

Incentivizing Customer Reviews in the Grocery Industry: The Re-Taled Project's Approach

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Abstract

Nowadays, user-generated content is pivotal for companies: people trust other customers' opinions more than any brand advertisement. Brands are aware of this and try to promote and motivate their customers to create high-quality content. The promotion is still at an early stage, though: there is a lack of fairness, as companies do not provide a validation system, or if they do, it is not based on a transparent solution, and there is no reward for creating unique and high-quality content. In this paper, we focus on the problem of incentivizing the user's creation of content, in the form of customer reviews, in the online grocery industry. Specifically, we illustrate the experience gained in the first months of the Re-Taled project in applying blockchain technology to provide a solution to the problem faced. The aim is to develop a decentralized ecosystem of consumers, influencers, and manufacturers, where content creators are rewarded for their contribution according to an algorithm that provides incentives in the form of both reputation and monetization. Blockchain technology is used to certify the content's authenticity and compensate content creators with an open-source cryptographic token named TALE. We illustrate the technical choices of the solution together with its software architecture design. Moreover, we introduce the algorithm used to validate the trustworthiness of user-generated content and promote fairness and transparency within the platform.

Keywords

User generated content, Reputation and Experience level, Blockchain.

1. Introduction

The market size of online grocery markets in selected European nations (Spain, Germany, France, and the United Kingdom) is predicted to experience very large growth, expected to rise at least 150% from 2018 to 2023 [1]. On the other hand, ratings and reviews are still not part of the grocery industry's e-commerce or online strategy, even if consumers always demand more unbiased content. Specifically, online shoppers can access vast information about products and services and rely on it to make informed purchasing decisions. One of the most significant sources of information for consumers is User-Generated Content (UGC), which is any content consumers create, e.g. product reviews, social media posts, and online forums.

UGC provides valuable insights into the experiences and opinions of other consumers, helping potential buyers to evaluate the quality and suitability of products and services. In particular, 80% of consumers affirm they use UGC to drive their purchase decisions [2]. Moreover, an analysis of 1.5MM

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online product pages from more than 1,200 brand and retailer sites found that there's a 120.3% increase in conversion when a shopper engages with ratings and reviews on a product page [3]. These results are also confirmed by researchers who have shown that a specific type of UGC, i.e., product reviews, can affect consumer decision-making [4], competition, and product sales. [5] The positive effects of UGC have been investigated also by other researchers, who discovered that UGC is pivotal for online dynamics and digital strategies because it drives and informs purchases [6], aids investment decisions [7] provides entertainment [8], and helps firms gather customer intelligence [9]. For all these reasons, UGC can provide a competitive advantage to firms that are constantly attempting to collaborate with content contributors and collect more content about their products.

Despite its well-recognized value, UGC is often affected by underprovisioning problems [10] [11], because it is typically supplied on a voluntary basis. Indeed, in 2014, Dr. Trevor van Mierlo published the "1% rule", according to which only a mere 1% of the people who consume UGC also actively contribute to it [12]. As a result, online businesses must understand how to leverage UGC effectively to succeed in today's competitive marketplace.

Motivating users to contribute content is thus an extremely important issue for many online platforms. Companies and firms have developed different approaches to address it: revenue shares (Youtube.com), reward points (Rakuten), titles (Perl Monks), badges and rankings (Chess.com), and content feedback (stackoverflow.com, quora.com) [13]. Even if reward strategies to recompense content creators are effective for increasing provisioning, they usually negatively affect consumers. Specifically, platforms that share revenues with customers or reward users for contributing content are considered unfair [14]. People also know that UGC might be fake or misleading because companies do not provide a validation system or if they do, it is not based on a transparent solution. On the other hand, the design and implementation of fair mechanisms to reward users are complicated, and valuation models are often inadequate. Therefore, creating and sustaining a transparent mechanism to distribute a fair share to content creators is challenging [14]. The challenge is even more complicated because rewarding strategies should encourage users to deliver the same quality. Previous research has demonstrated that authors were biased when compensated for writing product reviews [10].

In this paper, we illustrate the experience gained in the first months of the Re-Taled project addressing the problem of incentivizing the user's creation of content, in the form of customer reviews, in the online grocery industry. Our project aims at developing a decentralized ecosystem of consumers, influencers, and manufacturers, where content creators are rewarded for their contribution according to an algorithm that provides incentives in the form of both reputation and monetization. Re-Taled deals with the needs of several different subjects:

- producers, supermarket chains, and online marketplaces, which need to collect reviews continuously;
- acquired customers who need to be rewarded for providing trustful and time-consuming reviews;
- new consumers who need updated and unbiased content to drive their purchasing decisions.

The project focuses on developing a platform based on blockchain technology to promote UGC in the grocery industry while creating a transparent ecosystem where UGC is trustworthy, and users are fairly rewarded for their contribution.

