DeSci based web3 Journal Framework: Ownership, Governance, and Incentive

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Abstract—The advent of Web3.0 signifies a notable evolution in the Internet landscape, emphasizing decentralization, openness, and user control over data. This paper begins by delineating the key characteristics of Web3.0, including a decentralized network architecture, the application of smart contracts, and the protection of data privacy.Against the backdrop of blockchain technology, leveraging the immutability and transparency of blockchain, the paper discusses how it can facilitate the authenticity, security, and traceability of paper data, providing a new perspective on ownership and governance. Through the decentralized autonomous organization (DAO) framework, a more just, transparent, and open organizational structure can be realized, bringing new governance models to the academic research domain. This structure underscores more equitable stakeholder participation, fostering the collaborative development of the academic community. Lastly, this paper presents the implementation of a DAO framework, DeSCI, designed to streamline the lifecycle of scholarly articles, encompassing the submission, peer review, downloading, and citation processes, all securely recorded on the blockchain. Utilizing Non-Fungible Tokens (NFTs), the framework introduces a sophisticated incentive structure for authors, reviewers, and users. The incorporation of NFTs ensures a novel approach to fostering a decentralized and incentivized ecosystem for academic publishing, marking a substantial advancement in the realm of scholarly communication.

Index Terms—DAO, smart contract, decentralized autonomous organizations, decentralized funding, decentralized science, DeSci, parallel DeSci, Web3

I. INTRODUCTION

ACADEMIC publication methods have undergone significant historical transformations, reflecting the evolution of technology, society, and culture.Traditional scholarly journals, rooted in print formats and centralized editorial processes, have long been the primary medium for disseminating research findings [1]. However, the digital age has brought about profound changes, challenging the conventional models and paving the way for innovative solutions [2]. With the advent of the internet, electronic journals emerged, offering faster dissemination and broader reach, yet grappling with issues of copyright, authenticity, and peer review integrity.In recent years, the emergence of blockchain technology has presented a transformative opportunity for the academic publishing landscape. Blockchain, with its decentralized and immutable ledger, addresses several longstanding challenges [3]. The transition to blockchain-based academic journals holds the promise of enhancing transparency, traceability, and security in scholarly communication.

Decentralized Autonomous Organization (DAO) have emerged as a disruptive and transformative innovation in the realm of organizational governance. Built on the foundation of blockchain technology and smart contracts, DAOs present a novel approach to decision-making, fund management, and community governance. Unlike traditional hierarchical structures, DAOs operate without the need for central authorities, relying on transparent and automated processes governed by code and consensus [4]. The concept of DAOs originated from the desire to create decentralized and trustless organizations that are not bound by geographical limitations or intermediaries. DAOs leverage the decentralized nature of blockchain technology to establish a peer-to-peer network where every participant(authors, reviewers and readers...) can share research artilces resources. By utilizing smart contracts, DAOs can execute predefined rules, eliminating the need for intermediaries or third-party oversight and significantly reducing human intervention, thereby ensuring objectivity and efficiency in every step of the process. One of the key distinguishing features of DAOs is their ability to provide a transparent and auditable decision-making process [5]. By recording all transactions and actions on a blockchain, DAOs ensure that every participant has access to the same set of information, promoting transparency and accountability. This transparency also extends to the allocation and management of funds, as DAOs enable token holders to collectively govern and distribute resources based on predefined rules and consensus mechanisms.

blockchain-based smart contracts have received increasing attention in academic circles,Mainly distributed in security, privacy, software engineering, applications, performance, scalability, and other smart contract-related topics [6]. The current distribution and management processes in open journal

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systems are plagued by inadequate security, leading to issues such as unauthorized replication and dissemination of research papers. However, the implementation of blockchain technology has addressed these concerns by enhancing the security of electronic journal distribution and management. This approach brings significant benefits: Firstly, more precise and error-free distribution of e-journals within open journal systems. Secondly, improved reputation and increased trust in the open journal system. Lastly, safeguarding the management process of papers, protecting both soft and hard copies of journals from potential hacker threats. By utilizing blockchain technology, the security and efficiency of electronic journal distribution and management are significantly improved [7]. InterPlanetary File System (IPFS) and blockchain technology ensure the authenticity of online publications by storing them on a decentralized IPFS network and verifying their information through the blockchain, ensuring trust and reliability. This approach effectively addresses the challenges related to security and privacy in online publications [8]. The traditional scientific publishing system faces numerous challenges, including high publication costs, slow and biased peer review processes, copyright held by publishers, lack of rewards for contributors, and limited connectivity among researchers. By leveraging decentralized blockchain-based technology, creating a scientific publishing platform can address these issues. This platform utilizes Ethereum smart contracts to expedite the publication process, reduce biases in peer review, and lower publication costs. The model also enhances the quality of scientific research by incorporating new functionalities during the publishing process. The system increases the number of publishers, ensuring complete traceability throughout the publication process, and making scientific papers accessible to anyone for a nominal fee. Additionally, the system adopts a decentralized model for journals and integrates scientific papers with relevant data or datasets. Editors, reviewers, and cited authors are also rewarded [9]. The system is implemented using the Ethereum Virtual Machine (EVM), which includes frontend, middleware, and backend components. When an author submits a manuscript for evaluation, the system automatically identifies the most suitable editors and reviewers. After the publication process concludes, editors, reviewers, cited authors, and other contributors receive cryptocurrency rewards based on system tokens.

