TANULMÁNYOK / STUDIES

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The effect of ICO Capital Allocation on Project Valuation in Web3 Cryptocurrency Projects

This study investigates the allocation of pre-sale capital by blockchain technology-based startup ventures, with a specific focus on the Play-to-Earn (P2E) segment within the Web3 ecosystem, and its impact on token price performance. Our aim is to determine the proportion of initial capital that P2E startups, according to their business plan (whitepaper), allocated to key areas such as team and advisor expenses, marketing activities, and product development. Subsequently, this research centers on the question of how the focal areas of pre-sale capital utilization (team, marketing, development) correlate with the subsequent price performance of the tokens issued by these startups. The timeliness and relevance of this topic are underscored by the dynamic evolution of blockchain technology and the P2E model, as well as the critical role of startups' capital allocation decisions. Understanding how the utilization of initial funding influences long-term value is also of paramount importance for investors. Based on the results, while excessive marketing expenditures may offer a project short-term benefits, this strategy can potentially have negative long-term consequences. A project's financial viability is contingent upon competent human resources and the insights of external experts; nevertheless, these elements alone are not definitively sufficient. The significance of product development was only evident when the effect was measured in Bitcoin terms; no correlation was found when measured in Dollars.
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1. Introduction

Blockchain, a pivotal technological innovation of the 21st-century digital revolution, has fundamentally altered the modalities of data management, financial transactions, and digital trust, encompassing the storage, transmission, and authentication of information (Tapscott & Tapscott, 2016). Blockchain-based systems have the potential to become defining pillars of the future digital infrastructure, contingent upon their capacity to address technological and societal challenges (Mougayar, 2016).

The evolution of Web3 and P2E projects extends beyond mere technological considerations, holding significant implications from social, economic, and investment perspectives in the coming decades. Decentralization is fostering the emergence of novel business models that deviate from centralized corporate structures, phenomena whose analysis is both timely and forward-looking, particularly within the startup ecosystem. Following the preceding waves of ICOs, DeFi, and NFTs in recent years, P2E has emerged as the subsequent segment attracting investors, developers, and users alike. However, this rapid ascent has also harboured inherent risks: numerous projects have dissolved within short timeframes, raising substantial concerns regarding sustainability and long-term value creation. A central question concerning Play-to-Earn projects is whether they can genuinely establish sustainable economic ecosystems or serve as short-term speculative instruments. Of particular importance is the exploration of the extent to which decentralization

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contributes to the long-term success of these projects and the degree to which it creates opportunities for abuse.

The decentralisation of the financial sector has been a key determinant in the emergence of blockchain startups. In the wake of Bitcoin and Ethereum, a multitude of new cryptocurrencies, tokenized assets, and decentralized applications (dApps) have been created, offering alternative solutions across various industries in lieu of centralized services. The introduction of Ethereum enabled the utilization of so-called smart contracts, which function as self-executing programs for the automation of business logic (Wright & De Filippi, 2015).

One of the most recognized and widespread forms of funding within the realm of blockchain startups is the Initial Coin Offering (ICO), which provides businesses with the opportunity to sell digital tokens to the public in exchange for cryptocurrency. A characteristic feature of ICOs is their lack of reliance on intermediaries, stock market listings, or regulated financial institutions, thereby facilitating faster and more globally accessible funding (Fisch, 2018). Initial Coin Offerings rely heavily on the information disclosed in whitepapers, which serve as the primary communication tool for signaling project quality in the absence of traditional intermediaries (Fisch, 2018; Howell et al., 2020).

New types of funding mechanisms have also emerged, operating on the foundation of ICOs, such as the Initial Exchange Offering (IEO), conducted through cryptocurrency exchanges, and the Security Token Offering (STO), which offers regulated investment opportunities akin to traditional securities. These novel models contribute to enhancing transparency and investor protection, while simultaneously imposing stricter compliance and legal requirements on startups (Hacker & Thomale, 2017).

Furthermore, the lack of standardized investor rights and the presence of significant information asymmetry in the ICO market necessitate a closer examination of project-specific disclosures, as these serve as the primary basis for investment decisions in a largely unregulated environment (Zhao et al., 2020).

While most prior studies have examined ICO mechanisms more generally, this study makes a niche contribution by focusing specifically on the Play-to-Earn (P2E) segment. The novelty of the research lies in the fact that, going beyond a mere technological description, it quantifies the impact of resource allocation between marketing, product development, and human capital on market value, revealing strategic correlations within the specific P2E ecosystem. A unique element of the methodology is the dual-currency-based analysis, which measures performance in Bitcoin and USD, allowing the decoupling of project-specific success from general crypto market trends. This approach scientifically reinforces the primacy of sustainable development capability over marketing-driven growth models in the long-term lifecycle of Web3 projects.

