived experiences, thereby shattering the conventional, homogenised narratives frequently associated with African artistic expression (Fortagne 2023). Through the strategic adoption of blockchain technology and NFTs, Tanzanian artists stand poised to reclaim their narratives and present a more authentic portrayal of Tanzanian cultural heritage and artistic expression. Sidestepping traditional gatekeepers, artists gain the ability to share their creations directly with a global audience, fostering more profound understanding and appreciation for Tanzania's rich artistic legacy. This decentralized paradigm not only empowers artists but also catalyses cultural dialogues, culminating in a more inclusive and diverse artistic ecosystem, both within Tanzania and on the global stage (Rasolroveicy & Fokaefs 2023).

Everett Rogers' Diffusion of Innovations Theory (IDT) helps explain how Tanzanian artists are adopting blockchain technology and NFTs to redefine narratives and challenge stereotypes in African art. According to IDT, the adoption of innovations like NFTs involves a process where innovators and early adopters initially embrace the technology, followed by a wider acceptance within the community (Nadini et al. 2021). Tanzanian artists, as early adopters of NFTs, leverage this technology to bypass traditional art market gatekeepers, ensuring the secure and transparent dissemination of their work. This adoption fosters a direct connection with a global audience, allowing artists to share authentic cultural narratives and diverse artistic expressions, thereby breaking down stereotypes and promoting a broader understanding of Tanzanian culture (Valeonti et al. 2021). As more artists and audiences recognise the benefits of this decentralised approach, the adoption curve of NFTs in Tanzanian art is expected to steepen, resulting in a more inclusive and diverse artistic ecosystem both locally and globally.

ii. Amplifying Marginalised Voices

Artisans from diverse Tanzanian demographics, including indigenous tribes and minority groups, boast a rich cultural heritage that awaits effective dissemination and enhancement through NFTs. Tanzania's mosaic of over 120 distinct ethnic communities, each harbouring its own artistic legacy and societal customs, finds a promising avenue for global exposition through the realm of NFTs. These tokens provide a pivotal platform for these communities, transcending geographical boundaries and extending their artistic narratives to a broader international audience, thereby augmenting visibility and appreciation for their cultural legacy (Kräussl 2023). Moreover, the integration of NFTs into the creative pursuits of marginalised Tanzanian artists aligns with the broader discourse on empowering minority collectives through digital platforms. As explained by Rosner (2023), specific societal structures unintentionally subject minority groups to heightened surveillance and control by prevailing social forces. However, within the realm of NFTs, this technological innovation emerges as a catalyst for empowerment, affording marginalised artisans the direct means to exhibit and reap the rewards of their craft sans intermediaries.

Furthermore, the discourse introduced by Harris (2022) highlights the importance of legal frameworks in protecting the rights of indigenous artists who engage with NFTs. This highlights the importance of establishing supportive frameworks that protect the interests and intellectual property of Tanzanian artists from marginalised backgrounds as they navigate the digital artistic landscape. Through the recalibration of existing regulations and the institution of comprehensive safeguards, these artisans can confidently engage in the NFT marketplace, securing equitable recompense for their creative endeavours (Tomić, Todorović, & Jakšić 2023). In summary, the convergence of NFTs and Tanzanian artisans from marginalised communities marks a transformative juncture that is conducive to amplifying voices, conserving cultural legacies, and fostering economic empowerment. Through the strategic harnessing of NFTs and the fortification of supportive legal infrastructures, these artisans stand poised not only to showcase their distinctive artistry but also to make substantive contributions to a more inclusive and diverse digital artistic landscape.

