Metaverse: Virtual Currencies as a Mechanism for Employee Engagement and Retention

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Abstract: Virtual currencies, including cryptocurrencies and non-fungible tokens (NFT's), are increasingly used as rewards in virtual environments. Traditional reward systems have been effective in improving employee satisfaction and retention but with the shift to hybrid or remote work post-COVID-19, organisations need adapted reward systems. However, the problem of this research is that it's unclear how virtual currencies can be effectively utilised as a reward system, in the Metaverse, and their impact on employee motivation and engagement. This study explores this by reviewing literature, analysing reward mechanisms, and proposing a conceptual model to evaluate the feasibility of such a reward system. The study considers factors like social comparison and loss aversion as well as rewards known to boost motivation and engagement. The flexibility of virtual currencies for conversion or exchange into rewards offers numerous possibilities, with specific reward choices left to organisations' discretion. This study offers promise to organisations seeking to retain and motivate their employees, ultimately contributing to increased productivity. In turn, employees can benefit from improved job satisfaction and reduced work-related pressures. The study's conclusion assesses the usefulness of this research and outlines potential areas for future research.

Keywords: Metaverse, Virtual currency, Digital security, Employee motivation, Employee retention

1. Introduction

The Metaverse, a shared virtual space combining virtual reality (VR), augmented reality (AR), and immersive technologies, has gained attention since Facebook's rebrand to "Meta Platforms" in 2021, with a commitment to its development (Roose, 2021).

As remote or hybrid work becomes prevalent, studies indicate that most employees prefer and are more productive working from home (Abdullah *et al.*, 2020). Employee contributions are vital, and reward systems, including recognition, incentives, rewards, and compensation, have been shown to enhance performance, satisfaction, motivation, and retention (Ali and Anwar, 2021). Job stress negatively affects employee performance (Hussain *et al.*, 2019) , and incentive programs may help alleviate some of this pressure.

No known existing research has explored the use of virtual currencies in Metaverse-based reward systems to boost employee motivation, engagement, and retention. It is unclear how virtual currencies can be used as a reward system in the Metaverse, a space merging digital and physical realities, and their impact on employee motivation and engagement. This concept is novel and understudied. Existing research covers the use of currencies in educational, social, e-commerce, and healthcare applications in the Metaverse, but lacks insights into the effectiveness of virtual currencies in enhancing employee motivation, engagement, and retention.

Meanwhile as workplaces evolve with technology, exploring the use of virtual currencies to enhance employee motivation in the Metaverse becomes vital. This presents an opportunity for researchers to examine its challenges and opportunities. Therefore, the objectives of the research include: 1) A literature review on virtual currencies in the Metaverse and blockchain technology for security. 2) An analysis of existing reward systems, adapting them for the Metaverse with cryptocurrencies. 3) Developing a testable conceptual model and evaluating the research's validity.

To achieve the above, a detailed literature review involves searching ACM Digital Library Full-Text Collection, IEEE Xplore Digital Library and ScienceDirect, resulting in 168 research articles. A three-pass approach (Keshav and Cheriton, 2007) is used to filter and select relevant articles, and references from chosen papers are additionally considered. Three search types are conducted: 1) Virtual Currencies in the Metaverse to explore relevant concepts. 2) Review of existing traditional reward systems to find adaptable systems. 3) Blockchain technology for security insights. It concludes with an innovative conceptual model being developed, capturing the key research elements.

The research goal is to contribute to the understanding and development of Metaverse reward systems using virtual currencies for employee motivation and retention. The structured approach explores virtual currency incentives, that benefits employee satisfaction and offering valuable insights towards employee workplace psychological behaviour (Young *et al.*, 2015).

The remainder of this paper is structured as follows; Section 2 presents the background literature. This is followed by Section 3, the proposed conceptual model. A proof of concept that highlights the contributions of the conceptual model is presented in Section 4. Related literature that features the work of other authors in comparison to the proposed model, in Section 5. Section 6 evaluates the proposed conceptual model and Section 7 concludes this work and points to future work.