Several innovative elements differentiate the Re-Taled project from previous attempts. The most important is the link between the review provisioning and the loyalty program. Rewarding content creators with tokens would be ineffective without a market where those tokens can be spent. The loyalty program provides a market where consumers can exchange their tokens for discounts and prizes. Thanks to this strategy, the Re-Taled solution can improve customer retention while increasing users' motivation to contribute with reviews and content.

Moreover, Re-Taled uses an algorithm to validate the trustworthiness of content consumers generate after purchasing groceries. Recommender systems typically collect reviews and UGC to rank items but are based on a centralized control model. Our project exploits the blockchain technology to empower the community of consumers to evaluate the UGC in compliance with a transparent algorithm in a decentralized environment and to be rewarded for their effort. In particular, Re-Taled is powered by an open-source cryptographic token, named TALE, built on existing network technology.

The rest of the paper is organized as follows: Section 2 introduces the technical architecture, Section 3 presents the algorithm designed to ensure the trustworthiness of UGC, Section 4 discusses the most strictly related works, and Section 5 concludes the work with further considerations.

2. The Re-Taled Architecture

In this section, we first introduce the actors involved in the Re-Taled ecosystem, then we present the platform's architecture.

2.1. Actors

The Re-Taled ecosystem comprises two separated and mutually independent entities: the sponsor and the user community. The former is a marketplace or a large supermarket chain that adopts Re-Taled as a technological solution to collect trustable UGC to increase sales. The latter is an autonomous entity made of users who share the same set of rules and objectives. Users can interact with other users, consume their content, and gain experience level based on those interactions and content provisioning. Users can receive and use fidelity points to obtain discounts from the sponsor or to redeem cryptocurrency. A user can be:

- a *consumer*, who consumes other users' content without producing any personal contributions; a consumer interacts with the Re-Taled platform only by consuming content on the platform and by purchasing products from the sponsor, receiving fidelity points on confirmed purchases;
- a *contributor*, who contributes with reviews and comments or by validating other users' content, gaining fidelity points and experience for the value added to the platform;
- a *teller*, who is a contributor that acts as an influencer within the platform, by sharing high-quality content (e.g., photos, videos, posts), answering other's consumer questions, onboarding other users, and promoting other tellers, and receives tokens from manufacturers and producers to create sponsored content about products;
- a *moderator*, who is a contributor that gained a high level of reputation and experience;
- a *representative*, who is a highly responsive moderator that can join the Board of Representatives deciding on matters of community standards, conflict resolution, sponsored materials, and rewarding policies.

The sponsor will be responsible for product and business development, empowering the community to establish a reliable and trustworthy content exchange system. At first, the sponsor will also manage some community elements, but it will gradually relinquish responsibilities as long as the community matures and becomes capable of self-governing. The sponsor is also expected to contribute to maintaining and updating the Re-Taled platform when needed and provide the IT infrastructure required to support it. Moreover, the sponsor will integrate its e-commerce and loyalty program services with the Re-Taled platform to allow the community to use TALE tokens for discounts or in exchange for prizes.

We graphically depict in Fig. 1 the main interactions among the community members, the Re-Taled platform, and the other ecosystem actors, i.e., the e-commerce website of the sponsor and the blockchain (which identifies all the blockchain technologies involved within this project).

To participate in the Re-Taled system, users must register their accounts to provide the correspondence between users recorded within the Re-Taled platform, the e-commerce application, and the data recorded in the blockchain. Re-Taled provides two registration types: centralized (via the Re-Taled platform, which takes care of recording the data on the blockchain) and decentralized (directly via the blockchain, by means of the MetaMask wallet). Notably, the centralized form of registration is supported because, based on our previous analysis, only a limited percentage of potential users have a wallet. It is also worth noting that, in the case of decentralized registration, the user has to pay for the cost of executing the smart contract on the blockchain. For this reason, the Re-Taled platform will

reward the user with a welcome gift (a certain amount of tokens) to compensate for the sustained cost and encourage decentralized registrations.

Users can act as customers on the e-commerce site of the sponsor, receiving back fidelity points for the purchasing of each product. After purchase, a contributor user can publish a product review, which will be permanently stored and made publicly visible by resorting to blockchain technology. Other contributors can then give feedback to the reviews, which contributes to providing an average score to each review through a weighted mean depending on users' reputation and experience level. Moreover, positive feedback will also contribute to the reputation score of the user who wrote the review (refer to Section 3 for further details). Both reviewers and feedback providers will be rewarded with fidelity points that they can redeem to obtain cryptocurrency (TALE tokens). This token is built on an existing network and has been specifically defined as a unit of account and store of value to encourage users to create content.