The application of blockchain technology in intelligent journal has the potential to revolutionize data transparency and ensure its authenticity. By leveraging smart contracts, the reliability of data can be guaranteed, eliminating the need for third-party oversight. The framework of a DAO offers a higher level of scalability and addresses not only individual functionalities but the system as a whole. Recent research has demonstrated the feasibility of DAO applications in automating the peer review process and providing incentives to authors, reviewers, and cited authors, thereby fostering a self-sustaining publication ecosystem. While the adoption of DAO and other blockchain applications has become widespread, many implementations have remained largely theoretical, focusing on the concept of self-governance. However, to truly realize the potential of DAOs, an appropriate and robust

incentive mechanism is crucial. Without it, the token issuance within the organization would lack practical significance. This paper aims to explore the incentive mechanisms of DAOs, specifically from the perspective of journal readers, in order to achieve a fully autonomous and economically sustainable DAO ecosystem [10]. By examining the reader's role in the DAO ecosystem, we can delve deeper into the design and implementation of effective incentive mechanisms. This research strives to contribute to the understanding of DAOs and their potential to transform the publication industry, enabling a seamless integration of blockchain technology and fostering a self-governing and economically viable ecosystem.

This paper begins by providing an in-depth introduction to the framework of Journal DAO, including its concepts, operational processes, and a comparative analysis with traditional approaches. Following the framework overview, it delves into the design and implementation of the incentive mechanism within Journal DAO. This section explores the various factors considered in designing the incentive structure, such as rewarding authors, reviewers, and cited authors based on their contributions to the publication process. Additionally, it discusses the integration of token-based incentives to foster motivation and participation among stakeholders. Subsequently, it presents experimental results to validate the effectiveness of the implemented incentive mechanism in Journal DAO. Through a rigorous evaluation and analysis, the outcomes highlight the impact of the incentive structure on the overall performance, efficiency, and engagement of participants within the system. Overall, it aims to provide a comprehensive understanding of Journal DAO, its framework, incentive mechanism design, and practical implementation. The experimental results serve to demonstrate the efficacy of the proposed approach, ultimately contributing to the advancement of decentralized and autonomous publishing systems.
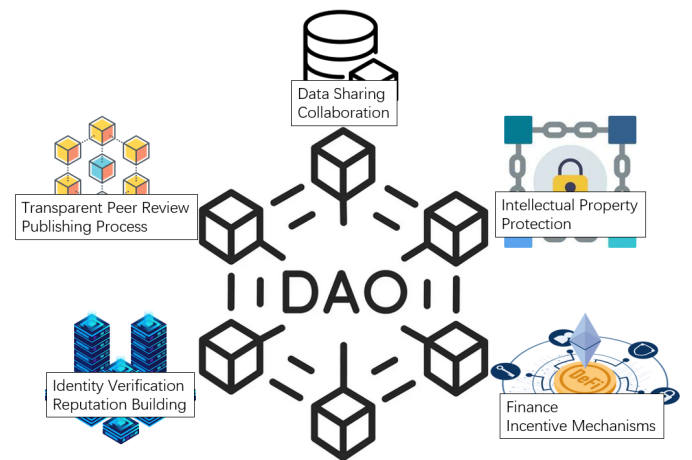
II. FRAMEWORK OF JOURNAL DAO

Fig. 1: Application of DAO in Article and Journal

According to the development of district DAO, related blockchain technology, the following DAO framework can be summarized as shown in the figure 1 .

