

Sustainability signals and the success of technology crowdfunding campaigns in Europe

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ABSTRACT,

As sustainability becomes a defining factor in consumer decision-making, its influence on crowdfunding performance demands closer examination. This study investigates the effect of sustainability mentions on the success of European technology crowdfunding campaigns. Specifically, it explores how such mentions influence the odds of success and its ability to overfund a campaign. A dataset of 481 Kickstarter campaigns was analysed, and web scraping was used to acquire data on sustainability-related mentions within campaigns. The analysis discovered positive and significant effects on campaign success and overfunding, although the effect is weaker in already successful campaigns. These results provide further evidence that sustainability serves as a signal to value-driven backers, showing whether a campaign succeeds and how far it can exceed its funding goal. The findings offer valuable insights for creators, backers, and platforms of reward-based crowdfunding by discussing the role of sustainability messaging in shaping campaign performance.

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Keywords

Crowdfunding, sustainability, overfunding, consumer behaviour, entrepreneurship, signalling theory

1. INTRODUCTION

Crowdfunding has become an increasingly popular method for start-ups and entrepreneurs to finance their business ventures, and it has not shown signs of slowing down. In 2024 the global crowdfunding market size was estimated at USD 2.14 billion and is estimated to grow 17.6% from 2025 to 2030. (Grand View Research, 2024).

At the same time, sustainability concerns have also become more influential in consumer buying behaviour. According to a study done in 2023, 74% of consumers say that the environmental impact of a product has an influence in their purchasing decision. (PDI technologies. 2024).

Another paper published in 2024 suggests that crowdfunding platforms which use the environmental, social, and governance (ESG) criteria are more likely to attract investors and achieve long-term survival. Since sustainability concerns are growing this would reinforce the need to examine how sustainability-related campaigns influence funding success. (Cumming et al. 2024).

Existing relevant research suggests that sustainability ventures often face challenges in securing traditional funding (Bank loans, Venture Capital) but may perform better in crowdfunding scenarios due to the increasing public interest in sustainability (Bürer & Wüstenhagen, 2009) which is why this paper will focus on crowdfunding. There already exists a lot of research on crowdfunding as well as the relationship between sustainability and crowdfunding, however many of these studies focus on equity-based crowdfunding for instance Lorenzo Gai's 2025 study focuses on crowdfunding platforms and examines how sustainability considerations influence equity crowdfunding in Italy. However, my research is on reward-based crowdfunding and will examine the crowdfunding platform, Kickstarter. This study focuses on campaigns launched within the European region this is because different regions have varying levels of sustainability concerns, maintaining consistency among consumer attitudes allows for a clearer analysis on the impact of sustainability on crowdfunding success. The existing research for equity-based crowdfunding showed that sustainability has a positive impact on success but its influence in reward-based crowdfunding remains less explored and could operate under different dynamics. Equity crowdfunding primarily attracts investors seeking financial returns where sustainability considerations are not as strong as with individual backers. Backers in reward-based crowdfunding support projects in exchange for a product or service. This means that their motivations are more closely aligned with the potential product. As sustainability becomes an important factor in purchasing decisions, understanding how and why it affects crowdfunding success in reward-based models is crucial. This study aims to bridge that gap by analysing whether sustainability drives funding success in technology crowdfunding campaigns.

The existing research on crowdfunding success and sustainability use crowdfunding success as a binary variable, which simplifies the analysis by categorizing campaigns into two groups (successful or unsuccessful) but fails to mention how much overfunding occurs. However, this study will also look at crowdfunding success based on a percentage of the goal raised, which can also exceed 100%, providing us with a more dynamic view of crowdfunding outcomes.

This study contributes to the crowdfunding and sustainability literature by addressing gaps in prior research and building up on the less explored reward-based crowdfunding literature. Another distinction between other studies is the focus exclusively on technology crowdfunding campaigns; this is

done to account for different dynamics across categories. Sustainability and technology have a strong intersection between each other with prior research largely ignoring category specific research (Barone, 2025; Vismara, 2019). Technology is the category that evolves at a rapid rate, meaning that more recent data on the technology crowdfunding holds greater significance compared to more stable categories such as Comics, Games, Food.

The findings from this study will offer valuable insights for technology crowdfunding campaign creators, investors and platform operators. Creators can use the results from this research to assess the importance of sustainability related keywords in their campaigns, as well as other factors such as campaign duration and funding goal. Whereas potential backers can use the findings to make more informed investment decisions. Backers can know the possible impact of sustainability on a campaign's performance as well as the other variables that will be measured such as creator quality. Platforms such as Kickstarter can improve their recommendation algorithms to potential backers by prioritizing sustainability-focused campaigns during their funding phase.

1.1 Research objective and question

This thesis aims to investigate the extent to which sustainability-related language within the campaign description influences the funding success of reward-based crowdfunding, with a specific focus on technology campaigns launched within Europe. This study will conduct two separate analyses: one using a binary success variable (dummy variable) and another will use success as a continuous variable (percentage of funding goal). This dual approach provides a more comprehensive perspective on crowdfunding outcomes and distinguishes this research from existing literature.

The research question formulated: ***“How does sustainability influence the success of technology crowdfunding campaigns in Europe?”***

The sub-research question formulated: *“Does the mention of sustainability have a positive relationship with overfunding in crowdfunding campaigns that have already met their funding goal?”*

This sub-question explores whether sustainability-related mentions in campaigns are associated not only with achieving the funding goal but also with exceeding it. If a positive relation between sustainability mentions and overall funding success is established, then analysing overfunding can provide further insight to its extent.

2. LITERATURE REVIEW

This study examines how sustainability mentions in campaigns influence crowdfunding success in technology-based Kickstarter campaigns. Reward-based crowdfunding may be a better alternative for sustainability ventures due to the increasing public demand. The following theories provide a theoretical basis for understanding how sustainability influences crowdfunding success in the technology sector. Consumer behaviour theory explains backer motivation and the decision-making process for people investing in sustainable crowdfunding campaigns. Signalling theory highlights how sustainability claims convey credibility and quality, therefore shaping the perceived product quality. Stakeholder theory emphasizes the interests of all parties involved in

crowdfunding, this would include the creator(s), Kickstarter, and the backers.