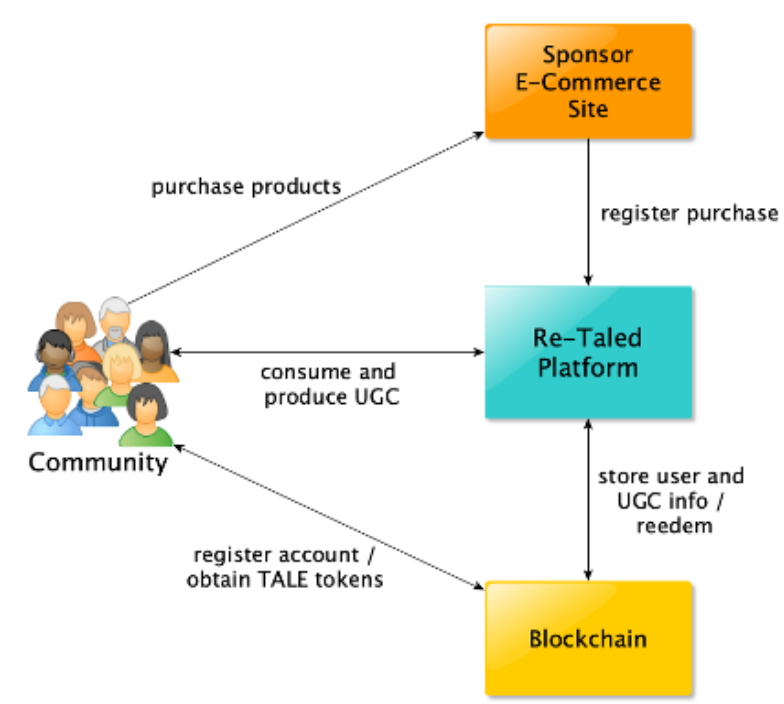


Figure 1: Re-Taled ecosystem's actors.

2.2. Architecture

We present here the architectural and functional structure of the Re-Taled platform based on a set of multiple blockchain networks (i.e., Polygon, Arweave, and EOS.IO). Even though the technical architecture introduced within this paper can be slightly adapted to meet the specific needs of different sponsors, this set of blockchain networks currently represents the best-fitting technologies for Re-Taled according to the best of our research knowledge and investigations.

The Re-Taled solution includes both a standalone web portal and a plugin module to be integrated within the sponsor's e-commerce application (reviews and comments have to be shown on the same web page where the products are on sale). Notably, the fidelity points obtained within the installation of the Re-Taled platform for a given sponsor can be used only within that same sponsor's selling channel (physical stores or e-commerce) to purchase discounts without paying any fee to mint the cryptocurrency. The redeem functionality allows users to convert their collected fidelity points into a corresponding amount of TALE tokens that can also be used outside the sponsor's loyalty program. This mechanism permits to involve users who are not familiar with decentralized tokens, while avoiding a global token economy where all sponsors share the same token. In addition, besides the sponsor, there are possibly manufacturers and producers of branded products interested in selling through the

sponsor’s channels. They can actually promote their products by purchasing fidelity points from the Sponsor to pay community members for sponsored content. The total amount of tokens is not fixed by default; new cryptocurrency will be minted or destroyed as needed during the redeem phase or the conversion into fidelity points, respectively.

The UML diagram in Fig. 2 shows the components forming the Re-Taled platform’s architecture and the dependencies between them. Each component represents a modular part of the architecture that encapsulates its behavior and can be replaced with another component that provides the same interface. The architecture is mainly composed of two parts: the Blockchain component and the Application System, formed by the frontend App, the backend WebService, and the StorageSystem. The latter component is necessary to manage the large amount of data about reviews and related feedback, which are not stored on-chain on the blockchain system to avoid unsustainable transaction costs. As usual [15], the hash of each resource will be stored on-chain. At the time being, to enable experimenting following a fast-prototyping approach in the current prototype of the overall system, the storage component has been realized by resorting to a database. The next development will realize the storage component using a decentralized, scalable solution, such as IPFS, Layer 2 technology (e.g., taking advantage of Polygon), or Arweave.