2. Literature review

2.1. Blockchain Technology and Smart Contracts

Blockchain is a distributed ledger technology (DLT) that enables network participants to share, record, and validate data without a central authority (Nakamoto, 2008). This approach is particularly significant in the realms of financial technologies, data security, and smart contracts, but it is also finding increasing application in logistics, healthcare, education, and public services (Swan, 2015).

The advantages of this technology include its transparency, the trust derived from decentralization, and the minimization of reliance on third parties. Conversely, the challenges associated with blockchain encompass high energy consumption, regulatory issues, and interoperability problems across different blockchain networks. The emergence of Bitcoin not only created a novel digital asset but also contributed to the birth of an entire industry, the blockchain ecosystem (Yermark, 2017).

Another significant milestone in blockchain technology was the launch of the Ethereum platform in 2015 (Castor, 2023). Ethereum is capable of not only processing transactions but also enabling the execution of so-called smart contracts. A smart contract is a self-executing code snippet that automatically performs a transaction or other operation on the blockchain when specific conditions are met (Buterin, 2014). This approach allows for the decentralized implementation of complex business logic, such as the automation of insurance payouts, digital rights management, or the operation of decentralized exchanges. The benefit of smart contracts is that transactions are deterministic and immutable, thus eliminating the need for legal intermediaries to guarantee execution (Wright & De Filippi, 2015).

2.2 Distinctive Attributes of Blockchain-Native Startup Ventures

Startup ventures represent one of the most dynamically evolving segments of the modern economy. These companies are innovative organizations that develop novel products, services, or business models, with the aim of rapid market growth. The operation of startups is characterized by significant uncertainty, high risk, and an experimental business approach (Kézai, 2024). By definition, a startup is a temporary organization in search of a repeatable and scalable business model (Blank & Dorf, 2020).

Key players in the startup ecosystem include venture capitalists, angel investors, accelerator programs, incubators, and universities. These actors not only provide financial support but also assist startups with strategic guidance, mentorship, technological infrastructure, and social capital (Wonglimpiyarat, 2015). Successful startups typically build upon multiple resources and actively participate in local or international innovation communities. As Benedek et al. (2018, p. 12) state in their study, ‘innovation is closely linked to technological development’.

Technology startups – particularly in the digital, IT, and fintech sectors – evolve in extremely rapid cycles. These ventures often work with artificial intelligence, data mining, blockchain technology development, or Software-as-a-Service (SaaS) models. Scalability, infrastructure flexibility, and the maintenance of technological competence are particularly important for such startups. The emergence of blockchain technology has ushered in a new era in the startup ecosystem, offering opportunities for the creation of decentralized systems and novel business models. Blockchain-based startups are enterprises whose business processes, services, or products are built on blockchain infrastructure. These companies leverage the key advantages of the technology – transparency, security, decentralization, and programmable contracts – to create new, often disruptive solutions (Adhami et al., 2018).

2.3 Capitalization Approaches for Blockchain-Based Projects

A prominent example of business innovation is the emergence of the previously mentioned Initial Coin Offering (ICO). The ICO stands as one of the most well-known and widely adopted fundraising methods for blockchain projects. This mechanism enables a newly established venture or decentralized project to issue digital tokens, which investors can purchase – typically using established cryptocurrencies such as Bitcoin (BTC) or Ethereum (ETH). The objective of an ICO is to directly raise the capital necessary for project implementation from investors, without the need for traditional financial intermediaries. This method gained significant popularity as it provided an avenue for the rapid financing of projects; however, it also entailed considerable risks for investors due to regulatory and transparency deficiencies. Among the successful ICO projects is Ethereum itself, which raised USD 18 million in 2014, thereby laying the foundation for a new era of decentralized applications (Tapscott & Tapscott, 2016).

2.4 Resource Allocation as a Critical Factor in Blockchain Project Success

The analysis of budgetary plans is indispensable for understanding the financial underpinnings and operational frameworks of blockchain-based projects. International literature distinguishes three prominent cost factors: resources allocated to marketing, funds dedicated to technological development, and the token share reserved for team members (Zetzsche et al., 2017). Each of these factors indirectly provides information about the project's strategic priorities and its market positioning (Fisch, 2018).

The theoretical role of marketing expenditure is paramount in the early stages of blockchain projects, as community recruitment and public attention are crucial elements in decentralized systems (Chen & Bellavitis, 2020). However, excessive marketing costs can also indicate increased speculation and the neglect of the technical foundation (Mougayar, 2016).

