A Scalable Framework for Game Transformation and Metaverse Financing

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Introduction

The global financial landscape has been reshaped by the advent of blockchain technology, offering a wide spectrum of alternative investments beyond the realm cryptocurrencies. Non-Fungible Tokens (NFTs) have emerged as a prominent feature of blockchain-based transactions, allowing unique digital assets to be transferred and owned securely on the blockchain. This has laid the foundation for the "play to earn" ecosystem in blockchain gaming, where gamers are rewarded with in-game items as NFTs that can be upgraded through gameplay. These NFTs can then be publicly traded on gaming ecosystems, providing an avenue for individuals, including the unemployed and low-income, to secure their financial needs [1].

Simultaneously, the PC and mobile gaming industries are poised for significant growth with the entry of Generation Z and Generation Alpha into the workforce. The traditional gaming market, operating under the web 2.0 paradigm, is projected to reach a value of USD 321 billion by 2026 [2]. Real-time multiplayer games are the primary revenue drivers in this industry. However, a vital limitation of traditional gaming is the non-transferability of most in-game items purchased by users. While some traditional game providers offer market exchanges for in-game item transactions, they are limited to in-game currencies and do not facilitate exchanges with fiat currencies or cryptocurrencies. As a result, traditional game providers offering virtual market exchanges miss out on potential value in these transactions. They collect transaction fees in in-game currency, which holds no intrinsic value for them as they cannot realize returns using in-game currencies [3]. In contrast, blockchain game providers can realize returns from player transactions since their currencies are listed on cryptocurrency exchanges, such as AXS of Axie Infinity.

Nevertheless, game providers face challenges in transitioning to blockchain and Web 3.0, a paradigm shift that is gaining momentum but lacks clear incentives and pathways. The swift evolution of the Game Finance (GameFi) market and the speculative nature of NFT trading further complicate this transition. The associated development and maintenance costs discourage many game providers from actively pursuing the transition. Therefore, the industry requires a transformative driver to facilitate the migration to Web 3.0.

Similarly, the development of metaverse-related projects faces multiple challenges. Despite being a topic of discussion for several years, tangible progress has been slow. Metaverse related projects are considered prodigal, in which investment is huge but progress is little. A net loss of USD 11.5 bn in 2022 due to metaverse research and development at Facebook Reality Labs wasz recorded [4]. The profligate nature of metaverse development levels high entrance requirements, hindering confidences of potential market investors and participants to finance and sustain their projects. To facilitate the development, the market needs a consolidated framework for developers and creators to finance their metaverse projects [5].

In response to these challenges and opportunities, this project will undertake an extensive study of tokenomics to devise a unique framework for game transformation. The goal is to

motivate game providers to transition to the Web 3.0 ecosystem by implementing an Initial Coin Offering (ICO) as a proof-of-concept. This endeavour seeks to facilitate the advancement of GameFi and MetaFi (Metaverse Financing), ultimately fostering a more resilient and efficient blockchain gaming ecosystem. The proposed framework will provide a liquid platform for gamers and providers to realize returns, contributing to the growth and development of the industry.

Scope and Objective

This project will be critically examining the ecosystems of blockchain games and traditional games in the real-world context. Opportunities and challenges presented by blockchain technology and NFT trading faced by game providers will be examined and modelled to formulate a solution addresses the lack of motivations in web 3.0 transitions. This project shall deliver (i) a comprehensive strategic analysis of game modelling; (ii) a framework based on researched tokenomics; (iii) an Initial Coin Offering (ICO) of the token designed around this proposed framework; and (iv) a simple UI and API prototypes for game developers.

[Objective 1] Review and analyse game economics and revenue models of blockchain and traditional games to identify potential business opportunities from web 3.0 game transition.

[Objective 2] Identify and discern challenges faced by game providers in the transition and research a tokenomics to motivate game providers and maximize returns.

[Objective 3] Develop and model a novel tokenomic framework for game transformation based on findings from the first two objectives, with an ICO as a Proof-of-Concept (POC).

[Objective 4] Prototype a simple UI and API Minimum Viable Product (MVP) to facilitate game developers to integrate game models with the framework.