The next section entails the background literature for this research.

2. Background Literature

In this section, the researcher reviews Metaverse currencies, existing rewards, and blockchain technology to identify key concepts, adaptable systems, and security insights for the research.

2.1 Currencies in the Metaverse

Through examining the literature described in the Methodology section, the following currencies were noted.

Second Life uses the Linden dollar (L$) for buying, selling, renting, and trading virtual assets and services within the platform (Scott, 2022; Xu *et al.*, 2023). L$ can be exchanged for U.S. dollars, however, L$ can only be used within the Second Life platform, making it a closed-loop digital currency (Scott, 2022).

Illuvium, an Ethereum-based game, uses ILV tokens for in-game rewards, vault distribution and governance. Illuvium includes a decentralised exchange for trading Illuvial NFTs, powered by Immutable X, a layer-2 Ethereum solution (Huynh-The *et al.*, 2023). NFT's are digital assets on the blockchain that function like cryptocurrencies (Lee *et al.*, 2023) Immutable X enables gas-free NFT trading, eliminating the need for users to pay transaction fees (gas) (Huynh-The *et al.*, 2023; Smith *et al.*, 2023).

Decentraland utilises MANA tokens, and Sandbox uses SAND tokens, both on the Ethereum blockchain. MANA is used for virtual land creation and trading, while SAND is employed for creating, owning, and monetizing gaming experiences (Huynh-The *et al.*, 2023).

Axie Infinity is a play-to-earn metaverse project, enabling players to boost their digital assets by advancing in-game abilities to specific levels. Axie Infinity has two tokens, Axie Infinity Shards (AXS) and Small Love Potion (SLP) tokens. Players can claim AXS rewards by staking their tokens, participating in governance, and creating user-generated content. SLP is granted through in-game activities. Most transactions occur on the Ronin sidechain, connected to Ethereum, to reduce fees (Huynh-The *et al.*, 2023).

2.2 Existing Reward Systems

Based on the methodology employed, this section categorizes the literature into two parts: reactions to rewards and reward types.

2.2.1 Reaction to rewards

Social comparison theory, developed by psychologist Leon Festinger in 1954, explains how individuals gauge their abilities, opinions, and emotions by comparing themselves to others. This comparison can be upward, where individuals compare themselves to those they perceive as better to improve themselves, or downward, where they compare to those worse off to feel better about their abilities. Social comparison leads to competitive behaviour and higher motivation (Christy and Fox, 2014; Dong and Zhu, 2023). Loss aversion is the tendency to avoid losses over equivalent gains but requires that the potential loss has value to the individual, such as monetary or psychological worth earned through effort (Lin *et al.*, 2023).

2.2.2 Reward types

Pombo et al. (2023) identified reward systems using points, leaderboards, and badges to recognise performance and progress. Points are granted for tasks or skills, leaderboards rank participants, and badges symbolise task completion (Pombo and Santos, 2023). Point-based incentives enhance employee motivation (Farzan *et al.*, 2008; Pombo and Santos, 2023), and leaderboards improve motivation and approval rates (Pombo and Santos, 2023). Leaderboards stimulate competition and social comparisons in a business context (Christy and Fox, 2014).

Badge-based systems boost engagement and commitment to task completion when aligned with objectives, promoting intrinsic motivation (Pombo *et al.*, 2019; Pombo and Santos, 2023). Reward systems can encompass both tangible and intangible elements, combining awards with a sense of achievement (Pombo and Santos, 2023).

2.3 Blockchain Technology

In this section, a literature review in blockchain technology is conducted, to identify techniques ensuring confidentiality, integrity, availability, and security risks.

Blockchains are decentralised databases that store a registry of transactions and are primarily utilised in cryptocurrency platforms but have applications in diverse sectors such as Healthcare, Real Estate, Supply Chain, Internet-of-Things (IoT), Government, Cyber Security, Social Media and Artificial Intelligence (AI) (Zantalis *et al.*, 2022; Raj, 2023). Their decentralised nature eliminates the need for a trusted third party (Li *et al.*, 2020; Zantalis *et al.*, 2022). Blockchain technology makes use of cryptography, Merkle tree, difficulty level and consensus algorithms, which are explained below.