Examining development expenditures is an important indicator of whether a project possesses a functional infrastructure or a suitable development roadmap (Buterin, 2014). Blockchain projects can ensure a technologically stable platform if a significant portion of their budget is allocated to development (Tapscott & Tapscott, 2016).

The third factor examined – the team's token share – reflects the project's internal incentive system (Zetzsche et al., 2017). The amount of resources allocated to team members can influence commitment and the extent of long-term participation (Fisch, 2018). However, excessive resource allocation to the team may reflect short-term interests, while a gradual release system (vesting) is theoretically considered a more effective incentive (Chen & Bellavitis, 2020).

The positive correlation between expenditures on the team and long-term token performance can be interpreted through the lens of signaling theory. In the high-uncertainty environment of Web3 startups, the quality and expertise of the founding team and advisors serve as a crucial signal of project legitimacy and future viability to potential investors. As noted in the literature, the allocation of resources to human capital acts as a commitment mechanism; it indicates that the project possesses the necessary technological competence and strategic leadership to navigate the post-ICO development phase. Furthermore, expert advisors not only provide social capital but also reduce information asymmetry by validating the project’s technical roadmap, which is essential for building digital trust in decentralized ecosystems. Consequently, a well-funded team is perceived not merely as a cost factor, but as a guarantee of sustainable development capability, which stabilizes investor expectations and contributes to long-term price performance.

According to a recent systematic literature review by Moxoto et al. (2025), human and social capital are among the most critical determinants of ICO success. Their analysis confirms that the expertise, technical skills, and reputation of the founding team serve as vital signals that reduce information asymmetry and build community trust.

A common characteristic of the examined resource elements is that, according to professional assumptions, they inherently contribute to the project's transparency, strategic coherence, and technical feasibility (Mougayar, 2016). The literature considers the examination of such structures important for reducing investor information asymmetry (Fisch, 2018).

Moreover, the inherent risks associated with the lack of standardized legal frameworks in the ICO process necessitate a robust internal governance structure, as project-specific risk management becomes the primary safeguard for investor capital (Karpenko et al., 2021).

3. Material and methods

Our background research for this study aimed to understand which factors, among those discussed in the theoretical section, influence the price performance of newly launched Web3 and Play-to-Earn based startup projects and in what manner. To this end, we examined a cohort of 504 projects. However, comprehensive information was obtainable for only 54 of these ventures, utilizing data disclosed during their Initial Coin Offerings (ICOs). This limitation arose due to the prevalent issue of incomplete information provision to investors during the pre-sale phase by a significant number of projects. Furthermore, the price data for numerous projects became unavailable on cryptocurrency tracking platforms within one year of their launch, further restricting our analytical

scope. Despite the reduction in sample size to 54 projects with complete ICO data, this number can still be considered substantial. According to data from the CryptoRank portal, the initial cohort of 504 projects represents the entirety of publicly listed Web3 and Play-to-Earn based startup projects launched between January 1st, 2017, and the end of 2022.
We hypothesized that the proportion of marketing costs, the amount allocated to the development budget, and the role of the team and advisors could all serve as important indicators of a project's long-term viability.
During data collection, we primarily utilized the CoinGecko and CoinMarketCap databases, which are two of the most well-known, regularly updated, and community-audited platforms in the cryptocurrency market. Throughout the data collection process, we verified the official website and business plan for each project, which contained detailed technical and financial information. These primary documents provided a basis for understanding the projects' budgetary structure: where cryptocurrency price tracking platforms did not provide sufficient information, the examination of business plans allowed for the accurate determination of the proportion of marketing, development, and team costs.
For each project, data pertaining to budgetary structure, tokenomics, team composition, and token performance were recorded in an Excel spreadsheet. The price fluctuations of the projects were recorded in Bitcoin (BTC) and US dollars ($) at 3-month and 12-month intervals, and the data were subsequently evaluated using the JASP statistical software. The projects included in the sample were launched between 2017 and 2022.
To validate the data sources, we employed cross-verification using multiple databases to filter out misleading or false information. Where discrepancies were found between different sources, the data from the official whitepapers were considered primary.
Prior to commencing data processing, we normalized the data to eliminate differences arising from varying launch dates, as timing can significantly influence the short-term success of projects in the Web3 P2E market. This was achieved by converting dollar values to Bitcoin units. Based on the normalized data, we calculated relative performance for each project after both 3 and 12 months. During the data preparation phase, projects for which budgetary data or performance indicators were not fully available were excluded.
The normalization of price performance into Bitcoin units is consistent with recent empirical literature, which suggests that the optimal timing of an ICO and its subsequent valuation are heavily influenced by broader cryptocurrency market cycles and Bitcoin’s price trajectory (Drobetz et al., 2024). This approach allows for the mitigation of timing-related biases and isolates project-specific performance from systematic market movements.
To ensure the robustness of the comparative analysis, all financial data were normalized to both USD and BTC. It is important to emphasize that the conversion process does not introduce significant bias into the results for several reasons. Firstly, a substantial portion of the project data was originally recorded in BTC on the respective monitoring portals. For the remaining data points, conversions were executed using the spot exchange rates on the specific observation dates. Regarding the pre-sale phases, the exchange rates from the final day of each stage were applied; since these phases typically spanned only 2–3 days, the impact of intra-period Bitcoin volatility remained negligible. This rigorous approach effectively isolates project-specific performance from broader market fluctuations, thereby enhancing the reliability of the long-term valuation metrics.