Methodology

First, a comprehensive literature review will be conducted qualitatively and quantitatively. Scholarly articles, industry reports and white papers are the primary sources of information to be examined meticulously with a specific focus on understanding the ecosystems of blockchain and traditional gaming ecosystems. Game economics formulation of both blockchain games and traditional games will be modelled through analysing game mechanics, player behaviours, item pricing models, and the in-game currency system [6], each of which will be analysed individually to provide a comprehensive understanding of their role and impact on game economics. Specific games will be studied, including a blockchain game, a traditional game equipped with a market exchange, and another traditional game devoid of a virtual exchange. A hypothetic general economic model will be developed by employing an algorithmic game-theory approach to achieve revenue maximization with a universal token (currency).

Following the formulation of game economics, a rigorous examination of the potential opportunities and challenges that a transition to Web 3.0 gaming could precipitate will be discussed. A multi-pronged approach will be adopted to ensure a comprehensive understanding of the subject matter. An in-depth exploration of the opportunities presented by the Web 3.0 transition will be conducted initially, drawing on a variety of data sources such as industry forecasts, emerging trends, and insights from stakeholders in the field. This process will involve a thorough analysis of the evolving market dynamics, technological advancements, and changing consumer preferences associated with the Web 3.0 gaming paradigm. Moreover, the potential challenges faced by traditional game providers during the transition will be identified. This will involve qualitative research methods including interviews with industry participants, i.e., game providers and gamers. The objective is to gain a broad spectrum of perspectives on the potential barriers to the transition, ranging from technological hurdles and regulatory issues to market acceptance and financial implications.

Upon identification of opportunities and challenges, a tokenomics ecosystem model will be designed to motivate game providers transit to web 3.0. Economic theories and algorithmic game theories will be considered. The development will begin with a theoretical discussion based on the previously summarised opportunities and challenges. Macroeconomic and microeconomic aspects will be incorporated into the model, including supply and demand dynamics, pricing strategies, and incentive structures. The model will be evaluated with game-theoretic approaches, which includes scenario analysis on multiple player behaviours and market conditions. The framework mechanism will be achieving revenue maximization based on algorithmic game-theoretic approaches [7]. With the finalized framework, an ICO with a white paper will be proposed as a POC of the framework.

In addition to the ICO, the POC development shall include an MVP of the UI and API. The API will be architected following the principles of the RESTful framework. By adhering to this framework, the API will provide a reliable interface that enables game developers to interact with the ecosystem programmatically. The API will be designed to handle a variety of requests, including player authentication and player-player transaction. The web-based console will be developed to serve as the User Interface (UI). This will be built using JavaScript frameworks, i.e., Next.js and React.js. The UI will offer essential features for gamers to interact with the ecosystem, including account management, transaction history, and access to the marketplace. The goal is to provide an intuitive and engaging user experience, encouraging gamers and game developers to actively participate in the ecosystem. This methodology aims to deliver a practical, engaging, and scalable solution that encourages both game providers and gamers to transition to the Web 3.0 ecosystem.

Project Schedule

Month	Description	Deliverable
October	✧ Literature review ✧ Case studies on selected game providers	**Project Plan**
November	✧ Evaluate game economies and business models ✧ Formulate tokenomics	Case studies
December	✧ Examine and fine-tune the framework ✧ Prepare for ICO ✧ UI & API development	N.A.
January	✧ Draft ICO white paper ✧ UI & API development	**Interim Report**
February	✧ Finalize ICO white paper ✧ Complete UI & API development	ICO white paper UI & API
March	✧ Start ICO campaign ✧ Refine framework based on feedback	N.A.
April	✧ Prepare final report	Launch ICO **Final Report**

Summary

In conclusion, the primary mission of this project is to foster a transformative shift in the gaming industry by facilitating a seamless transition from traditional game models to the Web 3.0 paradigm. This project aims to leverage the potential of blockchain technology, capitalize on the opportunities present in the tokenomics ecosystem, and address the challenges identified through comprehensive research and strategic analysis. The project envisions a gaming landscape where the benefits of blockchain technology and the Web 3.0 ecosystem are fully realized. This includes creating new revenue streams for game providers and promoting economic inclusivity through 'play to earn' models. This project not only motivates game providers to transition to Web 3.0 but also ensures sustainability and scalability for the future growth of the gaming and metaverse industry.

This project is expected to contribute significantly to academic discourse on blockchain gaming and tokenomics, whilst actively shaping the future of the gaming industry. We anticipate that the insights and solutions generated from this project will not only have immediate practical applications but also lay the groundwork for further research and development in the field.

References

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