2.1 Consumer behaviour theory

Consumer behaviour theory studies why and how people make decisions when they purchase, it considers factors like attitudes, perceptions, and social influence. Attitudes represent a customer's long-term evaluation of a product which if positive can lead to brand loyalty and word-of-mouth promotion. What this means for crowdfunding campaigns is that backers who hold positive attitudes toward environmentally responsible projects would be more likely to fund the campaigns and possibly inform others about the project. Perception is important for crowdfunding as their success is dependent on how backers perceive a campaign's trustworthiness. Potential backers could be more likely to invest in crowdfunding campaigns that promote environmental sustainability since they may view it as more ethical. Finally, social engagement helps backers make decisions by building trust through peer recommendations and herd mentality. Prior research indicates that herding behaviour in crowdfunding is especially evident in the later stages, as the campaign progresses late backers would invest due to there being many early backers. (Rodríguez-Garnica et al. 2024).

In reward-based crowdfunding platforms like Kickstarter, a lot of the backers are individuals, not companies or banks. Böckel et al. (2021) highlight that consumers are becoming increasingly driven by socially responsible behaviours and are thus more likely to support brands or projects that align with their ethical beliefs.

According to a 2020 study by McKinsey, more than 60% of respondents said they'd pay more for a product with sustainable packaging. (McKinsey, 2020) and 74% of consumers said that the environmental impact of a product does have an influence on their purchasing decision. (PDI technologies. 2024).

Social influence plays a critical role in shaping consumer decisions. Social media has had an impact on raising awareness on how unsustainable actions negatively impact the planet through various ways. This has created an increasing sense of community responsibility to support actions that are positive toward the environment.

Some research on crowdfunding and the social norms theory could also explain a positive relationship between sustainability and crowdfunding success. Social norms theory explains how individuals' behaviour is impacted by their belief of what is socially acceptable or typical. Environmental norms are becoming more popular, and this theory could explain why and how sustainability mentions positively influence a campaign's performance. Backers would see that other backers are supporting a sustainability-focused campaign and feel more obligated to contribute due to the societal norm. People enjoy the feeling of being environmentally sustainable and sometimes fear judgement if they go against the social norm. The existing research on social norms within crowdfunding are limited but has found that people contribute to crowdfunding based on altruistic motivations, meaning that they support projects not only for the rewards but also the satisfaction of helping either others or a larger cause. (Cecere, Le Guel, & Rochelandet, 2017).

2.2 Signalling theory

One of the key challenges in crowdfunding is information asymmetry, this occurs when project creators have more

knowledge about their project than potential backers. This imbalance means that backers cannot properly assess the project's quality or the creator's commitment, this in turn means people would be less willing to invest. Information asymmetry can never be fully avoided, however, there are steps which creators can take to minimize the gap between their knowledge and the potential backers.

A signal is a visible attribute or action that conveys information about a hidden attribute. Signalling theory in crowdfunding suggests that project creators use signals to reduce information asymmetry and therefore convey trustworthiness to potential investors. There have been studies done on signalling theory on crowdfunding success but on a broader note of information rather than focusing on sustainability. (Steigenberger, et al., 2024).

One method to minimize information asymmetry is by showcasing that your project is helping with sustainability and the environment. This would be showing transparency toward potential backers, making them more likely to invest in the campaign. Not mentioning sustainability in their campaign could potentially lead to investors thinking that the creator(s) lack social responsibility or transparency. Backers would then be less inclined to trust the project or invest in it. Technology startups are renowned for having high failure rates (Subrahmanya, 2022), which Dzene (2019) attributes to greater uncertainty and higher risks within the industry. By reducing information asymmetry, backers can feel more confident as they gain a better understanding of the project. (Cowling et al., 2006; Colombo & Grilli, 2005).

A 2025 literature review on crowdfunding (Escudero et al. 2025) highlights that well incorporated signals are influential in a campaign's success. However, the authors go on to mention that research on simple applications of signalling theory should be avoided and that future research should be more focused on more complex interactions. Notably, Sustainability claims have received limited attention as credibility signals in crowdfunding, presenting a gap for further exploration.

Reward based crowdfunding has higher information asymmetry when compared to other financing models. This is due to a lack of regulatory requirements for information disclosure and backers don't have the same legal safeguards as other financing models. (Cascino et al. 2019).

2.3 Stakeholder theory

Freeman (1984) introduced stakeholder theory as a framework that highlights the importance of addressing the needs and interests of all stakeholders involved in or affected by a project or organization. This includes customers, employees, investors, communities and in this case crowdfunding platforms, backers, and creators of a crowdfunding campaign. The theory suggests that by aligning with stakeholders' values, campaigns can build trust and loyalty which are good qualities to have when wanting people to fund your campaign. In correlation with the research question, stakeholder theory is relevant because it could explain how sustainability mentions in crowdfunding can resonate with environmentally conscious backers.

Since the study is on reward-based crowdfunding, the investors usually get the product or a service for the investment that they made if the campaign succeeds. This means that all backers for the campaigns are direct stakeholders as they will be the end consumer of the product. If the potential backer has an interest in mitigating their impact on the environment, then they will

only invest in crowdfunding campaigns which align with their interests.

More importantly there is already existing literature on crowdfunding success and stakeholder theory. A study done in 2024 examined how aligning with stakeholder interests does in fact contribute to crowdfunding success. Backers are described as holding power, legitimacy, and urgency meaning that their support in a campaign is crucial, the study suggests that crowdfunding relies especially on trust which can be built up by aligning with their interests. (Maraglino Misciagna, 2024). As mentioned previously with the growing interest in sustainability for the public we can assume that sustainable campaigns would have a better chance of success.

Misciagna (2024) also mentions the importance of aligning with other stakeholders, as they can also impact the success of crowdfunding campaigns, specifically platform operators and policymakers can shape the outcomes. Platform operators (in this case Kickstarter) influence a campaigns visibility and credibility; sustainability campaigns may outperform others due to decisions by Kickstarter who may wish to align more with sustainability. This also plays in hand with policy makers and regulations that are being implemented across the EU, as the EU is one of the strictest when it comes to environmental regulation. (ING, 2023) The combined influence of all stakeholders could create a favourable environment for sustainability campaigns. (Valančienė & Jegelevičiūtė, 2014)

2.4 Hypotheses

Based on these theories and prior studies, we can develop the following hypothesis:

H1: A higher frequency of sustainability-related mentions in a crowdfunding campaign is positively related to funding success.