4. Results

4.1. Average performance of Web3 P2E projects

Figure 1 illustrates the average performances in both US dollars and Bitcoin, clearly demonstrating the discrepancies in the short-term and long-term value generation capabilities of Web3 P2E projects. The initial part of Figure 1 presents the performances measured in US dollars,

where it is evident that the average 3-month performance (USD 6.2301) significantly surpasses the 12-month value (USD 0.5474). This suggests that many projects were capable of achieving high value increases in the short term, but this performance was not sustainable in the long run.
The difference is greater than tenfold, reinforcing the assertion that the life cycle of most projects exhibits a strongly short-term orientation. It can also be inferred from the data that the average 12-month performance is disproportionately low, which raises questions about the long-term investment value of these projects.

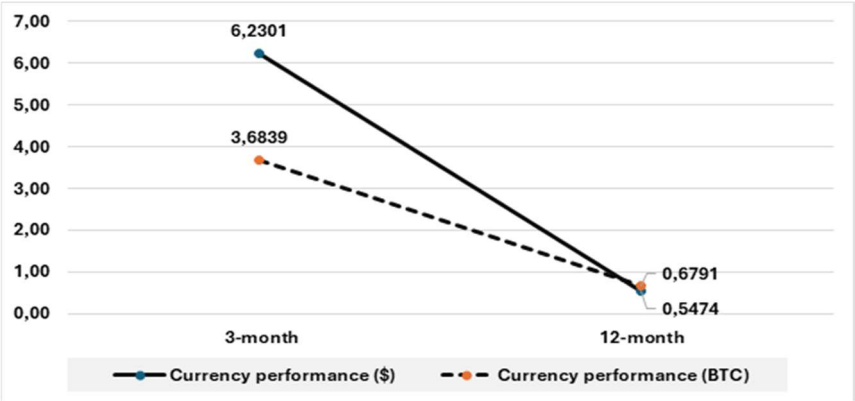

Fig. 1. Average performance of Web3 P2E projects in BTC and dollars
Source: edited by authors

Similarly, when examining the performance measured in Bitcoin, the average performance over the 3-month period (3.6839 BTC) is also considerably higher than the 12-month average (0.6791 BTC). The returns measured in Bitcoin further suggest that the projects' tokens were able to strengthen in the short term, even amidst cryptocurrency market volatility, but they could not keep pace with market expectations in the longer term.
The parallel observed between the two diagrams reinforces the conclusions drawn from the preceding quantitative and correlation analyses. These graphs suggest that the initial price surges characteristic of the early "hype" period should not be interpreted as genuine long-term success if they are not sustained by subsequent stability. Nevertheless, our results indicate that projects exhibiting stronger performance within the first 3 months tend to maintain a higher level of performance over a 12-month period as well.

4.2 Descriptive statistics

Table 1 presents key statistical indicators for three primary budgetary categories: marketing, game development, and team and advisors. The average values indicate that most projects allocated the largest proportion of resources to development (19%), followed by the team (16%), and finally marketing (12%). This distribution in itself suggests that a significant portion of Web3 P2E projects prioritize the development of their ecosystem.
The median values – 14% for marketing, 17% for development, and 15% for the team – indicate that the distribution of marketing costs is slightly right-skewed, meaning many projects remain at the lower end, but a few high values pull the average upwards. The mode – the most frequently occurring value – is 15% for all three categories, suggesting a somewhat standardized structure or that many projects allocate resources in a templated manner.
The standard deviation is highest for the development budget (0.126), indicating the greatest variance among projects in this area: some allocate almost nothing, while others exceed 50%. The standard deviations for marketing and team costs are smaller (0.065 and 0.062, respectively), suggesting more stable proportions for these categories.