- **Transparent Peer Review and Publishing Process:**
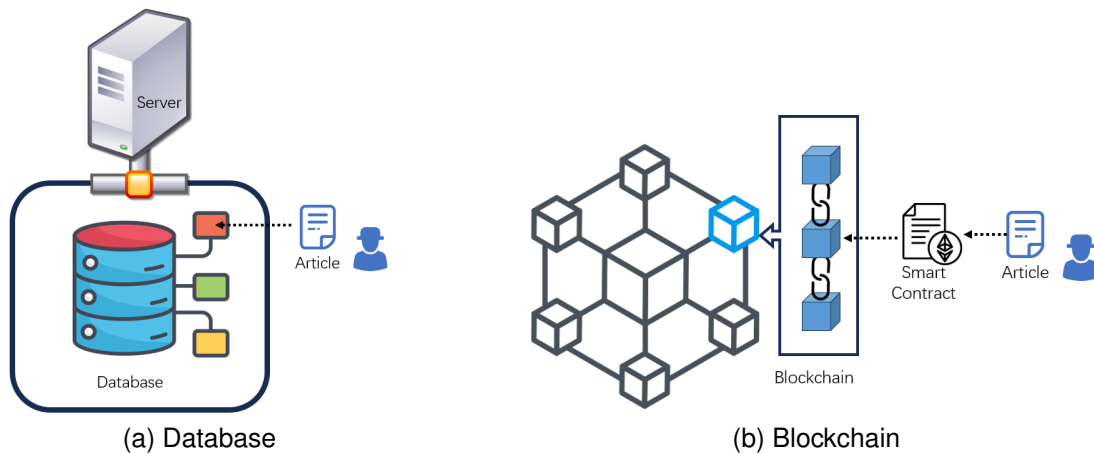
(a) Database   (b) Blockchain

Fig. 2: Article in Database or Blockchain

Blockchain can be used to create a transparent academic publishing platform, ensuring transparency throughout the peer-review and publishing processes. [11] Smart contracts can manage review, publication, and payment procedures, ensuring traceability and fairness.

- **Protection of Intellectual Property:**
  Blockchain and smart contracts can safeguard authors' intellectual property, ensuring their works are not copied or distributed without permission.
- **Identity Verification and Reputation Building:**
  Blockchain can be employed to establish scholars' identities and reputations [12]. Smart contracts can automate the validation of scholars' achievements, storing them on the blockchain.
- **Data Sharing and Collaboration:**
  Blockchain and smart contracts can facilitate data sharing and collaboration among scholars, ensuring data integrity and traceability [13].
- **Finance and Incentive Mechanisms:**
  DAO and cryptocurrencies can be used to support research finance and incentive mechanisms.Funds can be allocated according to token weightsn.

These application examples highlight the potential value of blockchain, smart contracts, and DAO technology in academic publishing and journal management. They enhance transparency, protect intellectual property, verify identity, automate processes, and encourage collaboration. As these technologies continue to evolve, they hold promise for further innovation and efficiency in academia.

A. Article in Journal DAO

In the traditional landscape of Web 2.0, the ownership of articles remains with the creators, yet the entirety of the associated data is ensconced within the databases of publishers, shrouded in a lack of transparency. This opaqueness extends to financial allocations, where, even if publishers express willingness to distribute funds, the absence of intermediary oversight poses challenges to ensuring fairness and accountability in the process. This paper delves into the transformative potential of Web 3.0 and blockchain technology within the DAO framework to rectify these issues, ushering in a new era of decentralized, transparent, and equitable financial distribution for content creators.

From a physical perspective, the data of articles is stored in the database of the journal website. When regular users access the journal website, they can browse and download articles of interest. The interaction between users and the journal website typically involves the following steps. When an article is uploaded to a blockchain like Figure **??**, its content, timestamp, and relevant metadata are all recorded on the blockchain. This means that anyone can verify the existence, content, and timestamp of the article. This provides a high level of assurance for the immutability and transparency of documents, particularly with potential significance in research, intellectual property protection, and copyright. Uploading articles to the blockchain also enables decentralized data storage, reducing reliance on centralized institutions. This offers a more open and trustworthy means of data sharing for the academic community and other domains.Uploading an article to a blockchain, as compared to storing it in a traditional database, provides the author with a clear and objective ownership of the article. In a traditional database, the ownership of the data and the integrity of the database are controlled by the entity or organization managing the database. Authors and other stakeholders may not have direct control or visibility into the ownership and usage of the data.

On the other hand, when an article is uploaded to a blockchain, the author can have greater confidence in their ownership and control over the article. The blockchain's decentralized and immutable nature ensures that the ownership records are transparent, tamper-resistant, and not under the sole control of a centralized authority. This empowers authors to have a direct and verifiable claim to their work, which can be particularly important for intellectual property protection, copyright, and ensuring that the author's rights are respected.