Everett Rogers' Diffusion of Innovations Theory (DIT) can be applied to amplify marginalised voices by examining how NFTs represent an innovative medium for Tanzanian artisans from diverse demographics. According to the IDT, the adoption of new technologies follows a process influenced by factors such as relative advantage, compatibility, complexity, trialability, and observability. NFTs offer a relative advantage by enabling direct access to global markets without intermediaries, thereby enhancing the visibility and appreciation of marginalised cultures (Franceschet & Libera 2023). They are compatible with the artisans' need to preserve and promote their cultural heritage, while the digital nature of NFTs reduces complexity and allows for easier experimentation (trialability). The success stories of early adopters are readily observable, encouraging further diffusion among Tanzanian artists. This alignment with IDT highlights how NFTs can serve as a transformative tool for cultural dissemination and economic empowerment within marginalised communities (Richardson 2015).

iii. Preserving Cultural Heritage in the Digital Realm

Tanzania's diverse cultural heritage confronts formidable challenges stemming from the forces of urbanisation, globalisation, and environmental degradation. These pressures place traditional artistic expressions and customs in jeopardy within the nation. Nonetheless, the emergence of blockchain technology offers an inventive avenue for the conservation and protection of Tanzanian cultural treasures. Through the process of tokenisation, wherein cultural assets are transformed into NFTs, Tanzanian cultural institutions and creators can guarantee the enduring safeguarding and availability of these invaluable heritage pieces for posterity (Trček 2022). Pioneering endeavours such as the Digital Agenda for Tanzania Initiative, bolstered by governmental and international support, strive to harness blockchain technology for the efficient digitisation and archiving of cultural resources. This digitalisation endeavour enhances heritage

preservation by providing a secure and user-friendly platform for storing and disseminating these cultural artefacts (Vacchio & Bifulco 2022).

The preservation of cultural heritage stands as a paramount concern, given the perpetual vulnerability of artefacts and landmarks to degradation (David, Ion, Grigorescu, Iancu, & Andrei 2020). The relentless deterioration of cultural heritage pieces due to various factors, including atmospheric pollution, climate shifts, and biological processes, underscores the imperative for the development of advanced protective methodologies and materials (Gifu et al. 2023). Furthermore, the integration of cutting-edge technologies, such as Terrestrial Laser Scanning (TLS) and UAV photogrammetry, facilitates the three-dimensional digital documentation and spatial evaluation of cultural sites, thereby enhancing their preservation (Jo & Hong 2019). In summary, the integration of blockchain technology into the conservation of Tanzania's cultural heritage, as exemplified by initiatives such as the Digital Agenda Tanzania project, presents a promising strategy to counteract the threats posed by urbanisation, globalisation, and environmental degradation. Through the tokenisation of cultural artefacts as NFTs and the digitisation of cultural resources, Tanzania is poised to ensure the enduring preservation and accessibility of its rich cultural legacy for future generations.

Utilising Everett Rogers' Diffusion of Innovations Theory (IDT), the adoption of blockchain technology for preserving Tanzania's cultural heritage exemplifies the diffusion process, where innovations spread through social systems over time (Cole, Stevenson, & Aitken 2019). In this context, blockchain adoption represents a novel solution (innovation) to the pressing challenge of preserving cultural heritage. The theory suggests that various factors, including the perceived attributes of the innovation, communication channels, social systems, and the passage of time, influence the adoption of innovations. In Tanzania, the emergence of blockchain technology as a tool for tokenising cultural artefacts into NFTs addresses the challenge of cultural preservation by offering a secure and decentralised platform. Governmental and international support, as well as initiatives such as the Digital Agenda for Tanzania, serve as catalysts for diffusion by promoting awareness and facilitating adoption among cultural institutions and creators (Nkwabi, 2021). As blockchain adoption continues to spread,

it has the potential to transform Tanzania's cultural preservation landscape by safeguarding its heritage for future generations, amid the pressures of urbanisation, globalisation, and environmental decline.