Table 1. Descriptive Statistical indicators

	Marketing	Development	Team and advisors
Mode	0.150[a]	0.150[a]	0.150[a]
Median	0.140	0.172	0.150
Mean	0.117	0.188	0.160
Std. Deviation	0.065	0.126	0.062
Minimum	0.000	0.0009	0.002
Maximum	0.250	0.510	0.300

([a] The mode is computed assuming that variables are discreet.)
Source: edited by authors

The minimum values are 0% for all categories, implying the existence of projects that allocated no resources to marketing, development, or the team at all – this could be concerning, given that these pillars are arguably essential for long-term sustainability.
The maximum values are also revealing: 25% for marketing, 51% for development, and 30% for the team. These extreme values demonstrate that some projects have allocated their resources in a highly lopsided manner, which could represent a significant risk factor. Such concentrated budgetary structures often backfire, especially if they cannot support the project's long-term growth strategy.

4.3 Correlation

The examination of correlation is one of the most fundamental statistical tools that allows us to explore the direction and strength of the relationship between two variables. During the calculation of the correlation coefficient, it is important to recognize that it does not indicate a cause-and-effect relationship, but rather a covariation, that is, the direction and extent to which a change in one variable coincides with a change in another. Correlation calculation constituted the first step of our analysis, and we expected it to provide a more comprehensive picture of which types of budgetary structures are more likely to contribute to successful, sustainable projects.

Pearson's Correlations

Variable		Marketing	Development	Team and advisors	IN CP ($)	3-M CP ($)	12-M CP ($)
1. Marketing	Pearson's r	—					
	p-value	—					
2. Development	Pearson's r	0.183	—				
	p-value	0.181	—				
3. Team and advisors	Pearson's r	0.099	0.071	—			
	p-value	0.474	0.604	—			
4. IN CP ($)	Pearson's r	−0.325*	−0.160	0.092	—		
	p-value	0.015	0.244	0.503	—		
5. 3-M CP ($)	Pearson's r	0.232	0.193	0.088	−0.145	—	
	p-value	0.088	0.157	0.521	0.292	—	
6. 12-M CP ($)	Pearson's r	−0.195	−0.068	0.316*	−0.117	0.417**	—
	p-value	0.153	0.624	0.019	0.394	0.002	—

* p < .05, ** p < .01, *** p < .001

Fig. 2. Correlation matrix between budgets and performance in $
Source: edited by authors

Figures 2 and 3 show the correlation matrix between fiscal resource targets and exchange rate performance at different points in time. The correlation calculations also assisted us in determining which factors' relationships were worth testing with a linear regression model in the subsequent step.
The Web3 P2E sector is particularly dynamic and often unpredictable, making any measurable relationship that can provide guidance for investor and developer decisions especially valuable. Therefore, we also hoped that the correlation analysis would help filter out factors that appear superficially favorable but do not actually contribute to long-term value creation.
Based on the correlation values, it was determined that only the performance measured in US dollars had a significant ($p < 0.05$) relationship with the examined resource allocations. The relationship with the price performance measured in Bitcoin was not statistically significant in this study.
Figure 2 provides a more precise understanding of the significant impact of each budgetary type on project performance. In the case of 3-month performance, marketing costs showed a positive correlation with the results measured in US dollars ($r = 0.232$), suggesting that in the short term, investment in marketing can increase a project's visibility and initial market value, but this is not considered a significant effect. However, over the 12-month period, this effect reverses, and a weak negative correlation emerges ($r = -0.195$), indicating that marketing-based strategies do not prove sustainable in the long run.
Regarding the development budget, a nearly significant short-term correlation with the 12-month performance is only observed when measured in Bitcoin terms. The correlation between team and advisor costs and 3-month performance shows a weak positive ($r = 0.088$) but non-significant relationship. In contrast, the strongest positive correlation is measurable with the dollar-denominated 12-month performance ($r = 0.316$). This suggests that expenditures on the team yield their effects over a more extended period, contributing to the project's sustainability and stable operation.