B. Finance in Journal DAO

In the evolution of electronic journals, websites have become the primary medium for disseminating research papers. Although the content of users' papers remains the intellectual

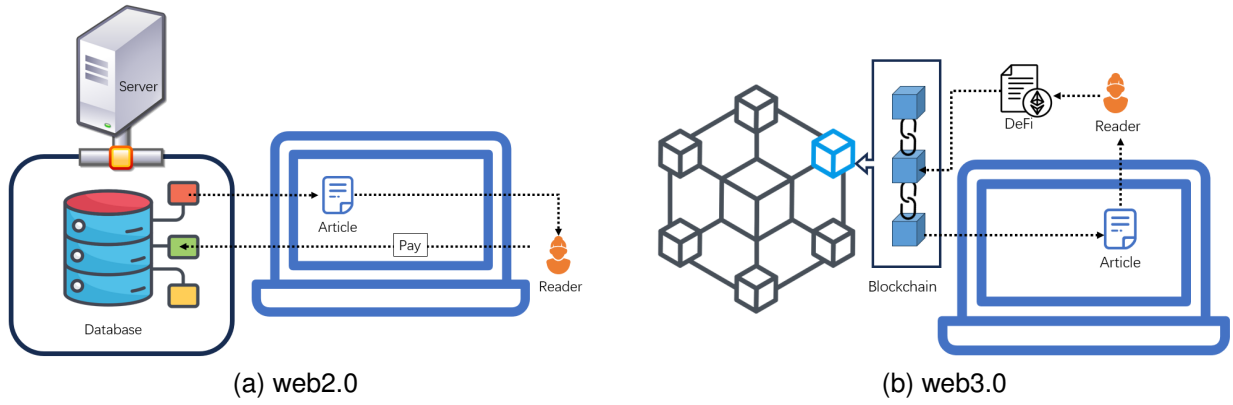(a) web2.0   (b) web3.0

Fig. 3: Reader Pay for Download

property of the authors, the wealth generated by journals through these papers often belongs predominantly to the journals rather than the authors.In our hypothetical scenario, we contemplate a shift in this paradigm, envisioning a system where a certain proportion of the generated wealth is allocated back to the authors. Taking paid downloads as a simple example, this mechanism aims to provide authors with a more direct economic incentive. Such a transformation not only has the potential to enhance authors' motivation and creativity but also holds the promise of establishing a more equitable wealth distribution system. This envisioned change could contribute to fostering a sustainable and mutually beneficial development model in the realm of electronic journals, addressing the balance of interests between authors and journals more effectively. Web2, also known as the social web, refers to the current state of the internet that we use today, which is primarily focused on social media, e-commerce, and other web-based applications that allow users to interact with each other and with content in various ways. In Web2, payment systems are typically centralized, meaning that they are controlled by a single entity or organization.

As the figure 3 shows. In the context of Web 2.0, the establishment of a platform for downloading articles entails several steps. Firstly, the creation of a functional website serves as the primary interface for users. This website acts as a centralized hub, hosting a database that stores a diverse range of articles across various disciplines.When a user decides to download a specific article, a payment system is in place to facilitate the transaction. The user pays a designated fee for the download, and the platform, acting as an intermediary, manages the distribution of funds. The allocation of funds may involve a proportional distribution to the authors, and this process is typically administered by the central entity running the website.This centralized model means that all user interactions, content storage, and payment transactions occur within the controlled environment of the website. Users depend on the centralized platform to oversee and coordinate all aspects of the transactional process, creating a reliance on a single authority for the entire operation.

Web3, also known as the decentralized web, represents a shift toward a more open, decentralized, and secure internet that is built on blockchain technology [14]. In Web3, pay-

ment systems are decentralized, meaning that they are not controlled by a single entity or organization [15]. Instead, payments are made using cryptocurrency, which is a digital asset that is secured by cryptographic techniques and operates independently of central banks and other financial institutions. Cryptocurrency payments are processed directly between users without the need for intermediaries, which can result in lower transaction fees and faster processing times.