2.3.1 Technology utilised

- Cryptography: Used for secure communication and data immutability in blockchain. It transforms data into ciphertext through encryption, which can be reversed with a key. Blockchain uses symmetric-key cryptography (one key) and asymmetric key cryptography (a key pair) to achieve this security (Mallouli *et al.*, 2021).
- Merkle tree: A hash binary tree for rapid integrity verification of data (Zhai *et al.*, 2019), confirming transaction presence in a block without requiring the entire block or transaction data (Samuel, 2015; Zantalis *et al.*, 2022).
- Difficulty level: Regulates the block creation rate, particularly in Proof-of-Work (PoW) blockchains, where miners aim to find a hash below a set threshold. PoW is a type of consensus algorithm and is discussed next. Higher difficulty levels deter attacks like the 51% attack, where one entity controls over 50% of network power, enabling manipulation and disruptions. Difficulty level ensures consistent block creation, balances mining power, incentivises honest participation, and maintains network stability (Mardiansyah and Sari, 2022; Academy, 2023).
- Consensus algorithms: Trust in blockchain transactions relies on mathematical algorithms, collectively known as the consensus mechanism (Samuel, 2015). Blockchain relies on decentralised consensus mechanisms for reliability and consistency (Li *et al.*, 2020). They address the Byzantine Generals' Problem (BGP) in distributed computing, which requires trust even in the presence of malicious nodes. Byzantine Fault Tolerant (BFT) algorithms are designed to handle trust challenges in distributed computing and achieve consensus, even in the presence of adversarial nodes (Lamport *et al.*, 2019; Zhang *et al.*, 2019). Consensus is possible if fewer than 1/3 of nodes are faulty by way of majority voting (Samuel, 2015). However, BFT has high communication complexity and relies on the majority node honesty (Zhang *et al.*, 2019). Popular consensus algorithms identified from research, detailed in Table 1, can resist BGP, provided the 51% attack doesn't happen.

2.3.2 Known attacks to blockchains

Some known attacks to blockchains include:

- 51% Attack: As mentioned, when someone controls over 50% of a blockchain's computational power to manipulate transactions. Higher difficulty levels make it more challenging and costly, potentially serving as a mitigation.
- Sybil Attack: Seizing control of multiple network identities to exert undue influence. PoW serves as defence (Lee *et al.*, 2022).
- Distributed Denial-of-Service (DDoS) Attack: Strain the network with requests to render it unavailable.
- Selfish-mining Attack: Withholding discovered blocks to waste other miners' computational power. The attacker accumulates 2N blocks and releases them when other miners find more than K (where N > K) blocks, disrupting the main chain. Countermeasures focus on block publication delay (Lee *et al.*, 2022).
- Nothing-at-Stake Attack: Occurs during forks when an attacker adds their block to multiple branches to boost its chance of becoming the next valid block. Forks occur when multiple blocks are added to the previous block. In PoW, shared resources decrease a miner's chance of finding a new block,

making this attack unlikely. Mitigation includes introducing penalties in PoS algorithms (Ferdous *et al.*, 2021).

- Bribing (Short-range) Attack: An attacker attempts to double-spend by creating a fork, e.g., an attacker buys goods, waits for delivery after a specific number of blocks, then forks the chain and bribes miners to make the forked branch longer. This reverses the transaction, enabling the attacker to spend the currency again. If the bribe cost is less than the goods price, it is profitable for the attacker. Mitigation involves penalty mechanisms (Ferdous *et al.*, 2021).
- Long-range Attack: An attacker constructs an alternative blockchain, colluding with stakeholders and seeking double-spending opportunities. Check-pointing, ensuring the chain becomes irreversible up to a certain block, serves as mitigation (Ferdous *et al.*, 2021).
- Coin-age Accumulation Attack: Manipulating algorithms with accumulated coin-age. Coin-age is trust in the authenticity of a miner by the period his coins have been kept as stake. A cap on coin-age serves as defence (Ferdous *et al.*, 2021).
- Cartel-formation Attack: A small group dominating mining pools, potentially launching 51% attacks in PoW or exploiting stakes in PoS algorithms (Ferdous *et al.*, 2021).
- Stake-grinding Attack: Allows an attacker to increase the probability of generating subsequent blocks if there's insufficient randomness in PoS algorithms. Mitigation involves establishing a secure source of randomness (Ferdous *et al.*, 2021).