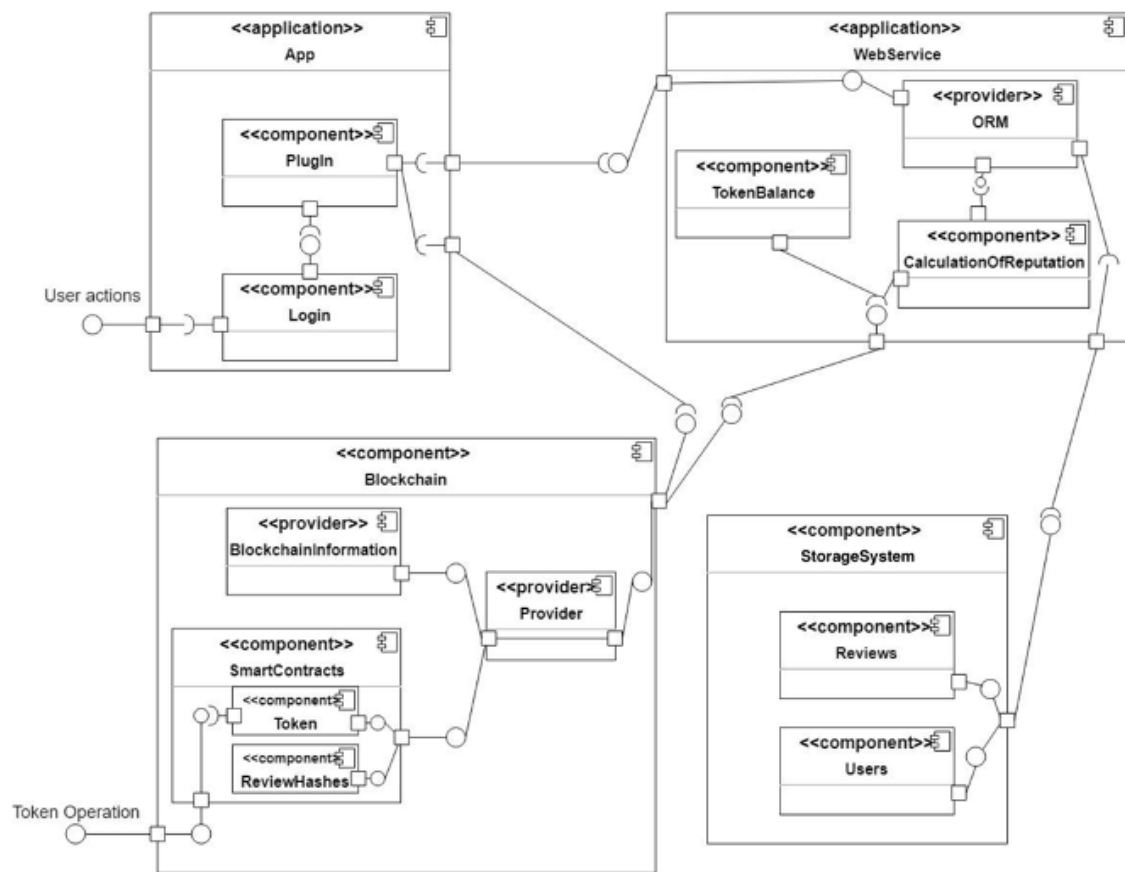


Figure 2: Component diagram of the Re-Taled platform.

To better clarify the actual role of each component and sub-component of the architecture, we provide in Fig. 3 a deployment diagram. We list below the involved components and provide a short description of them:

1. *Cloud:* Azure is a cloud computing platform and an online portal that allows users to access and manage cloud services and resources provided by Microsoft. Particularly, Azure supports the PostgreSQL database and .NET framework, which are crucial for Re-Taled development. The services configured are Azure Database for PostgreSQL, API Management, and Azure App Service.

2. *Backend*: ASP.NET core 7 is an open-source web framework created by Microsoft for building modern web apps and services. We take advantage of it to develop a solid application backend.

3. *Database*: PostgreSQL is an object-relational database management system (ORDBMS) based on POSTGRES, Version 4.2, developed at the University of California at Berkeley Computer Science Department.

4. *ORM (Object Relational Mapper)*: Entity Framework is an open-source ORM framework for .NET applications supported by Microsoft. It enables developers to work with data using objects of domain-specific classes without focusing on the underlying database tables and columns where this data is stored.

5. *Frontend*: React is a JavaScript library that simplifies development and supports user interfaces for web and mobile applications. React supports TypeScript, a typed language that extends JavaScript.

6. *Ecommerce Plugin*: This component is an integration module accessing the application services. It may work as a simple extension or inject HTML code into the web application of the sponsor.

7. *EVM Blockchain*: The Polygon network is a recent blockchain project combining high-security standards with cheap transactions. It addresses the network's challenges by handling transactions on a separate Ethereum-compatible blockchain.

8. *EVM Integration*: We rely on an Ethereum SDK to build our custom app. We also use Web3.js libraries to interact with a local or remote Ethereum node and the ethers.js library to interact with the Ethereum Blockchain and its ecosystem. Nethereum is the .NET integration library for Ethereum, simplifying smart contract management and interaction with Ethereum nodes.

9. *Smart Contracts*: Solidity is the high-level language we use for implementing smart contracts, relying on HardHat as an Ethereum development environment. We also rely on OpenZeppelin, an open-source framework to build secure smart contracts, which provides a complete suite of security products and audit services to build, manage, and inspect all aspects of software development and operations for decentralized applications.