C. Advanced of Journal DAO

In the realm of Web 3.0, we witness a fundamental transformation in the dissemination of academic articles. Unlike the traditional Web 2.0 model, it introduces a paradigm shift. In this innovative framework, the data entity of articles resides directly on the blockchain, with the website serving as a mere interface reflecting the blockchain data. When users make payments for downloads, the entire fund allocation process is automated through smart contracts, eliminating the need for manual intervention. This groundbreaking framework ensures complete transparency and traceability throughout the process. As users pay to download articles, funds are automatically distributed according to the rules set within the DAO framework, without any centralized oversight.In the Web 3.0 paradigm, this novel model signifies a departure from reliance on traditional intermediaries. Instead, it empowers users with the direct participation in DAO frameworks, utilizing smart contracts for automated and secure fund distribution. This shift not only achieves decentralization in the transaction process but also enhances the efficiency of academic article transactions.In the Web 3.0 environment, articles are directly uploaded to the blockchain. All operations, including payment processing and fund distribution, are seamlessly executed through smart contracts. This innovative framework ensures complete transparency and traceability throughout the entire process. When users pay to download articles, the funds are automatically allocated according to the rules established within the DAO framework, eliminating the need for any centralized oversight.

Overall, the main difference in payment systems between Web2 and Web3 is the degree of centralization. Web2 payment systems are centralized, while Web3 payment systems are decentralized. While Web3 is still in its early stages, it

has the potential to revolutionize the way we think about payments, transactions, and financial systems.In the current era of digitization, the act of anchoring a paper on the blockchain signifies the author's complete ownership of the work, opening up boundless possibilities. The introduction of blockchain technology empowers authors with more rights and limitless potential. Once a paper is inscribed on the immutable blockchain, authors not only possess intellectual property rights but also gain absolute control over their creations. This shift in ownership implies that authors can explore innovation more freely, facilitate transparent data sharing, and attain fairer returns from the wealth generated by their works. The immutability and transparency afforded by blockchain provide robust protection for the rights of paper owners, ushering in new possibilities for academic research and knowledge sharing. This profound ownership transformation elevates a paper beyond being merely a conduit for academic dissemination; it becomes a symbol of the unique wealth created by the author, sparking a profound revolution in the relationship between academia and authors.

III. MECHANISM DESIGN OF JOURNAL DAO

In the practical implementation of the Journal DAO, we leveraged the Aragon framework to establish a decentralized and transparent infrastructure for academic publishing. The execution of the DAO involved several key steps to ensure a seamless and fair distribution of tokens among participants.

A. Token Distribution Mechanism

1) Author Rewards:
   Authors receive tokens based on the evaluation provided by reviewers during the submission process. The more constructive and impactful the reviews, the higher the token allocation to the authors.
2) Reviewer Incentives:
   Reviewers are rewarded with tokens for their valuable contribution to the peer-review process. This includes providing insightful feedback and assisting in maintaining the quality of published work.
3) Publication and Download Rewards:
   Upon successful publication, both authors and users who download the papers are granted tokens. This encourages not only the creation of quality content but also its dissemination and accessibility.
4) Citation Bonuses:
   Authors receive additional tokens when their published work is cited by other researchers. This incentivizes the production of influential and impactful research that contributes to the academic community.

As Figure 4 shows, the process initiates with a user submitting a paper for publication. As the DAO initiates the coin minting process, specific rules govern the allocation of tokens. Authors are categorized based on their roles in the paper, including corresponding authors, first authors, second authors, and third authors, and so on, each receiving distinct token allocations.Simultaneously, reviewers play a pivotal role in the distribution of tokens. Their allocations are determined
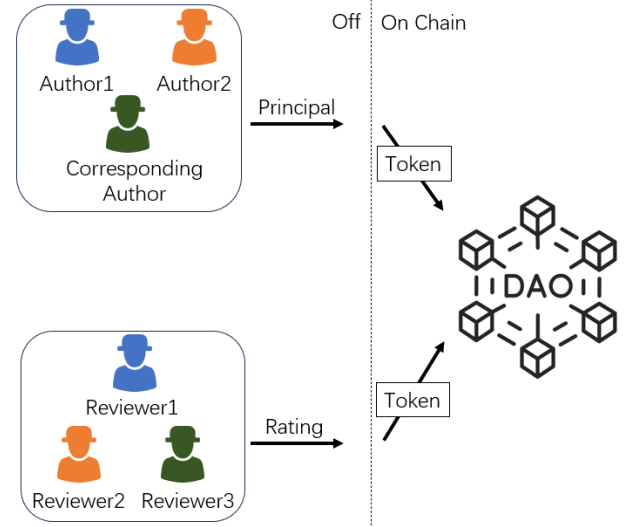

Fig. 4: Distribute Token by DAO

by their roles in the review process and the scores they assign to the submitted papers. This meticulous token distribution mechanism ensures that each contributor, whether an author or reviewer, is fairly rewarded according to their specific contributions and responsibilities.By implementing such a structured system, the DAO creates a transparent and equitable environment, aligning the incentives of authors and reviewers. This not only fosters a sense of fairness within the system but also encourages active and meaningful participation from all contributors. The workflow, guided by DAO principles, facilitates a seamless integration of various stakeholders, ensuring a well-functioning and self-sustaining ecosystem.