Table 1: Consensus algorithms (Samuel, 2015; Zhang *et al.*, 2019; Manolache *et al.*, 2021)

Consensus Algorithms	Limitations	Properties
Proof-of-Work (PoW)	1. High computation complexity, low success probability. 2. Energy consumption in hash computation. 3. Mining centralization to boost block mining chances and risk of 51% attack. 4. Tragedy of commons: miners leaving due to low rewards.	1. Computationally difficult yet easily verifiable puzzles for data credibility verification.
Proof-of-Stake (PoS)	1. 51% attack possible when one user controls over 50% of the blockchain. 2. No mining rewards. 3. Transaction fees divided among validators, potentially discouraging block mining with low fees.	1. Ensures CAP Theorem. 2. Reduces dependence on rewards with penalty-based solutions. 3. Requires miners to stake their capital to qualify for block mining.
Delegated Proof-of-Stake (DPos)	1. 51% attack risk with insufficient validators. 2. Coin-wealth reliance leads to disproportionate influence.	1. Reputation and user voting select validators.
Proof-of-Authority (PoA)	1. Vulnerable to DDoS attacks (described in section below). 2. Relies on validators' identity verification. 3. Requires investments in money and reputation to mitigate risks. 4. 51% attacks are more challenging.	1. A cost-effective PoS variant with identifiable block creators. 2. Predictable block production through "target spacing", where blocks are produced on fixed time intervals.

Most attacks occur during block mining competitions and result from vulnerabilities in the consensus algorithms being exploited. It's worth noting that PoS variants are more susceptible to attacks, but implementing PoW requires more computational power to maintain a sufficiently high difficulty level. In the proposed model, an attempt is made to address this weakness.

The next section proposes a metaverse reward model.

3. Proposed Metaverse Reward Model

In this section, a metaverse reward model is presented, building on the findings in the previous section. It includes a conceptual model, individual component flow diagrams, and a comprehensive model flow diagram.

3.1 High-Level View of Proposed Metaward Model

Each of the components in the conceptual model are elaborated below, as represented in Figure 1:

- Tasks or challenges are generated and reviewed with rule implementation, ensuring alignment with the organization's requirements.
- Once approved, tasks are assigned to relevant employees with specified deadlines and notifications. Periodic reminders are sent to motivate individuals who are driven by loss aversion to complete their tasks promptly and avoid penalties.
- Failure to complete tasks results in a cryptocurrency penalty deducted from the employee's wallet.
- Employees receive cryptocurrency rewards upon timely and successful task completion, accumulating in their wallet. Rewards have expiry dates for regular redemption. The organization offers flexibility by allowing various redemption options, such as converting cryptocurrency to fiat currency, receiving instant rewards, taking time off, and more. Employees can accumulate rewards until they have a sufficient balance for their preferred redemption.
- To foster social comparison, employees receive icon-like badges upon completing tasks. Similar to rewards, badges have expiration dates to ensure accurate and up-to-date recognition of achievements.
- Employee rankings fluctuate based on completed/non-completed tasks, appealing to those motivated by social comparison. An expiry date ensures fair ranking changes with time and task completion.