3. METHODOLOGY AND DATA

This study adopts a quantitative research approach using regression analysis to examine the relationship between sustainability mentions and crowdfunding success. The research is based on both primary and secondary data; the secondary data was collected from a dataset created by WebRobots. WebRobots is a web crawling platform that uses AI and Machine learning to acquire data that would otherwise be hard to find. They have datasets on Kickstarter campaigns going back to 2014 and as recent as 2025. This is very helpful in collecting data as Kickstarter hides campaigns which are failing, with their algorithm. The dataset will allow us to easily view historical data on campaign funding and filter for category, year, and region. After applying the necessary filters, we have identified a total of 481 Kickstarter campaigns for our analysis. The Kickstarter dataset was used to filter and identify crowdfunding campaigns that aligned with the research focus, specifically, campaigns which are in the technology category, launched in 2024, and based in Europe. Selecting data from January 1st, 2024, to December 31st, 2024, gives us more recent and relevant data and distinguishes this study from earlier research, such as Barone (2025). Selecting 2024 as the focus year is also done due to the post-pandemic market stability as 2024 represents a more stabilized economy. (Gama, Emanuel-Correia, & Duarte, 2023). Our focus on the European region rather than a global scope is because sustainability expectations vary across regions. This applies to both creators and backers, as European regulations are stricter and public opinion on sustainability in Europe is generally higher than that of other

regions. This regional focus allows for a more precise analysis while accounting for cultural differences. (ING, 2023).

Both the main research question and sub research question analyse the mentions of sustainability-related keywords within campaign descriptions, so we need to develop a web scraping script to acquire this data. From the filtered dataset, campaign URLs were extracted, and a Python script was developed to scrape the content from each individual URL, providing the necessary data for subsequent keyword analysis.

3.1 Data Analysis

For the main research question a logistic regression approach is applied to examine the role of sustainability mentions in crowdfunding success. This method assesses whether the inclusion of sustainability-related keywords increases the likelihood of a campaign achieving or exceeding its funding goal. Furthermore, the odds ratio is also calculated to provide a measure of how much sustainability mentions impact the odds of success, using the formula:

$$\text{Odds ratio} = e^{\text{coefficient}}$$

The sub-research question examines the relationship between sustainability mentions and overfunding in crowdfunding campaigns. Since the dependent variable—percentage of project funded—is continuous, a multiple linear regression model will be used to analyse the relationship. Two separate regression models will be developed, one analysing all campaigns and their relationship with sustainability, the other being only successful campaigns (campaigns that have $\geq 100\%$ of the funding goal). This approach allows for direct comparison of how sustainability influences overfunding and also functions as a robustness check.

Two variables are log-transformed for the multiple linear regression model, namely, percentage of project funded and funding goal. This is done due to the extreme variation within the data. Logging these variables allows for the examination of the impact of sustainability mentions (the frequency of sustainability-related keywords in the campaign description) on crowdfunding success (measured as the percentage of the goal raised), while controlling for other factors that could influence funding outcomes. These variables are not log-transformed for the logistic regression as it would make the model unfit.

Logistic regression model would look like this:

$$\log(\text{Probability of success} / \text{Probability of fail}) = \beta_0 + \beta_1 (\text{Sustainability Mentions}) + \beta_2 (\text{Funding Goal}) + \beta_3 (\text{Campaign duration}) + \beta_4 (\text{Past campaigns launched}) + \epsilon$$

Multiple linear regression model would look like this:

$$\log(Y) = \beta_0 + \beta_1 (\text{Sustainability Mentions}) + \beta_2 \log(\text{Funding Goal}) + \beta_3 (\text{Campaign duration}) + \beta_4 (\text{Past campaigns launched}) + \epsilon$$

To assess if the logistic regression model was valid, several diagnostic tests will be conducted, including The Hosmer-Lemeshow goodness-of-fit test, variance inflation factors (VIFs), classification accuracy, and the receiver operating characteristic (ROC) curve.

To account for potential heteroskedasticity in the multiple linear regression model, HC1 robust standard errors were applied to ensure the coefficient estimates are unbiased. Additionally, the Durbin-Watson test will be done for

autocorrelation, and the Breusch-Pagan and White tests for heteroskedasticity.

3.1.1 Variables and measurements

In this research, crowdfunding success is examined using two distinct approaches. The main study will use success as a dummy variable, where if a campaign has reached its funding goal it would be 1, otherwise 0. In the other, the dependent variable is success but measured as a percentage of the funding goal achieved. This number is provided in the dataset as “percent funded” and can also be calculated by the following equation: $(\text{Amount Raised} / \text{Funding goal}) \times 100$.

The independent variable is sustainability mentions, this is measured by the number of times environmental sustainability-related keywords appear in the campaign description. Following are the keywords which will be searched for: Sustainability, Sustainable, Ecological, Eco-Efficient, Eco-Effective, Eco-Design, Eco-Friendly, Green, Recycle, Recyclable, Renewable, Environmental, Environmentally Friendly, Ecology, Circular Economy, Carbon-Neutral, Carbon Footprint, Upcycled, Biodegradable, Compostable, Organic, Zero Waste, Climate Change

Existing research has analysed the impact of sustainability on equity based crowdfunding success through text analysis by searching for words that are synonymous with “sustainable”. (Vismara, 2017). This study expands on the list of keywords to include additional terms that capture a wider range of sustainability-related keywords.

3.1.2 Control variables

The control variables chosen are funding goal, campaign duration (in days), and the number of past campaigns launched by the creator. The reasoning behind this is that these are the most likely factors to have an influence on crowdfunding success. The motivation behind choosing these control variables is based on a 2022 literature review in which the determinants of crowdfunding success were examined. From this literature review, funding goal and campaign duration were the two most researched project characteristics with both generally having a negative impact on crowdfunding success. (Deng et al 2022) However, another important factor influencing crowdfunding success is the quality of the campaign creator. One common way to approximate creator quality is by considering their previous experience with crowdfunding. According to research, prior crowdfunding experience has been shown to positively influence campaign success (Siering & Koch, 2015). These control variables are also seen in similar research such as Barone (2025).