Pearson's Correlations

Variable		Marketing	Development	Team and advisors	3-M CP (BTC)	12-M CP (BTC)
1. Marketing	Pearson's r	—				
	p-value	—				
2. Development	Pearson's r	0.183	—			
	p-value	0.181	—			
3. Team and advisors	Pearson's r	0.099	0.071	—		
	p-value	0.474	0.604	—		
4. 3-M CP (BTC)	Pearson's r	0.071	0.060	0.066	—	
	p-value	0.605	0.664	0.634	—	
5. 12-M CP (BTC)	Pearson's r	−0.078	0.259	0.044	0.393**	—
	p-value	0.574	0.056	0.750	0.003	—

* p < .05, ** p < .01, *** p < .001

Fig. 3. Correlation matrix between budgets and performance in BTC
Source: edited by authors

Based on the results, it can be established that the rapid ascent of marketing-dominant projects is often only superficial, and their market value decreases or stagnates in the long term. Marketing strategies may work in the short term, but their impact diminishes or even turns negative over a longer horizon. In contrast, projects that allocated more significant resources to team costs and, to some extent, development performed better in the long run. The most significant long-term positive impact is observed in the USD-based performance of team and advisor costs. Thus, the data clearly indicate that resource allocation towards the team and advisors can be the foundation

for sustainable Web3 P2E projects. At the same time, excessive reliance on marketing does not result in stable long-term value growth. This information can be useful in formulating new startups' budgetary strategies and making informed investment decisions.
Overall, the data highlight that an increase in the proportion of marketing costs was rather weakly negatively correlated with project performance. In contrast, development and team costs showed a positive or neutral relationship. It is important to note that the low correlation coefficients observed across the examined factors align with existing literature, suggesting that a multitude of variables influence the price fluctuations of cryptocurrency projects (see theoretical sub-sections). It is essential to emphasize that while budget allocation metrics offer valuable insights, they explain only a limited fraction of price dynamics (as indicated by the reported R^2 values). The valuation of Web3 P2E projects is a complex phenomenon influenced by a multitude of external factors, including overall cryptocurrency market sentiment, regulatory changes, technological shifts, and broader macroeconomic conditions, which are beyond the scope of this budgetary analysis.

4.4 Linear regression

The results indicate that none of the three examined budgetary factors exhibited a strong, significant relationship with market performance, yet their impact, albeit to varying degrees, is discernible. To further understand the connection, we conducted regression analysis in those relationships where the correlation matrix showed a significant association. Using the R^2 indicator, we quantified the proportion to which each factor explains the price fluctuations in the short term (3 months) and longer term (12 months).

Table 2. Linear regression analysis between marketing and initial exchange rate (in $)

Model Summary - IN CP ($)

Model	R	R^2	Adjusted R^2	RMSE
M_0	0.000	0.000	0.000	0.075
M_1	0.325	0.106	0.089	0.072

Note. M_1 includes Marketing

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
M_1	Regression	0.033	1	0.033	6.277	0.015
	Residual	0.275	53	0.005		
	Total	0.308	54			

Note. M_1 includes Marketing
Note. The intercept model is omitted, as no meaningful information can be shown.

Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
M_0	(Intercept)	0.058	0.010		5.707	< .001
M_1	(Intercept)	0.102	0.020		5.079	< .001
	Marketing	-0.376	0.150	-0.325	-2.505	.015

Source: edited by authors

As depicted in Table 2, marketing expenditures account for 10.6% of the variance in the dependent variable (IN CP). This represents a weak but significant explanatory power. The costs allocated

to marketing showed a weak relationship with the issue price. This short-term marketing effect highlights that while initial hype can facilitate an increase in the token's value, fundamental factors take precedence in the long run. As we also established following the correlation calculations, the impact of marketing may still be relevant in the short term, but it cannot sustain the price if the project lacks genuine development activity. Marketing is important for generating initial attention, but it cannot substitute for actual value creation. The impact of individual factors can also differ over time: what is perceived as positive in the short term (e.g., marketing) may become irrelevant in the long term. Therefore, when evaluating projects, investors should consider not only the proportions but also their evolution over time. Due to the nature of the decentralized economic ecosystem, long-term sustainability and continuous development remain key factors.

Table 3. Linear regression analysis between Team & Advisors usage target and 12-month performance (in $)

Model Summary - 12-M CP ($)

Model	R	R^2	Adjusted R^2	RMSE
M_0	0.000	0.000	0.000	1.543
M_1	0.316	0.100	0.083	1.477

Note. M_1 includes Team and advisors

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
M_1	Regression	12.820	1	12.820	5.873	0.019
	Residual	115.683	53	2.183		
	Total	128.503	54			

Note. M_1 includes Team and advisors

Note. The intercept model is omitted, as no meaningful information can be shown.

Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
M_0	(Intercept)	0.547	0.208		2.632	0.011
M_1	(Intercept)	-0.707	0.555		-1.275	0.208
	Team and advisors	7.852	3.240	0.316	2.424	0.019

Source: edited by authors

The regression analysis presented in Table 3 examines the relationship between "Team and advisors" costs and the 12-month dollar-based performance (12-M CP $). The "Team and advisors" expenditures have a significant positive impact on the 12-month token performance, explaining 10% of its variance. This result is statistically reliable and the relationship is also commercially interpretable. Allocations toward human capital show a positive correlation with 12-month performance, suggesting that a strong team may be one of the contributing factors to project stability. Similarly, marketing expenditures are associated with short-term price movements, although this relationship does not imply a guaranteed outcome or a direct causal

link. This finding aligns with the literature, which suggests that the presence of a working product or prototype strengthens the project's credibility and increases investor confidence (Chen & Bellavitis, 2020).
The extent of development expenditure carries somewhat greater weight, as the infrastructure being built and the technological implementation indirectly contribute to the project's long-term viability. The research confirms that the amount of resources allocated to development can be a critical factor from the perspective of investor confidence. However, the low R^2 values also indicate that there is no deterministic relationship between the cost structure and market performance. Therefore, budgetary factors should be interpreted more as qualitative than quantitative filters. Based on the results, developers should focus on strengthening the technical foundation and communicating product development effectively.

Table 4. Linear regression analysis between 3 and 12 months performance (in $)

Model Summary - 12-M CP ($)

Model	R	R^2	Adjusted R^2	RMSE
M_0	0.000	0.000	0.000	1.543
M_1	0.417	0.174	0.158	1.415

Note. M_1 includes 3-M CP ($)

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
M_1	Regression	22.368	1	22.368	11.170	0.002
	Residual	106.135	53	2.003		
	Total	128.503	54			

Note. M_1 includes 3-M CP ($)

Note. The intercept model is omitted, as no meaningful information can be shown.

Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
M_0	(Intercept)	0.547	0.208		2.632	0.011
M_1	(Intercept)	0.286	0.206		1.386	0.172
	3-M CP ($)	0.042	0.013	0.417	3.342	0.002

Source: edited by authors

The linear regression analysis presented in Tables 4 and 5 examines the extent to which 3-month performance (independent variable) can predict 12-month performance (dependent variable). This analysis is displayed in a multi-part table: Model Summary, ANOVA, and Coefficients (Figures 6 and 7). This analysis reveals a statistically significant positive association between 3-month and 12-month performance. However, while the 3-month token performance provides some explanatory value for the subsequent price trajectory, the majority of price variance remains unexplained by this factor alone (it is certainly not the sole determining factor). This also implies that projects enjoying better investor perception in the short term typically manage to maintain that trust over the first year, hence in the longer term. This finding appears to contradict previous assumptions regarding the "pump and dump" phenomenon. These assumptions suggest that a significant portion of microcap crypto projects are designed for substantial and artificial short-

term price surges, often at the expense of long-term financial sustainability. (For the pump and dump assumptions and results, see: Friedhelm & Hagemann, 2019; Xu & Livshits, 2019; Kamps & Kleinberg, 2018.)
Although the results for team expenditures are statistically significant ($p = 0.019$), their economic significance is moderate, as budget structure accounts for approximately 10% of the long-term price variance. This suggests that while team composition is a relevant strategic signal, investors must weigh it alongside other fundamental and market-driven variables.

Table 5. Linear regression analysis between 3 and 12 month performance (in Bitcoin)

Model Summary - 12-M CP (BTC)

Model	R	R^2	Adjusted R^2	RMSE
M_0	0.000	0.000	0.000	1.607
M_1	0.393	0.154	0.138	1.492

Note. M_1 includes 3-M CP (BTC)

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
M_1	Regression	21.485	1	21.485	9.657	0.003
	Residual	117.918	53	2.225		
	Total	139.404	54			

Note. M_1 includes 3-M CP (BTC)

Note. The intercept model is omitted, as no meaningful information can be shown.

Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
M_0	(Intercept)	0.679	0.217		3.135	0.003
M_1	(Intercept)	0.252	0.244		1.033	0.306
	3-M CP (BTC)	0.116	0.037	0.393	3.108	0.003

Source: edited by authors

5. Practical Implications

The empirical findings of this study offer several strategic insights for both founders of Web3 startups and prospective investors by clarifying the link between capital allocation and market performance. Regarding project founders and developers, the results suggest that a balanced budgetary structure is a prerequisite for long-term viability, where human capital and technical development receive a prioritized share of initial funding. While marketing is essential for generating initial visibility and short-term price increases, an over-reliance on promotional spending often signals a lack of long-term substance and can negatively impact token performance after the first year. Therefore, establishing a competent team with reputable advisors should be viewed not merely as an operational necessity but as a critical strategic signal that supports long-term valuation and investor trust.