10. *EVM Smart Contract Handler*: We exploit OpenZeppelin Defender, a web-based application that allows us to perform and automate smart contract operations securely. Through Defender, we can monitor the activity of the smart contract deployed on the blockchain and pause it in accordance with a specific trigger.

11. *EVM API*: Etherscan is a block explorer and analytics platform that allows us to access details on any Ethereum blockchain transactions that are pending or confirmed. In addition, Moralis provides APIs allowing companies and projects of all sizes to seamlessly integrate blockchain into their solutions stack and scale with ease. With these services, we can monitor the blockchain, analyze the transactions or ask for the information of an account.

12. *EVM Provider*: Infura and Alchemy are node providers that provide remote access to blockchain services; in this way, we do not have to run our own node. Moreover, these providers allow the backend to create transactions and make requests to the blockchain.

13. *EOS*: It is a blockchain-based, decentralized platform used to develop, host, and run business applications, or dApps. It operates on Delegated Proof of Stake, built on the open-source software framework of EOS.IO.

14. *EOS Integration*: We use the Javascript library Eosjs to provide an API to integrate EOS.IO-based blockchain using the EOS.IO Nodeos RPC API.

15. *EOS Smart Contracts*: We exploit the EOSIO Contract Development Toolkit to develop our smart contracts for the EOSIO platform.

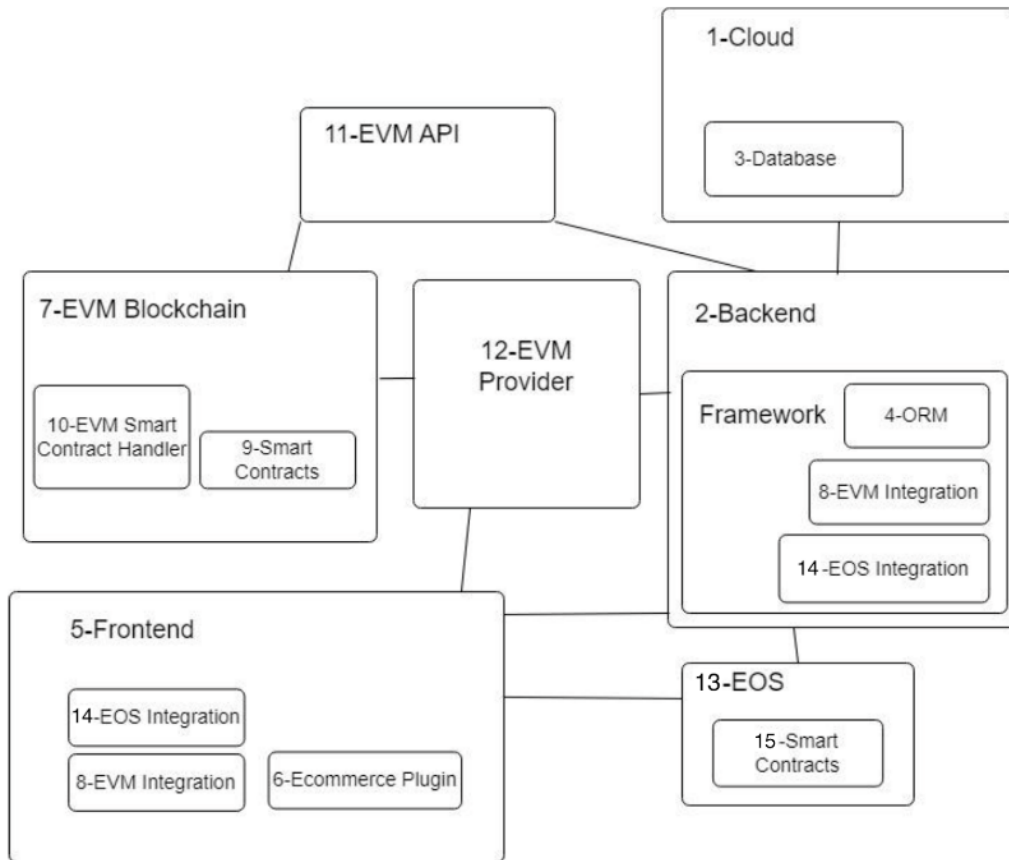


Figure 3: Deployment diagram of the Re-Taled platform.

3. Trust and Security Framework

We discuss in this section the trust and security concerns related to the Re-Taled platform.

3.1. Trustworthiness

Re-Taled mechanisms aim at increasing transparency and trustworthiness of user-generated genuine content. In particular, the content is mainly composed of reviews and incorporates text, images, and videos. The evaluation of content created by contributors relies on a set of different factors:

- *Automated checks*: content will be required to verify some requirements before publication, e.g., to be authored by consumers who actually purchased the reviewed product.
- *Feedback from other users*: each content provided by contributors and tellers can be commented on by other users through a feedback system. Each feedback will be weighted based on the reputation score and experience level of the user who provided it. Therefore bad feedback from an experienced user (e.g., a moderator) will affect the average evaluation of the review more than the same comment from a newly registered user. In particular, each user will be allowed to provide only one feedback for each review and assign an integer score ranging from 1 to 5. On the other hand, users will not be allowed to score their own reviews. Moreover, only feedback corresponding to scores 4 and 5 is considered positive feedback and will contribute to the computation of the reputation score (see below).