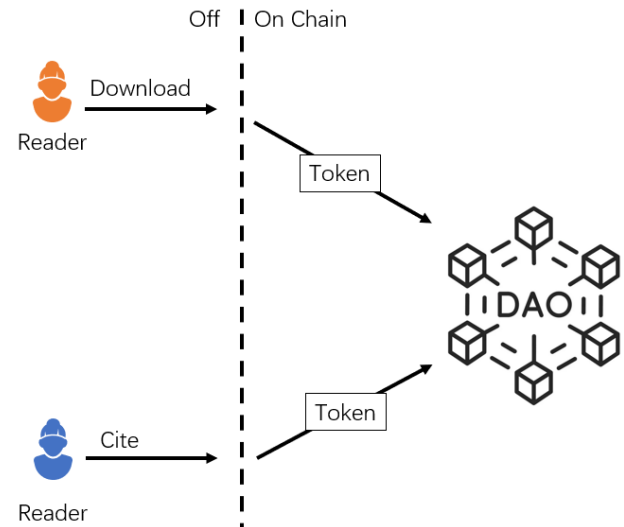Fig. 5: Distribute Token while Download or cited

As Figure 5 shows, upon the download or citation of a paper, the DAO employs specific rules for the allocation of tokens to the downloader and the citers. This ensures that contributors beyond the authorship and reviewing process are also recognized and rewarded within the DAO framework.For downloaders, the token allocation is determined by the extent

and impact of their engagement with the paper. High download counts result in increased token rewards, creating a dynamic and merit-based incentive system.Similarly, when a paper is cited, the citers receive token allocations based on the significance and reach of their citations. This encourages users to engage in scholarly discussions, contribute to the academic community, and actively participate in the dissemination of knowledge.These token allocation mechanisms not only acknowledge the efforts of those who contribute by downloading or citing papers but also foster a collaborative environment where users are motivated to interact with the content and contribute meaningfully to the scholarly ecosystem. The DAO's commitment to recognizing various forms of contribution ensures a comprehensive and inclusive reward system, aligning incentives with the broader goals of the academic community.

B. NFT-Based Finance Distribution

The finance generated within the Journal DAO is distributed based on the NFT model, where each token holder is entitled to a proportional share. This innovative approach ensures that the financial rewards align with the level of contribution and engagement at various stages of the academic process.
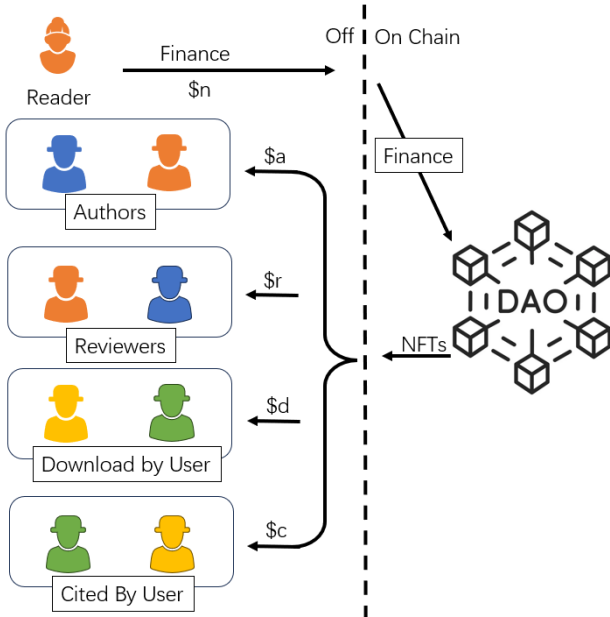

Fig. 6: Distribute Finance by NFTs

As Figure 6 shows, in this system, authors, reviewers, download users, and reference users all possess a specific quantity of tokens. These tokens are considered as NFTs (Non-Fungible Tokens) due to their unique nature. Once finance is generated, such as when a user pays to download a paper, the system allocates this finance based on the number of tokens held by the respective parties.This design ensures objectivity, fairness, and transparency within the system. Each participant's contribution is reflected in a specific number of tokens, and the allocation mechanism operates according to the quantity of these tokens. Such a design not only enhances the fairness of the incentive mechanism but also makes the entire system more transparent, allowing participants to clearly

understand the relationship between their contributions and rewards.This NFT-based token system provides tangible and verifiable returns for contributors while establishing an effective and operable incentive mechanism for the entire ecosystem. This fair and transparent allocation method is expected to drive collaboration and development in the academic community, creating a mutually beneficial environment for all stakeholders.