The figure below represents the conceptual model:

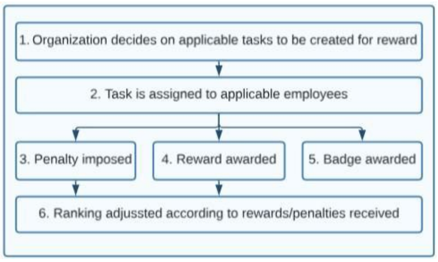


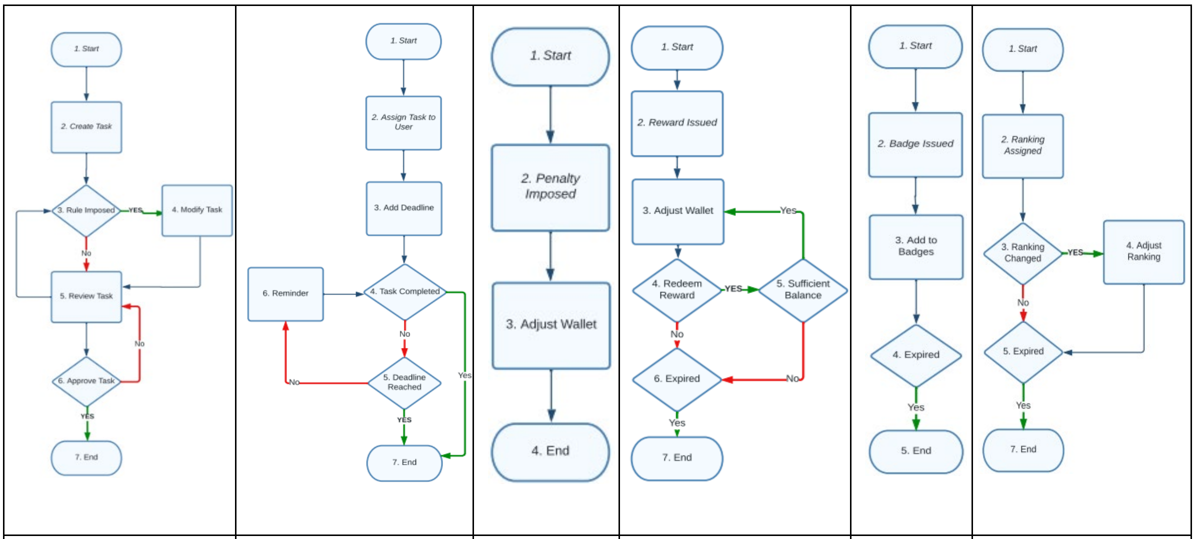
Figure 1: Conceptual Metaward model

3.2 Detailed View of the Metaward Model

This section illustrates each component of the Metaward Model, describing events within each. Figure 2 depicts the component diagrams.

Task created (Figure 2.1):

- Start - The beginning of Metaward model, either after login or when integrated into an existing setup.
- Create Task - Tasks or challenges are generated in this step.
- Rule Imposed - This checkpoint handles rule implementation. It proceeds to "Modify Task" for further rule implementation or "Review Task" if no additional changes are needed.
- Modify Task - Task modifications are made in this phase.
- Review Task - After implementing modifications and rules, the task undergoes review.
- Approve Task - If approved, it moves to the next stage; otherwise, it returns to "Review Task" for further assessment and modifications.
- End – Placeholder to mark the end of the "Task Created" process. In the complete model, the task or challenge will be assigned from this point.



1 Task created	2 Task assigned	3 Penalty	4 Reward	5 Badge	6 Ranking

Figure 2: Component Diagrams

Task assigned (Figure 2.2):

- Start - Placeholder to begin the "Task Assigned" component, to be removed in the complete model.
- Assign Task - The task is allocated to an employee or user.
- Add Deadline - A completion deadline is set during this step.
- Task Completed - A checkpoint for periodic checks to verify task or challenge completion. If not completed, it proceeds to a checkpoint to confirm if the deadline has passed.
- Deadline Reached - A checkpoint to confirm if the deadline has been exceeded.
- Reminder - If the deadline has not passed, a reminder is sent to prompt timely task completion.
- End - Placeholder to mark the end of the "Task Assigned" process. In the complete model, it will move to either the "Reward" or "Penalty" process, depending on task completion status.