- *Content moderation*: users and moderators can report content that they consider unfair, offensive, or improper to be shown. Each report will be analyzed to understand whether or not the corresponding review has to be removed. Moreover, multiple reports addressing content published by the same user can lead to the ban of the corresponding account. Moderators and members of the board of representatives will manage these issues and conflicts.

- *Reputation score and Experience level*: they are two parameters attributed to each registered user that contribute to recognizing his/her authenticity and reliability.

The **reputation score** is intended to measure each user's authenticity, transparency, and trustworthiness. More specifically, it depends on the number of proofs provided by each user (proof of location, proof of stake, etc.), their wallet statistics (number of transactions performed, address seniority, etc.), and the number of positive feedback provided by the other users. The algorithm underlining the computation of reputation will follow the subsequent formula:

$$Reputation = \sum_{i=1}^N a_i * P_i + \sum_{j=1}^M b_j * W_j + c * \sum_{l=1} F_l$$

where: P_i is proof that the user can provide (proof of location, proof of stake, proof of personhood, proof of trust, proof of participation); a_i is a different weight for each proof to obtain a weighted average; W_j is a statistics that the user can provide on the basis of the wallet account (proof of seniority, proof of transaction); b_j is a different weight for each statistics; c is the weight attributed to positive feedback for calculating the reputation; and F_l is the number of positive feedback received through the published content. It is worth noticing that we are still working on the appropriate tuning of the weights a_i , b_j , and c . Moreover, we are still investigating appropriate mechanisms for decreasing the reputation score.

The **experience level** measures the number of contributions provided by users. In particular, it increases when users publish reviews, generate content, write comments, or score other users' reviews. Particularly, most of the actions that allow users to receive fidelity points, also provide them with experience badges. We are still investigating the definition of the proper amount of experience increase corresponding to each valuable action completed by users.

A linear combination of the above parameters determines the **trustworthiness**, according to the following formula:

$$Trustworthiness = \beta * Reputation + \xi * Experience Level$$

where the weights β and ξ are positive numbers, which will be defined according to the results of experiments that we are conducting (in the current implementation we use $\beta=60$ and $\xi=40$ to give more weight to the proofs from the blockchain data). The trustworthiness level is normalized in order to become an integer number ranging between 0 and 10 and shown (as a series of stars) below each published review. Therefore, a new consumer visiting the Re-Taled platform will be able to access the review content and the level of trustworthiness attributed to the reviewer.

Notably, our notion of trustworthiness depends on the proof P_i that the user can provide and the statistics W_j that the user can show on the basis of the wallet account. Therefore, blockchain technology is then the main enabling system that allows the evaluation of user trustworthiness and content reliability. To this aim we have chosen a set of proofs and statistics, which are listed below:

- *Proof of Stake*: to provide this proof, the users are supposed to stake a significant amount of token, which will be burned if the user will improperly act within the platform or if moderators certify it was a fake account. This mechanism will have a dissuasive effect on users and will also hinder ill-intended attackers to create multiple accounts (each account will require an amount of token to stake, which represents a financial obstacle multiplied by the number of new accounts).

- *Proof of Personhood*: to satisfy this requirement, each user will need to prove that he/she is a real person by using a proper service. At this stage of our work, we selected the Polygon ID service, but we could also consider other mechanisms (based on social networks for example) in the future. Particularly, the Polygon ID service registers in a smart contract the

identity card the user provides. Through this mechanism, users can prove the authenticity of their accounts, and the Re-Taled platform can resist attacks that utilize multiple fake identities (otherwise known as a Sybil attack).

- *Proof of Seniority*: this wallet statistic is useful to assess the date when the wallet was created and/or the first transaction has been completed. We believe that wallet accounts created before the introduction of the Re-Taled platform deserve an advantage in terms of credibility. In fact, if a malicious attack intends to affect the evaluation of a product by generating many like-minded reviews, it would need to open a corresponding number of new accounts. To overcome this issue, we decided to underestimate the reputation of new-born accounts with respect to the existing ones.