4. RESULTS

4.1 Summary statistics

In Table 1, we report the descriptive statistics for the dependent, independent and control variables. The average funding percentage of technology crowdfunding campaigns in Europe in 2024 was 562.95%, though extreme outliers push the maximum to 31,984% and the standard deviation is high at 2841.13%. the binary success rate indicates that only 31% of the 481 campaigns successfully meet their funding goal. Sustainability mentions average 4.62 per campaign, furthermore, we analysed the average number of sustainability mentions per campaign, excluding cases where sustainability was absent, resulted in an average of 4.64 mentions. The largest

disparity is within funding goal, ranging from \$5,000,000 to \$10. Due to severe skewness in both the “percentage funded” and “funding goal” variables, a log-transformation was applied for a better model fit and clearer inference.

Table 1 - Descriptive statistics

Variables	Mean	Std. Dev	Min	Max
Percentage funded (%)	562.95	2841.13	0	31,984
Success (binary)	0.31	0.46	0	1
Sustainability mentions	4.62	7.60	0	69
Number of campaigns launched by creator	1.22	1.59	1	13
Funding goal (\$)	45,136.3	280,603.57	10	5,000,000
Campaign duration (in days)	34.54	13.56	1	60
Avg. Sustainability mentions (excl. 0)	4.64	8.47	1	69
Observations	481			

4.2 Correlation

In Table 2, we report the correlation matrix between all variables. This is done to help indicate whether multicollinearity is occurring which can impact our inferences from our regression models. The results show generally low correlations between predictor variables suggesting that multicollinearity is not a major concern in the models. The strongest correlation is past campaigns and success with a coefficient of 0.33. the matrix also suggests that sustainability has a positive but weak correlation on success and percent funded. Funding goal and Number of campaign days both have a negative correlation on the dependent variables.

Table 2 – Correlation matrix

	1	2	3	4	5	6
1. success	1					
2.goal	-0.08	1				
3.% funded	0.29	-0.03	1			
4.# of sustainability mentions	0.17	-0.02	0.21	1		
5.# of past campaigns	0.33	-0.02	0.28	0.02	1	
6.Campaign days	-0.32	0.03	-0.19	-0.08	-0.3	1

4.3 Regression

4.3.1 Regression results of funding success

Table 3A presents the logistic regression model assessing which factors influence campaign success (binary outcome: success/failure). The number of sustainability mentions has a positive coefficient (0.0586) and is statistically significant ($p = 0.002$). Past campaigns launched has a higher positive coefficient (0.2869, $p < 0.001$), suggesting a stronger influence. Both funding goal and campaign duration have negative coefficients and are also highly significant ($p < 0.01$), reflecting an inverse relationship. The model's Pseudo $R^2 = 0.2044$ indicates moderate explanatory power, which is standard in studies on human behaviour (Ozili, 2023). The Hosmer-Lemeshow test ($\chi^2 = 5.0566$, $p = 0.82934$) suggests a good model fit (see Appendix 1).

Table 3A also builds on the logistic regression by converting the coefficients to odds ratios, which indicate how each predictor affects the likelihood of campaign success. A value greater than 1 suggests an increased likelihood, whereas a value below 1 indicates a decreased likelihood of success. For clarity, the odds ratio is converted to a percentage changes.

The number of sustainability mentions has an odds ratio of 1.0603, meaning that each additional sustainability-related keyword mention is associated with a 6.03% increase in the odds of success. From all variables the number of past campaigns launched showed the strongest influence, with an odds ratio of 1.3323, translating to a 33.23% increase in the odds of success per additional prior campaign. This suggests that creator experience has a significant impact on a project's success.

Campaign duration and funding goal both indicate a negative effect with the likelihood of success. While funding goal has only a slight negative effect, we can see from Table 1 that funding goal had extreme variation. This means that small effects can accumulate significantly across campaigns. For example, an increase of \$10,000 in the funding goal is associated to a 15% reduction in the odds of campaign success.

To contextualize our findings, we can calculate the expected impact sustainability would have on technology campaigns in Kickstarter within Europe. From our descriptive statistics (Table 1), we can calculate the odds of success from our sample. The mean of success was 0.31, using the odds formula ($p / (1 - p)$) this gives us the baseline odds of success to be 0.449. In practical terms, this means that for every 1 campaign that succeeds, approximately 2.23 campaigns fail or conversely, for every 1 failure, 0.449 succeed. Incorporating the findings, which suggests a 6.03% increase in odds per sustainability-related keyword, a single mention would increase the odds of success from 0.449 to 0.475 (0.449×1.06). we can also do a similar calculation with Kickstarter statistics as the average success rate for tech campaigns across all regions and years is 24.23%, this corresponds to odds of 0.319, this suggests a higher likelihood of success within our dataset. (Kickstarter, 2025).

4.3.2 Regression results of overfunding

Table 3B presents the multiple linear regression results, for easy comparison both results are put into the same table as one model measured the effect on all campaigns whereas the other measured only on successful campaigns. Both models have relatively similar results with the number of sustainability mentions showing a positive effect on total funding in both models but are more influential amongst all campaigns (Coeff = 0.024) than when analysing only successful campaigns

(Coeff = 0.016). This indicates that sustainability mentions play a strong role in attracting initial funding but has a slightly weaker impact on overfunding. The dependent variable of funding as a percentage and the control variable of funding goal are both log-transformed to account for variance. Thus, the sustainability coefficients can be interpreted as: each additional sustainability related keyword added in the campaign is associated with a 2.4% increase in percent funded. For clarity if a campaign was expected to reach 50% of its funding goal, one additional sustainability keyword would increase that to 51.2% as the coefficient reflects the percentage change in % funded, not percentage points. Past campaign experience strongly affects funding, with a much greater impact on all campaigns (Coeff = 0.075) compared to only successful campaigns (Coeff = 0.026). Funding goal has a slight negative effect on funding, reducing contribution more in all campaigns than in successful ones. It is also worth mentioning that the coefficient for funding goal is interpreted differently due to it being log-transformed. The funding goal coefficient of -0.495 indicates that a 1% increase in funding goal is associated with a 0.495% decrease in percent funded across all campaigns. Campaign duration shows a small negative effect on percent funded with the coefficients of -0.014 for all campaigns and -0.004 for only successful campaigns. However, the effect is statistically insignificant in the successful-only model ($p > 0.1$) suggesting it does not impact percent funded once a campaign is successful. Finally, the adjusted R^2 values (0.381 for all campaigns, 0.292 for successful ones) indicate a moderate level of explained variability.