Penalty (Figure 2.3):

- Start - Placeholder to commence the "Penalty" component, to be removed in the complete model.
- Penalty Imposed - Imposition of a penalty for failure to complete the task timeously.
- Adjust Wallet - The user's wallet is deducted with a negative cryptocurrency amount for the penalty.
- End - Placeholder to mark the end of the "Penalty" process, to be removed in the complete model.

Reward (Figure 2.4):

- Start - Placeholder to commence the "Reward" component, to be removed in the complete model.
- Reward Issued - Issuance of a reward in the form of cryptocurrency.
- Adjust Wallet - Modification of the employee's balance to reflect the added reward.
- Redeem Reward - Checkpoint for potential reward redemption.
- Sufficient Balance - Verification of adequate funds. If balance is sufficient, the reward is redeemed, and the wallet is adjusted.
- Expired - Handling of expired rewards.
- End - Denotes the conclusion of the process.

Badge (Figure 2.5):

- Start - Placeholder to begin the "Badge" component, to be removed in the complete model.
- Badge Issued - Issuance of a badge for completed tasks.
- Add to Badges - Inclusion of the badge in the employee's collection.
- Expired - Removal of expired badges from the collection.
- End - Marks the conclusion of the process.

Ranking (Figure 2.6):

- Start - Placeholder to commence the "Ranking" component, to be excluded in the complete model.
- Ranking Assigned - Allocation of a ranking based on task completion.
- Ranking Changed - Verification of any changes in the employee's leaderboard position.
- Adjust Ranking - If the employee's ranking has changed, the leaderboard is updated accordingly.
- Expired - Removal of expired rankings.
- End - Marks the conclusion of the process.

3.3 Comprehensive Metaward System

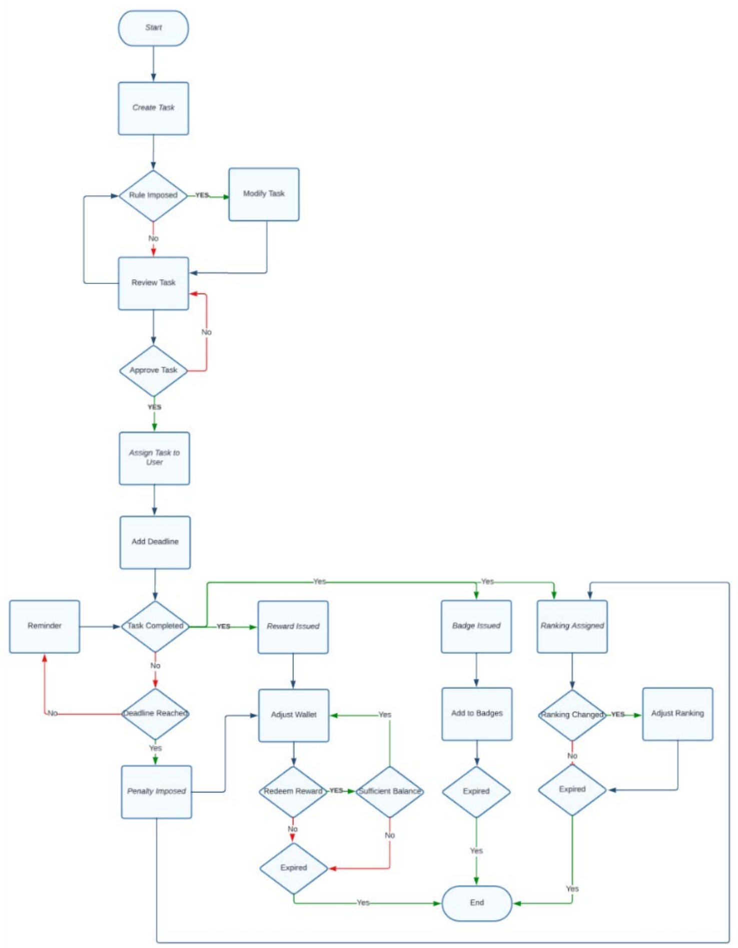


Figure 3: Metaward reward system

Figure 3 above, depicts the inclusive Metaward system, addressing various employee motivations with badges for recognition-seeking employees, leaderboards for those motivated by social comparison, rewards for those driven by incentives, and timed penalties caters to individuals preferring loss aversion. Initial rewards are in cryptocurrency, offering flexibility for later redemption in line with the organization's choices, including monetary rewards, instant benefits, or time off.