- *Proof of Location*: to provide this proof, the user is required to record his/her geographical position through a service that matches GPS tracking and the blockchain system. Particularly the user can record multiple times the location where he/she lives, causing the reputation score proportionally to increase. We believe that this feature will hinder malicious attacks and improve the transparency and the trustworthiness of the Re-Taled environment, for two reasons: (i) the transaction to record the position requires a certain amount of gas that the user would need to pay every time; (ii) the reputation score increases with the number of time the user recorded the same position. Therefore a malicious attack intending to affect the evaluation of a product by generating many like-minded reviews would need to pay a fee for each account several times to increase the reputation. This feature will then hinder ill-intended attacks through an economic barrier.

- *Proof of Transaction*: this is the second proof based on wallet statistics, and relies on the number of previous transactions already completed by the same wallet account. In particular, we believe that wallet accounts that have already completed several transactions outside the Re-Taled platform, and before its introduction deserve an advantage in terms of credibility and authenticity. As described before, while explaining the Proof of Seniority, if a malicious attack intends to affect the evaluation of a product by generating many like-minded reviews, it would need to open a corresponding number of new accounts. This proof then underestimates the reputation of new-born accounts with respect to the existing ones.

- *Proof of Trust*: to provide this proof two users are supposed to identify each other through a QR code. Specifically, each user will need to require a QR code to be scanned by the device's camera of the second user. Therefore, users can identify one with each other and certify that other users are associated with real people. Through this mechanism, we aim at certifying real users and discouraging the proliferation of fake accounts.

- *Proof of Participation*: to provide this proof users are supposed to solve a reCAPTCHA providing that they are not robots. This mechanism is designed to automatically exclude fake users and allow only real ones to use the platform.

We designed our mechanism based on many factors because none of the listed proofs can provide enough information by itself. Contrarily, we believe that a high reputation score will be a good indicator of the authenticity of the corresponding user since its estimation relies on several different proofs. For this reason, reviews made by a user with a high score will be highlighted more than those made by a user with a low reputation score. Moreover, the moderation of the content published on the platform will also be based on user reports. A report provided by a moderator or a user that has a high reputation score and experience level will have priority on the other reports.

Since these mechanisms are based on the blockchain, malicious users must hack the blockchain to affect our application.

3.2. Application vulnerability

We discuss here the overall security aspects of the Re-Taled system.

Alchemy² is the provider that we have chosen to interface with the blockchain. It is a trustable and solid provider, ensuring that our service cannot be attacked or interrupted by a DDoS attack. We have also selected a second provider, Infura, which will work as a backup if the first provider goes down.

The Proof of Participation will ask users to solve a reCAPTCHA test, which will protect the application also against a massive attack of spam produced by bots. On the other hand, the Re-Taled platform is also a cloud-based application that inherits from the Azure service all the security technology. In particular, the Azure Database service for PostgreSQL uses a server-level firewall. By default, this firewall prevents external applications and tools from connecting to the server and databases in the server unless a firewall rule is created to open the firewall for a specific IP address range.

Lastly, developers teams working in Omnia Service Italia are used to adopting a DevSecOps practice integrating security initiatives at every stage of the software development lifecycle to deliver robust and secure applications. Particularly they take advantage of tools like Snyk and SonarQube to continuously check the codebase's quality and security while programming. In particular, Snyk³ is a tool cooperating with the IDE, which performs static code analysis, finds vulnerabilities, and automatically suggests fixes to developers. Moreover, it checks open-source dependencies and third-party libraries and compares them with their latest releases. On the other hand, SonarQube⁴ is an open-source platform developed by SonarSource for continuous inspection of code quality to perform automatic reviews with static analysis of code to detect bugs and code smells.

Moreover, we performed static and dynamic application security testing, using, e.g., the HCLAppscan tool, to find vulnerabilities in our applications and fix them.

4. Related Work

Looking at the Stat-of-the-Art, we can affirm that different companies or university teams have approached the broad issue of validating UGC and developing a reward engine for content creators.

UGC is crucial for companies, but it is hard for consumers to trust it because it is not easy or common to prove its authenticity and reliability. UGC, such as reviews, pictures, comments, etc., can be easily manipulated, and it is quite easy for companies to buy positive reviews. Companies are aware of this lack of trust and trying to find valid solutions to meet this need for authenticity and trustworthy content.

It is also crucial to incentivize content creation: companies know it, and they often create specific giveaway campaigns, coupon distribution, contests, etc., to encourage their clients. What companies really need, though, is a structured reward engine that automatically recompenses the content creators.

Below, we discuss solutions that use blockchain for UGC validation and content creator reward, or similar use cases.

Steemit. Steemit⁵ is a content-sharing social network based on blockchain. The users can post and share different types of content validated and registered on a distributed ledger system. The users are rewarded within seven days with a cryptocurrency called Steem, which can be exchanged, sold, and bought on the market as a regular cryptocurrency. Not only content creators receive a token for their contribution, but also users who merely comment, share, and repost, improving the content's quality and diffusion. Because of this reward system, Steemit is considered a high-value content platform. It is possible to affirm that a rewarding system such as the Steemit platform increases the quality of the content and the number of users.