Challenges and Adaptation

The potential advantages inherent in NFTs within the Tanzanian art realm are undeniably significant, presenting novel avenues for artists to broaden their reach on a global scale and potentially augment their revenue streams. However, amidst these promising prospects, substantial impediments and hurdles confront the widespread adoption of NFTs within Tanzania. One significant obstacle is the restricted access to technology and internet infrastructure in some regions of Tanzania (Vasan, Janosov, & Barabási 2022). This digital schism impedes artists' capacity to engage with the digital art marketplace through NFTs. Lacking dependable internet connectivity and the necessary technological resources, artists may face challenges in creating, minting, and selling their digital artworks as NFTs. Such limitations risk marginalising a considerable segment of Tanzanian artists from capitalising on the opportunities afforded by NFTs. Furthermore, the intricacies inherent in blockchain technology present another barrier to the assimilation of NFTs within the Tanzanian art domain. Grasping the nuances of generating and trading NFTs on blockchain platforms, alongside navigating associated fees and protocols, can prove challenging for artists unfamiliar with this technological domain (Bhujel & Rahulamathavan, 2022). Without adequate education and support mechanisms, Tanzanian artists may struggle to effectively leverage NFTs for the exposition and monetisation of their artistry.

Additionally, the legal and financial consequences entailed in NFT transactions necessitate meticulous deliberation and expertise. Tanzanian artists may lack the necessary knowledge and resources to safeguard their intellectual property rights when partaking in NFT transactions (Dume, 2023). Familiarity with the legal frameworks underpinning NFTs,

encompassing copyright considerations and ownership entitlements, is paramount in ensuring the comprehensive protection of artists within the digital art marketplace (Nadini et al., 2021). To surmount these impediments and barriers, initiatives tailored to providing technological infrastructure, fostering internet connectivity, disseminating education about blockchain technology, and offering legal support for artists in Tanzania emerge as imperative. Collaborative endeavours involving governmental agencies, non-profit entities, and the private sector have the potential to bridge existing gaps and empower Tanzanian artists to engage actively within the NFT ecosystem. By adroitly tackling these challenges, the Tanzanian art sphere can harness the latent benefits of NFTs and flourish within the digital art landscape.

Within the framework of Everett Rogers' Diffusion of Innovations Theory (IDT), the adoption challenges facing NFTs in the Tanzanian art realm reflect the dynamics of innovation diffusion. While NFTs promise significant advantages, such as expanded global reach and revenue generation for artists, barriers including limited access to technology, inadequate internet infrastructure, and unfamiliarity with blockchain technology hinder their widespread adoption (Noh, Odenkirk, & Shionoiri, 2022). These barriers create a digital divide, impeding artists' ability to create, mint, and sell digital artworks as NFTs, thus excluding a significant portion of Tanzanian artists from benefiting from NFT opportunities. Moreover, the legal and financial complexities surrounding NFT transactions pose additional hurdles, necessitating the development of educational and support mechanisms. To facilitate NFT adoption in Tanzania, efforts must focus on enhancing technological infrastructure, promoting internet connectivity, providing education on blockchain technology, and offering legal support to artists. Collaborative initiatives involving government, nonprofits, and the private sector are essential to addressing these challenges and enabling Tanzanian artists to thrive in the digital art landscape.

Conclusion

The incorporation of blockchain technology and Non-Fungible Tokens (NFTs) within the Tanzanian art sphere offers a profound opportunity laden with diverse implications. By directly involving artists, avoiding intermediaries, and guaranteeing ownership and legitimacy, NFTs provide Tanzanian creators with fresh avenues for global exposure, independence, and revenue generation. Furthermore, the integration of blockchain technology holds promise in reshaping narratives, amplifying underrepresented voices, and safeguarding cultural heritage in the digital domain, thereby promoting inclusivity, empowerment, and preservation within Tanzania's artistic sphere. Nevertheless, notable obstacles such as limited technological access, the intricacy of blockchain, and legal and financial complexities must be navigated to foster widespread adoption and ensure fair participation in the NFT ecosystem. It is imperative to engage in collaborative endeavours aimed at bridging technological, educational, and regulatory gaps to unlock the full potential of NFTs and nurture a thriving digital art scene in Tanzania.

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