The following section presents the proof of concept.

4. Proof of Concept

In the proof of concept, two blockchain solutions are introduced, one using PoW and the other employing the (MultiversX, 2018) Secure Proof-of-Stake (SPoS), a PoS variant. Both randomise block creation to eliminate mining competition. The PoW mechanism offers robust security but demands significant computational power to maintain a high difficulty level. However, it lacks flexibility when changing tasks or challenges. On the contrary, the SPoS system, incorporates an innovative solution by MultiversX (2018b), that simultaneously addresses state, network, and transaction sharding. With its adaptive component, this architecture allows dynamic network configuration, ensuring both high security and scalability to meet demand. Additionally, new challenges or tasks can be deployed through smart contracts on the network.

To evaluate the system, a small-scale test with five hypothetical employees is conducted. Each receives an initial 100 Metagems (the Metaward's cryptocurrency), in their wallets. These Metagems can only be redeemed once the employee has earned the equivalent amount by completing tasks. However, non-completion results in Metagems being deducted from their wallet and still requires the employee to earn 100 Metagems before redeeming a reward. Additionally, negative balances are allowed in the wallet. An expiry date of six months is applied to rewards and badges, and employees can earn multiple badges of the same type. A penalty higher than the reward aims to encourage employees to prioritise avoiding loss over earning rewards. The reward structure is designed to be easily attainable, allowing for the accumulation and redemption of Metagems before expiration. The leaderboard highlights top-performing employees, fostering a culture of excellence.

Various tasks are deployed, assuming that the organisation is a remote tech company: 1) Employees receive 50 Metagems and an "Innovator" badge for suggesting new product features or solving technical challenges, with no penalties; 2) Employees receive 20 Metagems and a "Deadline Dynamo" badge for timely project completion but face a penalty of 30 Metagems for untimely completion; 3) Employees earn 10 Metagems and a "Virtual Virtuoso" badge for attending virtual meetings, with a 15 Metagems penalty for missed meetings; 4) Leaderboards are displayed upon employee login to foster healthy competition among development teams.

Reward redemption options are set as follows: 1) 200 Metagems – a R200 lunch voucher at the employee's choice restaurant; 2) 300 Metagems – movie tickets for two; 3) 500 Metagems – a day off for the employee.

Test Cases: 1) Employee 1 proposed an innovative solution, attended five virtual meetings, and completed the project on time, earning 120 Metagems, an "Innovator" badge, a "Deadline Dynamo" badge, and five "Virtual Virtuoso" badges. This allowed redemption of a lunch voucher, leaving a wallet balance of 20 Metagems after the reward; 2) Employee 2 attended five virtual meetings, earning 50 Metagems and five "Virtual Virtuoso" badges, resulting in a wallet balance of 150 Metagems, which is insufficient for reward redemption; 3) Employee 3 proposed an innovative solution and solved a complex technical issue, earning 100 Metagems and two "Innovator" badges. Employee 3 chose not to redeem rewards, maintaining a wallet balance of 200 Metagems; 4) Employee 4 attended five virtual meetings but missed the project deadline, earning 50 Metagems and five "Virtual Virtuoso" badges. A penalty of 30 Metagems was imposed for untimely completion, resulting in a wallet balance of 120 Metagems, insufficient for reward redemption; 5) Employee 5 missed three meetings, incurring a penalty of 45 Metagems, leaving a wallet balance of 55 Metagems. Since Employee 5 has not earned Metagems, they cannot redeem any rewards and have lost 45 of their initially awarded Metagems.