Table 3 – Regression models

Table 3A: Logistic regression (success as a dummy variable)			
Variables	Coefficient	Odds ratio	Effect sizes (%)
(Constant)	-0.066	0.936	-6.39%
# of Sustainability mentions	0.059*	1.060	+6.03%
# of past campaigns	0.287*	1.332	+33.23%
Goal	-1.49e-05*	0.999	-0.0015%
Campaign days	-0.039*	0.961	-3.87%
Pseudo R^2	0.2044		
Observations	481		
Note: Significance level: * $p < 0.01$			

Table 3B: Multiple linear regression (% funded)		
Variables	Coefficient (all campaigns)	Coefficient (successful campaigns only)
(Constant)	3.25*	3.18*
# of Sustainability mentions	0.024*	0.016*

# of past campaigns	0.075*	0.026*
Log (Goal)	-0.495*	-0.174*
Campaign days	-0.014*	-0.004
Adjusted R Square	0.381	0.292
Observations	481	148

Note: Significance level: * $p < 0.01$, the dependent variable in this regression is log-transformed (log of percentage funded)

4.3.3 Evaluating model performance

The logistic regression model was tested for goodness-of-fit, multicollinearity, and predictive accuracy; the full results are presented in Appendix 1 and 2.

The Hosmer-Lemeshow test resulted in $\chi^2 = 5.0566$, $p = 0.829$. This indicates a strong model fit, as the p-value shows no significant deviation between observed and predicted values. Variance Inflation Factors (VIFs) were calculated with values ranging from 1.001 to 1.127, this confirms low multicollinearity this indication is also seen in the correlation matrix in Table 2. The model achieved a classification accuracy of 76.51%, showing that it is effective at identifying which campaigns are likely to succeed or fail.

The Receiver Operating Characteristic (ROC) Curve provides insight into the classification performance of the model. The curve plots the True Positive Rate against the False Positive Rate at different threshold levels. The AUC (Area Under the Curve) = 0.82, indicating strong model effectiveness. Figure 1 illustrates the ROC curve.

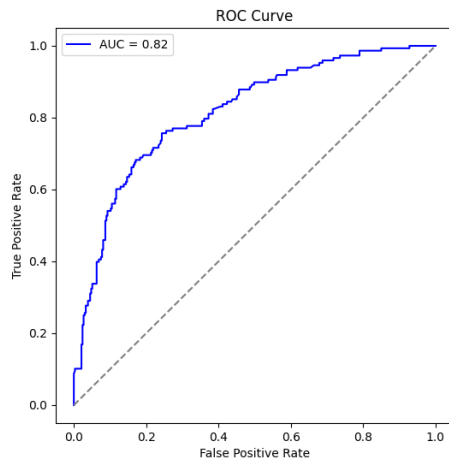


Figure 1 - ROC Curve

The multiple linear regression models that test the sub-research question were tested for overall fit, normality, heteroskedasticity, and multicollinearity; the full results are presented in Appendix 3 and Appendix 4. Normality of residuals was tested using the Shapiro-Wilk test ($W = 0.965$, $p = 0.009$) and the Shapiro-Wilk test for the successful-only model ($W = 0.973$, $p = 0.0055$); both suggest that residuals deviate slightly from normality, though the deviation is not considered severe due to the sample sizes. Heteroskedasticity was assessed using the Breusch-Pagan test and the White test, both of which indicate the presence of heteroskedasticity ($p < 0.001$); however, the HC1 (Heteroskedasticity-Consistent

Standard Errors Type 1) adjustment was performed to ensure that the statistical conclusions remain valid. Finally, Variance Inflation Factors (VIFs) ranged from 1.007 to 1.332, confirming low multicollinearity.

5. DISCUSSION

The goal of this research was to examine how sustainability influences the success of technology crowdfunding campaigns in Europe. Specifically, it aimed to assess whether sustainability mentions have an impact on a campaign's likelihood of success. Using a logistic regression model on our dataset of 481 Kickstarter campaigns, we provide insights into how sustainability influences crowdfunding outcomes.

The findings of this study indicate that sustainability mentions significantly influence crowdfunding success. The logistic regression model demonstrates that sustainability mentions increase the likelihood of success, with each additional mention raising the odds of success by 6.03%. Similar research also finds that sustainability disclosure is positively associated with campaign success. Although the interpretation differs due to model choice. (Barone, 2025).

We also calculated the impact that a single sustainability mention would have on the success odds of our sample, increasing them from 0.449 to 0.475. Now this may seem insignificant, however, the descriptive statistics (Table 1) also reveal that campaigns which incorporate sustainability typically include an average of 4.64 mentions of sustainability-related key words. Given that each mention increases the odds of success by 6.03%, an average sustainability-focused campaign would approximately increase its likelihood of success by 27.9% (4.64×6.03) compared to campaigns that do not reference sustainability.

We can also look at the odds for technology campaigns overall, across all countries and years on Kickstarter. According to Kickstarter (2025) the average success rate for tech campaigns is 24.23%, which gives us odds of 0.319 by using the odds formula. This is lower than what we found from our findings, this could be due to campaigns performing better in Europe or 2024 being a strong year for Kickstarter campaigns. If we apply our 6.03% increase from sustainability mentions to the 0.319 odds, it will increase to 0.338. This is not a huge jump but still could improve the chances a campaign would succeed, which in a category such as technology is amongst the lowest.

The findings are in line with consumer behaviour theory, as sustainability disclosure may influence value-driven preferences among backers, making them more willing to support campaigns that reflect their ethical viewpoints. This aligns with Cecere, Le Guel, & Rochelandet (2017), who found that backers often contribute out of altruistic motivations or a desire to support a larger cause.

From a signalling perspective, sustainability messaging could serve as campaign credibility, which is especially important in high-risk categories like technology, in this instance mentions of sustainability would reduce the information asymmetry between the potential backer and creator by creating trust. This is supported by Cowling et al. (2006) and Colombo & Grilli (2005), who argue that signals play a key role in reducing uncertainty in investment decisions, especially reward-based crowdfunding where formal disclosure requirements are limited (Cascino et al., 2019; Escudero et al., 2025).