C. Decentralized Governance

The DAO operates on a decentralized governance model, allowing token holders to participate in decision-making processes. This ensures that the community has a say in the evolution of the platform, creating a democratic and inclusive environment.

D. Results and Implications

The implementation of the Journal DAO has yielded positive results in terms of increased engagement, quality submissions, and a more inclusive academic ecosystem. The transparent and automated token distribution mechanisms have effectively addressed issues of ownership and reward distribution, fostering a collaborative and fair scholarly environment.

IV. AN ILLUSTRATIVE EXAMPLE

In addition to the theoretical framework, we conducted simulations to evaluate the effectiveness of the proposed DAO system. Table I presents results from 20 simulated downloads, illustrating the distribution of finance among holders. This simulation provides a comprehensive overview of how finance is allocated to holders based on their token holdings.

Furthermore, we applied our DAO framework to a real-world case by analyzing a published paper with 2154 downloads and 42 citations. As shown in Table II. By simulating the income distribution within the current DAO structure, we observed that download users not only offset their initial payment but also gained additional earnings. The incentivized system encourages users to respect copyright and, more importantly, has achieved a level of autonomy.The provided tables and case study demonstrate the practical application and positive outcomes of our proposed DAO framework. By aligning incentives with user behaviors, the system not only offsets costs for downloaders but also significantly incentivizes engagement. This not only respects copyright but also establishes a self-sustainable and autonomous ecosystem, providing valuable insights for the future development of decentralized academic publishing.

After voluntarily making a payment, users' ability to participate contributes to a robust incentive mechanism, fostering a sense of autonomy within the entire framework. Through this design, users become direct contributors to financial activities, injecting new value into the framework and creating potential opportunities for self-reward. This decentralized autonomous model empowers users to engage directly in decision-making and contributions, shaping a more open, fair, and virtuous ecosystem. Overall, this autonomous framework cultivates a more positive and sustainable participation experience for

TABLE I: Finance for DAO.

index	Authors				Reviewers			Readers	
	Corresponding	Author1	Author2	Author3	reviewer1	reviewer2	reviewer3	cite	download
0	0.128171	0.128171	0.051068	0.025367	0.222296	0.278037	0.166889	0.000000	0.000000
1	0.128605	0.128605	0.051044	0.025191	0.220749	0.276102	0.165728	0.000000	0.003977
2	0.129032	0.129032	0.051020	0.025016	0.219223	0.274194	0.164582	0.000000	0.003950
3	0.129454	0.129454	0.050997	0.024845	0.217718	0.272311	0.163452	0.000000	0.003923
4	0.129870	0.129870	0.050974	0.024675	0.216234	0.270455	0.162338	0.000000	0.003896
5	0.130281	0.130281	0.050951	0.024508	0.214769	0.268623	0.161238	0.000000	0.003870
6	0.130685	0.130685	0.050929	0.024343	0.213325	0.266816	0.160154	0.000000	0.003844
7	0.130982	0.130982	0.050693	0.023929	0.209698	0.262280	0.157431	0.007557	0.003778
8	0.131373	0.131373	0.050673	0.023772	0.208320	0.260557	0.156397	0.007507	0.003754
9	0.131759	0.131759	0.050653	0.023617	0.206961	0.258856	0.155376	0.007458	0.003729
10	0.132140	0.132140	0.050633	0.023464	0.205619	0.257178	0.154369	0.007410	0.003705
11	0.132515	0.132515	0.050613	0.023313	0.204294	0.255521	0.153374	0.007362	0.003681
12	0.132886	0.132886	0.050594	0.023164	0.202987	0.253886	0.152393	0.007315	0.003657
13	0.133253	0.133253	0.050575	0.023016	0.201696	0.252271	0.151423	0.007268	0.003634
14	0.133614	0.133614	0.050557	0.022871	0.200421	0.250677	0.150466	0.007222	0.003611
15	0.133971	0.133971	0.050538	0.022727	0.199163	0.249103	0.149522	0.007177	0.003589
16	0.134324	0.134324	0.050520	0.022585	0.197920	0.247548	0.148588	0.007132	0.003566
17	0.134672	0.134672	0.050502	0.022445	0.196692	0.246013	0.147667	0.007088	0.003544
18	0.135016	0.135016	0.050484	0.022307	0.195480	0.244497	0.146757	0.007044	0.003522
19	0.135356	0.135356	0.050467	0.022170	0.194282	0.242999	0.145858	0.007001	0.003501
20	0.135692	0.135692	0.050449	0.022035	0.193099	0.241519	0.144970	0.006959	0.003479
Total	2.773651	2.773651	1.064935	0.495363	4.340948	5.429444	3.258970	0.101500	0.074210