Specifically, to express appreciation for specific content, the user can upvote it: in this way, the user generator of the content will receive a reward. The amount of token he will receive is based on the voting weight of the commenting user: the bigger it is, the higher will be the money value. The voting weight depends on the Steem Power, which can be gained through the rewarding process: usually, as a

2 <https://www.alchemy.com/>

3 <https://snyk.io/>

4 <https://www.sonarsource.com/products/sonarqube/>

5 <https://steemit.com/>

reward, the users get 50% Steem power and 50% of Steem dollar. The users who have liked, commented or reposted the content also get a smaller reward.

To sum up, this system allows users to get rewarded for high-quality content. The reward is based on other users' quality checks of the content, who are also rewarded. The quality standard of the UGC is always high as they are validated in a fair ecosystem that rewards only the best contributions. The use of blockchain provides a certified and quality-based ecosystem. Even if the Re-Taled approach has a similar aim, our rewarding mechanism based on reputation and experience level provides a different and innovative solution to achieve high-quality content.

Read.Cash. Read.cash⁶ is a platform where people can publish content (e.g., articles, images, and videos), earning BitCoin cash. The other users can decide to upvote a specific content sending to the author the amount of BitCoin cash they think he deserves: 90% goes to the writer and 10% to the platform.

Compared to Re-Taled architecture, read.cash uses an existing cryptocurrency to reward content creators, but it does not rely on the chain to keep track of published content. According to read.cash, this strategy is ideal to avoid the cost of publishing (you need to have BitCoin cash in the first place) and to avoid a censorship-resistant environment that would not allow the community managers to delete inappropriate content (such as illegal, porn or hate content).

Lum Network. Another solution with many commonalities with Re-Taled is Lum Network,⁷ which has been on the market since 2017 and has evolved in the last couple of years, showing rapid growth.

Lum Network is based on a decentralized protocol that businesses can use to build trust with their customers. The reward system is based on their cryptocurrency, Lum, which is available on the crypto market. It is focused on users' reviews: brands use the token Lum to reward this type of content creation. This solution helps companies get more high-quality reviews from their clients. It provides trustworthy reviews to consumers and fairly rewards content creators, who are then motivated to invest their time in creating new content. Lum Network offers a shared loyalty program available for different brands. In particular, Lum Network works with two main partners: Skeepers, a leading group in customer engagement specialized in UGC, such as rating & reviews, influencers, but also feedback and predictive marketing; and Lumki, a social wallet to store LUM earned as loyalty, cashback, and engagement rewards.

5. Concluding remarks

In this paper, we have presented our progress in the first months of the Re-Taled project while addressing the problem of incentivizing the user's creation of content, in the form of customer reviews, in the online grocery industry. Specifically, we have illustrated how we applied blockchain technology to develop a decentralized ecosystem of consumers, influencers, and manufacturers. The project aims to create a platform where content creators can be rewarded for their contribution through a reputation and monetization system.

One of the key lessons learned is the importance of user adoption and engagement in the success of a blockchain-based platform. The Re-Taled team has been working hard to create a user-friendly environment and incentivize users to participate actively in the ecosystem. Particularly, we understood that the blockchain is still not a mainstream technology. We enabled consumers to sign up through a centralized registration process without a wallet address. We designed this feature to engage and incorporate users unfamiliar with blockchain technology but still fond of the sponsors' loyalty program. In particular, based on our market analysis, we discovered that many retailers' customers are used to collecting and trading on fidelity points through loyalty cards or mobile applications. The Re-Taled project cannot neglect these existing solutions to be successfully integrated within the IT environment of the retailer choosing to adopt it.

⁶ <https://read.cash/>

⁷ <https://lum.network/>

Another learned lesson is the need for a robust and transparent algorithm that can accurately measure the value of each contributor's contribution. The team developed an algorithm that considers various factors such as engagement, reach, quality of content, and previous transactions of the same wallet address.

Additionally, the Re-Taled project has highlighted the potential of blockchain technology to disrupt the traditional content creation industry by enabling more transparent, fair, and decentralized reward systems.

Overall, the Re-Taled project has made significant progress in its mission to create a decentralized ecosystem for content creators, and the lessons learned in the first months will undoubtedly shape the platform's future development. In particular, the reviews collected through the platform represent a highly valuable dataset for producers and manufacturers eager to enrich their product pages with consumer feedback. For this reason, we will consider the opportunity for the sponsors to sell this dataset to producers and manufacturers within the next developments. In addition, we plan to perform an extensive evaluation of the current prototype of the platform and its subsequent developments. In particular, we plan to analyze the costs of executing the smart contracts exploited by the Re-Taled implementation in different blockchain platforms, to assess the feasibility of the approach and select the most suitable blockchain technology for it.

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