Stakeholder theory also provides a useful explanation for the positive association that we see with sustainability mentions in campaign success. As public concern about climate change and the environment continues to grow, then these issues are

influencing purchasing decisions. As a result, campaigns that resonate more with backers' values would likely attract more funding. However, stakeholder theory also applies to the broader crowdfunding ecosystem including the platform itself. In this instance Kickstarter could be pushing sustainability-oriented campaigns with their algorithm to reach more backers. The reason behind this could be that Kickstarter like many other companies would want to align their brand with the growing public concern for environmental and social responsibility. Maraglino Misciagna (2024) also emphasizes the influence of other stakeholders such as platform operators and policymakers, which supports the idea that Kickstarter itself may be amplifying sustainability-focused campaigns to align with broader social expectations.

The sub-research question was "Does the mention of sustainability have a positive relationship with overfunding in crowdfunding campaigns that have already met their funding goal?" and was analysed using multiple linear regression illustrated in Table 3B. The key difference between the main and sub research question was the dependent variable being funding goal as a percentage rather than a binary success variable. Two regression models were calculated and compared, one with only successful campaigns and the other with both successful and failed campaigns.

The findings from the multiple linear regressions further support the main research as both coefficients for sustainability mentions were positive. However, the coefficient for sustainability mentions in all campaigns (Coeff = 0.024) was found to be higher than that of only successful ones (Coeff = 0.016). This implies that sustainability mentions have a stronger effect on unsuccessful campaigns and is less impactful once a campaign has surpassed its funding goal. The coefficient indicates that each additional sustainability related keyword added in the campaign is associated with a 2.4% increase in percent funded and a 1.6% increase for only successful campaigns. These findings are in line with similar papers (Barone, 2025).

There is not much research done on overfunding in reward-based crowdfunding to explain the results, however, Pinkow (2022) found that factors that typically influence project funding success (such as frequent updates and social media use) do not contribute to explain project overfunding. He argues that different motivations drive continued contributions which can support our findings that sustainability mentions have a positive effect after success.

Overall, the analysis provided results that would prove sustainability mentions do have a positive relationship with overfunding once they have already met their funding goal.

In our regression models we used control variables to isolate the effect of sustainability mentions. The strongest predictor on both success and overfunding was found to be the number of past campaigns launched by the creator. This control variable is used to account for creator quality as prior experience is likely to influence a campaign's outcome. This was also reflected in the results with all three models showing positive and significant effects. The logistic regression indicated an odds ratio of 1.332, suggesting that each additional prior campaign launched increases the odds of success by 33.2%. The linear models showed coefficients of 0.075 and 0.026, corresponding to a 7.5% increase in funding percentage across all campaigns and a 2.6% increase among only successful campaigns. The drop in coefficients is seen amongst all variables in the model restricted to only successful campaigns, an explanation for this could be that once a campaign has reached its goal the funding slows down and would link with

the consumer behaviour theory that backers tend to fund campaigns for altruistic reasons meaning they would be more inclined to financially contribute to a project which has yet to reach its goal, (Cecere, Le Guel, & Rochelandet, 2017).

The overall positive and significant effect of past campaigns could be due to the idea that reputation builds trust and with creators gaining more experience they can learn from their previous mistakes and improve for the next project. Existing research by Zheng, Liu, and Jiang (2022) found that creators who have launched at least two crowdfunding campaigns have a higher success rate with the impact being even greater with each additional campaign the creator has launched. This paper specifically highlights that experienced creators refine their strategies over time which could explain the significant impact on success rate and funding percentage.

Finally, funding goal and campaign duration were examined on their impact on success and overfunding. Both variables indicated a negative effect on their respective dependent variables. Funding goal was seen to have a very small negative effect, indicating that higher goals reduce the odds of success and the percentage funded. Although the effect is small, funding goal has much higher variance than other variables, as a \$1,000 increase in goal is more likely than a 1,000-sustainability-mention increase. Higher goals could indicate lower achievability, which is very important in reward-based crowdfunding, as backers only achieve the reward once the project is funded.

Campaign duration also had a negative effect on the logistic model and the multiple linear regression on all campaigns, however, was not deemed significant on the model for successful only campaigns. From this we can interpret that longer campaigns tend to perform worse and according to outstanding research this occurs because backers lose interest. (Crowdlift, 2024).

6. CONCLUSION

The main research question of this study was, "How does sustainability influence the success of technology crowdfunding campaigns in Europe?". The results from the study provide strong evidence that sustainability mentions positively affect campaign success. Using logistic regression, we discovered that each sustainability-related keyword increased the odds of success by 6.03%. This result would lead us to accept our hypothesis and supports broader theories of consumer behaviour, signalling, and stakeholder engagement with how they impact crowdfunding success.

To explore the relationship between sustainability and overfunding the following sub-research question was formulated: "Does the mention of sustainability have a positive relationship with overfunding in crowdfunding campaigns that have already met their funding goal?" This was assessed using multiple linear regression models which analysed percentage funded as a continuous variable rather than a dummy variable. These models also served as a robustness check for the main research question. The findings revealed a positive and significant effect; however, the impact was slightly weaker among already successful campaigns. This suggests that sustainability mentions still have an impact on overfunding but has a stronger influence before a project has reached its funding goal.

Control variables such as number of prior campaigns launched by creator, funding goal, and campaign duration helped isolate the effect of sustainability. From these control variables prior campaigns emerged as a strong predictor of project

performance, likely due to increased creator trust and learning effects. Higher funding goal and longer durations were negatively associated with campaign outcomes, suggesting that achievability and urgency are critical for backer engagement.