The rankings after the experiment are as follows: 1) Employee 1; 2) Employee 3; 3) Employee 2; 4) Employee 4; 5) Employee 5.

The following section presents the related literature.

5. Related Literature

This research's primary objective is to find an effective reward system for motivating and retaining employees in the Metaverse. This section reviews relevant literature on reward systems to inform this goal.

Notably, the study found only one enterprise-level reward system, the focus of this research. Farzan et al. (2008) implemented a points-based incentive system in a social networking site for IBM employees. It effectively motivated user contributions, particularly when combined with email notifications. Visible points encouraged more content, discussions, and allowed site owners to influence user behaviour for specific goals, benefiting marketing and content generation. However, some users wanted more control over the visibility of their activity due to privacy concerns. Christy and Fox, (2014) implemented a leaderboard reward system in educational settings, which impact academic performance and identity. However, the study contained a limited sample, requiring further research. Pombo et al. (2019) and Pombo and Santos (2023) introduced badge-based systems in educational contexts. In the study conducted by Pombo et al. (2019) at two Portuguese universities, gamification enhanced education by increasing engagement, motivation, and alignment with learning goals. Pombo and Santos (2023) used a badge-based system for in-class activities, following SCRUM principles over five sprints, featuring student achievements, class creation, and badge rewards. The findings can guide researchers and practitioners in implementing similar tools for in-class activities. Lin et al. (2023) employed a loss aversion strategy in an outdoor AR exergame, leading to longer, more intense exercise sessions compared to a reward-based approach. However, it caused pressure for one player. Study suggests careful use of loss aversion to avoid discouraging players. Future research should factor in personality traits, develop adaptive games with better content, usability, multiplayer options, and adjust exercise intensity based on fitness levels.

Each of these studies applied a unique reward strategy and analysed its individual outcomes, in contrast to the Metaward system, which integrates various motivational and incentivising elements. The next section will delve into the Metaward reward system.

6. Discussion

The Metaward reward system offers a comprehensive solution to enhance employee motivation and engagement. It leverages a combination of rewards, penalties, recognition, and social comparison to create a dynamic and motivating work environment. Organisations can customise this approach to align with their goals and values, ultimately contributing to improved employee performance and satisfaction.

Badges are awarded to employees upon task completion, serving as a form of recognition. They are used to acknowledge achievements and motivate those seeking recognition. Badges also expire for accuracy and up-to-date recognition. Employee rankings fluctuate based on task completion, catering to individuals motivated by social comparison. These rankings are periodically adjusted to ensure fairness and accuracy over time. Rewards are provided to employees upon successful and timely task completion. These rewards accumulate in their wallets and can be redeemed for various options, such as fiat currency, instant benefits, or time off. This flexibility allows employees to choose rewards suited to their preferences. The rewards also expire to ensure regular redemption and sustainability in issuing rewards from the organisational perspective. In addition to rewards, the penalty component introduces a loss aversion element. If employees fail to complete tasks timeously, they face cryptocurrency penalties deducted from their wallets. Periodic reminders help motivate individuals to avoid penalties by completing tasks promptly.

In the subsequent section, this research concludes its findings and outlines potential avenues for future work.

7. Conclusion

The Metaward reward system presents a comprehensive framework to invigorate employee motivation and engagement. By amalgamating rewards, penalties, recognition, and social comparison, it constructs a dynamic work environment that can be tailored to harmonise with an organisation's mission and values. This multifaceted approach has the potential to significantly enhance employee performance and job satisfaction.

Several avenues for future work warrant exploration in: 1) Long-term impact on motivation and performance.; 2) Adaptability across different industries; 3) Use of gamification to boost user engagement; 4) Continuous improvement based on employee feedback; 5) Suitability in diverse cultural contexts; 6) Addressing ethical concerns like privacy and fairness. These future directions hold the potential to further enhance the Metaward system's effectiveness and expand its applicability as a powerful tool for bolstering employee motivation, engagement, and overall workplace satisfaction.

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