For the investor community, these findings imply a need to look beyond initial "hype" and short-term price surges, as such performance is frequently unsustainable if not backed by continuous product development and a stable infrastructure. The data indicates that the allocation for "Team and Advisors" serves as a more reliable indicator of 12-month performance than marketing expenditures, providing a more grounded basis for long-term investment decisions. Furthermore, investors should evaluate project performance in both USD and BTC terms to accurately distinguish between a project's idiosyncratic success and broader market movements.
Ultimately, budgetary structures can serve as vital qualitative filters during the due diligence process. Projects that allocate nearly zero resources to essential pillars like development or human resources should be treated with significant caution, as the lack of these foundational elements is strongly associated with a failure to maintain value over time. A judiciously balanced resource allocation strategy, prioritizing technical and human capital over aggressive short-term marketing, appears to be the most efficacious approach for achieving sustainability within the Web3 sector.

6. Conclusions

Based on the aggregated interpretation of the results, it becomes evident that the majority of Web3 Play-to-Earn projects exhibit a strong short-term focus, with only a smaller fraction demonstrating sustainable long-term value creation. The sharp contrast between the 3-month and 12-month performance data indicates that while most projects may be capable of showing initial growth, this does not translate into long-term sustainability. This is particularly true for the dollar-denominated performance, where the average values decrease drastically after the initial period.
The relationship between marketing expenditure and performance further corroborates the theoretical proposition that excessive marketing dominance diminishes long-term effectiveness. This supports the investor perspective that technological foundation, rather than marketing intensity, is the determining factor for sustainability. Here, marketing specifically refers to promotional activities.
We were unable to demonstrate a significant relationship between development costs and 3-month and 12-month performance in the current sample.
The correlation between team and advisor costs and 12-month dollar-denominated performance showed the strongest positive association. This indicates that investing in appropriate human resources and external expertise plays a crucial role in the long-term survival and success of a project. This is less noticeable in the short term but becomes decisive over time, a trend consistent with classical startup theories.
The budgetary statistical indicators also reinforce the above conclusions. The proportion allocated to development showed the highest variance, suggesting that projects employ very different strategic priorities. The median and mode values are relatively close to the mean, which, in turn, may indicate similarities among the projects in the sample. However, this apparent consistency is misleading, as the extreme values, especially for development and team costs, point to significant discrepancies.
The interpretation of the 3-month and 12-month performance charts clearly shows that short-term price increases do not guarantee a project's long-term viability. The initial "hype" phase is often not based on real value creation, and in many cases, the price falls to a fraction of its initial value within 12 months. In contrast, projects that allocate a larger proportion to team costs tend to exhibit more stable performance.
Based on the combined interpretation of the data, a balanced budgetary structure is one of the main characteristics of successful and sustainable Web3 P2E projects.
The results largely confirmed our hypotheses. Marketing expenditures positively correlated with project performance over the 3-month period; however, this correlation turned negative over the 12-month period. This reinforced the idea that while the immediate impact of marketing can be favorable, it does not guarantee long-term value retention.

While development costs measured in dollars did not show a strong positive long-term effect, a clear positive relationship emerged with Bitcoin-denominated performance. This implies that the significance of product development is more pronounced within the decentralized economic space.

The hypothesis regarding team costs was also confirmed: the strongest positive long-term correlation with dollar-denominated performance was observed in this category. This suggests that maintaining competent human resources and incorporating the knowledge of external experts support a project's viability. The analysis of statistical variance and minimum and maximum values also showed that although there are significant differences between individual projects, higher proportions of development and team costs resulted in more stable performance.

The research highlighted that marketing-based strategies tend to support short-term price increases, but the key to long-term success lies in development and a strong team. Based on while simultaneously, a balanced budget allocation is recommended: increasing the proportion of resources allocated to development and the team can positively contribute to project performance in the long run. Excessive marketing expenditures may yield short-term results but do not provide a stable long-term foundation.

Regarding development costs, it is recommended to support technological innovation and product development, especially introducing features that create long-term value for users. Furthermore, ensuring the team's competence is crucial: expert background, active advisors, and well-structured management.

In aggregate, our results indicate that a judiciously balanced resource allocation strategy may prove to be the most efficacious for enterprises within the Web3 sector. Concurrently, price performance may be subject to a multitude of potential determinants, the comprehensive understanding of which necessitates additional inquiry.

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