6.1 Practical & Theoretical implications

The results from this study give valuable guidance for technology campaign creators, backers, and platform operators. For campaign creators, including sustainability-related language has shown to increase the likelihood of a campaign's success and improves funding beyond the target. This gives creators an insight into how focusing on sustainability can be beneficial for the campaign and that they should highlight potential sustainability practices or environmental goals in ways that are visible to potential backers. The findings also suggest that creators should not choose longer campaign durations and should focus on setting a realistic funding goal, as higher funding goals are associated with less funding and lower success odds. The findings are also beneficial for backers as it provides an insight into what factors influence success in a crowdfunding project. Kickstarter uses an all-or-nothing model which means backers only receive the reward once the project has reached its funding goal, so understanding these indicators can influence their decision to invest. Particularly, the strong effect that past campaigns launched by the creator has shown and the positive impact of sustainability-related mentions can help backers assess which projects are more likely to succeed. Kickstarter can use the findings in this research to promote campaigns that highlight sustainability or experienced creators with their algorithms. Kickstarter could also inform new creators with this information to potentially boost success rates, which in the technology category is notoriously low.

In terms of theoretical implications, this research contributes to several existing theoretical frameworks. It supports consumer behaviour theory and the role of value-driven decision making. Backers appear more likely to support campaigns that align with their ethical values, as suggested by Cecere, Le Guel, and Rochelandet (2017). The findings also align with signalling theory, showing that sustainability disclosure reduces information asymmetry between creators and backers. Prior research, such as Escudero, Anglin, Allison, and Wolfe (2025), highlights that well-incorporated signals are influential in a campaign's success. Lastly, the study contributes to stakeholder theory by suggesting that not only customers but also platforms may influence campaign outcomes, as discussed by Maraglino Misciagna (2024).

There is little research done on "post-success momentum" in crowdfunding and what specifically impacts overfunding. The common assumption is that contributions continue once a campaign reaches its funding goal. But our findings challenge that assumption and align more with the research of Pinkow (2022), who found that common factors do not contribute to explain project overfunding.

6.2 Limitations & Future research

This study provides useful insights, but several limitations must be acknowledged. The dataset was limited to 481 technology campaigns on Kickstarter within Europe. This restricts the generalizability of the findings to other regions, such as the United States, where the crowdfunding market is dominant. (Statista, 2024). Different categories can also have different influences. The focus on sustainability mentions is on keyword frequency; this could be problematic, as it does not capture the

authenticity or context of the sustainability mentions, potentially leading to measurement bias. Lastly, control variables were included in the regression analysis, but unobserved confounding factors may also have underlying effects on the dependent variables.

Building on these limitations, future research could consider focusing on different categories of crowdfunding rather than only technology, there is little research done on the individual categories of crowdfunding and the effect of sustainability on their success. It could be interesting to see if there are differences in how sustainability effect various categories. Future studies could implement natural language processing (NLP) or machine learning algorithms to assess the tone and context of sustainability-related keywords beyond just simple keyword count. Lastly, more work is needed to understand what drives overfunding and more specifically why funding stagnates once the project goal has been reached.

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8. REFERENCES

1. Bala Subrahmanya, M. H. (2022). Competitiveness of high-tech start-ups and entrepreneurial ecosystems: An overview. **JGBC*, 17*, 1–10. <https://doi.org/10.1007/s42943-022-00056-w>
2. Baldissarro, G., Farinelli, E., Iazzolino, G., Maiolini, R., & Morea, D. (2025). The link between crowdfunding and sustainability: A literature review in the field of entrepreneurs and academic spinoffs. **Finance Research Letters*, 77*, 107097. <https://doi.org/10.1016/j.frl.2025.107097>
3. Barone, S. (2025). Can sustainability disclosure affect crowdfunding success? **Business Strategy and the Environment*. <https://onlinelibrary.wiley.com/doi/10.1002/bse.70010>
4. Böckel, A., Hörisch, J., & Tenner, I. (2021). A systematic literature review of crowdfunding and sustainability: Highlighting what really matters. **Management Review Quarterly*, 71*, 433–453. <https://doi.org/10.1007/s11301-020-00189-3>
5. Bürer, M. J., & Wüstenhagen, R. (2009). Which renewable energy policy is a venture capitalist's best friend? Empirical evidence from a survey of international cleantech investors. *Energy Policy*, 37(12), 4997–5006. <https://doi.org/10.1016/j.enpol.2009.06.071>
6. Calic, G., & Mosakowski, E. (2016). Kicking off social entrepreneurship: How a sustainability orientation influences crowdfunding success. **Journal of Management Studies*, 53*(5), 739–767. <https://onlinelibrary.wiley.com/doi/abs/10.1111/joms.12201>
7. Cascino, S., Correia, M., & Tamayo, A. (2019). Does consumer protection enhance disclosure credibility in reward crowdfunding? **Journal of Accounting Research*, 57*(5), 1247–1302. <https://www.researchgate.net/publication/324820071>
8. Cecere, G., Le Guel, F., & Rochelandet, F. (2017). Crowdfunding and social influence: An empirical investigation. **Applied Economics*. <https://www.researchgate.net/publication/318115189>