TABLE II: Finance of Real Article for DAO.

index	Authors				Reviewers			Readers	
	Corresponding	Author1	Author2	Author3	reviewer1	reviewer2	reviewer3	cite	download
0	0.128171	0.128171	0.051068	0.025367	0.222296	0.278037	0.166889	0.000000	0.000000
1	0.128605	0.128605	0.051044	0.025191	0.220749	0.276102	0.165728	0.000000	0.003977
2	0.129032	0.129032	0.051020	0.025016	0.219223	0.274194	0.164582	0.000000	0.003950
3	0.129454	0.129454	0.050997	0.024845	0.217718	0.272311	0.163452	0.000000	0.003923
4	0.129870	0.129870	0.050974	0.024675	0.216234	0.270455	0.162338	0.000000	0.003896
...	...	...	...	...	...	...	...	...	...
2151	0.209045	0.209045	0.043698	0.001416	0.012405	0.015516	0.009313	0.000447	0.000224
2152	0.209049	0.209049	0.043698	0.001415	0.012400	0.015509	0.009309	0.000447	0.000223
2153	0.209052	0.209052	0.043698	0.001414	0.012395	0.015503	0.009305	0.000447	0.000223
2154	0.209056	0.209056	0.043697	0.001414	0.012389	0.015496	0.009301	0.000446	0.000223
Total	423.722713	423.722713	96.973407	9.477511	83.052922	103.878504	62.352043	2.672524	1.492444

users and the entire community. Through the detailed simulations and analyses, the incentive mechanisms within the DAO framework emerge as crucial drivers in shaping the dynamics of authorship and user participation. As downloads and citations increase, the token-driven rewards become a powerful motivator for authors, leading to an accumulation of influence and financial gains. This incentive structure not only acknowledges and rewards the contributions of authors but also establishes a direct correlation between their efforts and the benefits they accrue. Furthermore, users who engage with the system by downloading papers witness a direct impact on their influence and, subsequently, on their earnings. This creates a dual incentive structure, where authors and users are mutually motivated to contribute to and participate in the DAO environment. The concept of decentralized autonomy becomes evident as the system operates independently, fostering a self-sustaining loop of contributions, rewards, and governance. In this context, the DAO framework provides a powerful tool for aligning interests and promoting a fair distribution of rewards based on tangible contributions. The transparency and automation inherent in DAO contribute to a governance model that minimizes external intervention, allowing the ecosystem to evolve organically through the collective actions of its participants. This synergy of incentives and autonomy within DAO not only enhances the overall efficiency of the academic publishing model but also creates a robust and self-regulating environment for authors and users alike.

Once the paper is on the blockchain, it unequivocally belongs to the author, author is the real owner,that creating endless possibilities, especially in terms of financial activities. This means that the author not only owns their work but can also leverage blockchain technology to create various financial opportunities. Authors can receive rewards through financial activities, which may include paid downloads, knowledge exchanges, collaborative projects, and more. This decentralized framework provides authors with greater creative freedom and potential economic returns, enabling them to be more independent and influential in the academic domain. Overall, putting a paper on the blockchain opens up a new and forward-thinking path for authors.

V. CONCLUSION

This paper extensively explores the framework of DAO and provides a thorough analysis of its potential applications in the academic publishing domain. By placing papers on the blockchain, we have achieved transparency in ownership, allowing authors to have complete control over their works while

also creating diverse financial opportunities. The autonomous nature of DAO enables users to directly participate in decision-making and contributions, constructing an ecosystem that is open, fair, and characterized by positive feedback loops.

Under this framework, users can not only pay for paper downloads but also receive rewards through participation in financial activities. This novel academic publishing model grants authors greater creative freedom while motivating users to actively engage, contribute, and share knowledge. The decentralized autonomous design brings a more open and fair publishing mechanism to academia, breaking away from the limitations of traditional academic publishing.

In summary, Decentralized Autonomous Organizations inject new vitality into academic publishing, creating a more equitable environment for both authors and readers. This innovative model holds promise for paving new paths in the development of academia, fostering the free dissemination and sharing of knowledge.

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