9. Colombo, M., & Grilli, L. (2005). Founders' human capital and the growth of new technology-based firms: A competence-based view. *Research Policy*, 34*(6), 795–816. <https://doi.org/10.1016/j.respol.2005.03.010>
10. Cowling, M., Fryges, H., Licht, G., & Murray, G. (2009). Survival of new technology-based firms in the UK and Germany. *Frontiers of Entrepreneurship Research*, 26*(22), 1–11. <https://ssrn.com/abstract=1331047>
11. CrowdLift. (2025). *How long do crowdfunding campaigns last? * <https://crowdlift.ing/crowdfunding-latest/how-long-do-crowdfunding-campaigns-last/>
12. Cumming, D., Meoli, M., Rossi, A., & Vismara, S. (2024). ESG and crowdfunding platforms. *Journal of Business Venturing*, 39*(1), 106362. <https://doi.org/10.1016/j.jbusvent.2023.106362>
13. Deng, L., Ye, Q., Xu, D., et al. (2022). A literature review and integrated framework for the determinants of crowdfunding success. *Financial Innovation*, 8*, 41. <https://doi.org/10.1186/s40854-022-00345-6>
14. Dzene, E. (2019). From the crowd to the market: The case of successful crowdfunding campaigns for technology products. *Stockholm School of Economics in Riga*. * https://www.sseriga.edu/sites/default/files/2020-05/6Paper_Dzene.pdf
15. Escudero, S. B., Anglin, A. H., Allison, T. H., & Wolfe, M. T. (2025). Crowdfunding: A theory-centered review and roadmap of the multidisciplinary literature. *SAGE Journals*. * <https://journals.sagepub.com/doi/pdf/10.1177/01492063251328267>
16. Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Pitman Publishing.
17. Gai, L., Algeri, C., Ielasi, F., & Manganiello, M. (2025). Sustainability-oriented equity crowdfunding: The role of proponents, investors, and sustainable development. *Sustainability*, 17*(5), 2188. <https://doi.org/10.3390/su17052188>
18. Gama, A. P. M., Emanuel-Correia, R., & Duarte, F. D. (2023). The COVID-19 impact on crowdfunding performance: Evidence from a peer-to-peer lending platform. *Applied Economics Letters*, 31*(13), 1207–1211. <https://doi.org/10.1080/13504851.2023.2178616>
19. Grand View Research. (2024). *Crowdfunding market report*. * <https://www.grandviewresearch.com/industry-analysis/crowdfunding-market-report>
20. ING. (2023). *How the US is slowly catching up with Europe on ESG and climate policies*. * <https://www.ing.com/Newsroom/News/How-the-US-is-slowly-catching-up-with-Europe-on-ESG-and-climate-policies.htm>
21. Kickstarter. (2025). *Kickstarter stats*. * <https://www.kickstarter.com/help/stats>
22. McKinsey & Company. (2020). *Sustainability in packaging: Inside the minds of US consumers*. * <https://www.mckinsey.com/industries/packaging-and-paper/our-insights/sustainability-in-packaging-inside-the-minds-of-us-consumers>
23. Misciagna, M. M. (2024). The role of stakeholders in crowdfunding success: Insights from a systematic literature review. *Proceedings of the 25th European Conference on Knowledge Management*, 25*(1), 2441. <https://doi.org/10.34190/eckm.25.1.2441>
24. Nicerobot. (n.d.). *Kickstarter datasets*. * Web Scraping Service. <https://webrobots.io/kickstarter-datasets>
25. Nielsen, K. R., & Binder, J. (2019). *Reward-based crowdfunding and sustainability: The role of values in mobilizing backers in crowdfunding campaigns*. Paper presented at the 6th Annual World Open Innovation Conference, Rome, Italy. kristian.roed.nielsen.et.al.rewardbased.crowdfunding.2019.conference.paper.pdf
26. Ozili, P. K. (2023). The acceptable R-square in empirical modelling for social science research. *Munich Personal RePEc Archive*. * https://mpra.ub.uni-muenchen.de/115769/1/MPRA_paper_115769.pdf
27. PDI Technologies. (2024). *Report shows consumers want sustainable products*. * <https://pditechnologies.com/resources/report/2023-business-sustainability-index>
28. Pinkow, F. (2022). The impact of common success factors on overfunding in reward-based crowdfunding: An explorative study and avenues for future research. *Journal of Entrepreneurship, Management and Innovation*, 18*(1), 131–168. https://jemi.edu.pl/uploadedFiles/file/all-issues/vol18/issue1/JEMI_Vol18_Issue1_2022_Article5.pdf
29. Rodríguez-Garnica, G., Gutiérrez-Urtiaga, M., & Tribo, J. A. (2024). Signaling and herding in reward-based crowdfunding. *Small Business Economics*, 64, 889–916. <https://doi.org/10.1007/s11187-024-00933-z>
30. Siering, M., & Koch, J.-A. (2015). Crowdfunding success factors: The characteristics of successfully funded projects on crowdfunding platforms. <https://www.researchgate.net/publication/277016908>
31. Statista Research Department. (2024). *Leading crowdfunding countries globally in 2024*. * Statista. <https://www.statista.com/statistics/1078229/global-crowdfunding-volume-worldwide-by-country>
32. Steigenberger, N., Garz, M., & Cyron, T. (2024). Signaling theory in entrepreneurial fundraising and crowdfunding research. *Review of Political Economy*. * <https://www.tandfonline.com/doi/pdf/10.1080/00472778.2024.2412710>
33. Valančienė, L., & Jegelevičiūtė, S. (2014). Crowdfunding for creating value: Stakeholder approach. *Procedia - Social and Behavioral Sciences*, 156, 599–604. <https://doi.org/10.1016/j.sbspro.2014.11.248>
34. Vismara, S. (2017). Sustainability in equity crowdfunding. *Technological Forecasting and Social Change*, 125*, 15–27. <https://www.sciencedirect.com/science/article/abs/pii/S0040162517312118>
35. Vismara, S. (2019). *Sustainability in equity crowdfunding. Technological Forecasting and Social Change*, 141, 98–106. <https://doi.org/10.1016/j.techfore.2018.07.014>
36. Zheng, T., Liu, L., & Jiang, Y. (2022). The impact of serial creator's learning on their crowdfunding performance: A panel data analysis based on Indiegogo. In *WHICEB 2022 Proceedings** (Paper 58). Association for Information Systems. <https://aisel.aisnet.org/whiceb2022/58>

9. APPENDIX

Appendix 1 – Logistic regression testing

Metric	Value
Hosmer-Lemeshow Test (Chi²)	5.056
Hosmer-Lemeshow p-value	0.829
Classification accuracy	76.51%

Appendix 2 – Logistic regression VIF

Variable	VIF	Interpretation
Constant	10.116	High collinearity
Goal	1.001	Low collinearity
Past campaigns	1.006	Low collinearity
Sustainability mentions	1.096	Low collinearity
Campaign Duration (Days)	1.126	Low collinearity

Appendix 3 – Multiple linear regression testing

Test	Model (All Campaigns)	Model (Only Successful Campaigns)
Shapiro-Wilk test	0.965	0.973
Breusch-Pagan	p < 0.001	p < 0.001
White test	p < 0.001	p < 0.001
<i>Note: Robust errors (HCl) were used to address assumption violations.</i>		

Appendix 4 Multiple linear regression VIF

Variable	VIF (All Campaigns Model)	VIF (Successful-Only Model)
Log (Funding Goal)	1.229	1.224
Past campaigns	1.173	1.233
Sustainability mentions	1.007	1.036
Campaign Duration (Days)	1.200	1.332
<i>Note: All VIF values indicate no evidence of multicollinearity</i>		

Declaration of AI: this research has been assisted by AI in the following ways: Referencing, Grammar, and providing guidance in creating the web scraping script using python.