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Predicting Success Factors of Regional Revitalization Crowdfunding Projects Using Logistic Regression Analysis

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Abstract

This study quantitatively identifies desirable words linked to successful purchase-based crowdfunding for regional revitalization. Using 8,544 projects from five Japanese platforms — CAMPFIRE, Booster, ReadyFor, Makuake, and kibidango — we analyzed frequently used words and compared them with non-regional projects to explore differences in success factors. The findings offer insights for developing practical fundraising guidelines.

Keywords: Crowdfunding, Logistic regression analysis, Success factors.

1 Introduction

The primary objective of this study is to analyze the success factors of crowdfunding projects that address social issues using text mining techniques [1]. This research is motivated by the need for effective solutions to Japan's ongoing regional revitalization challenges, such as population decline, hollowing out of shopping districts, and underutilization of local resources — all of which fuel further economic stagnation. Sustainable revitalization methods are urgently needed, especially ones that require minimal financial resources.Among emerging solutions, the sharing economy [1] promotes "access over ownership" to improve resource efficiency, but its success depends on the availability of shareable resources and established systems — conditions often lacking in local areas.

On the other hand, crowdfunding can gather both local and external financial support for regional projects. In particular, reward-based crowdfunding has rapidly expanded in Japan, with funds raised increasing from 7.7 billion yen in early 2019 to 22.3 billion yen in early 2020. This model lowers psychological and financial barriers for contributors through non-monetary rewards and has been widely used since around 2011, especially for disaster recovery and promotional purposes.This study focuses on five Japanese crowdfunding platforms: CAMPFIRE, Booster, ReadyFor, Makuake, and kibidango, all of which support regional revitalization projects. Each platform has unique characteristics: CAMPFIRE covers a wide range of creative fields; Booster targets younger audiences through PARCO collaborations; ReadyFor specializes in social welfare and local campaigns; Makuake focuses on product testing and launches; and kibidango supports creators with prototypes and ideas. These platforms typically allow categorization and hashtagging, which facilitate the analysis of success factors.The study aims to develop a predictive model with about 70% accuracy to clarify the elements that lead to successful regional revitalization projects. The process involves five stages: applying text mining to identify

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project characteristics [2]; using descriptive statistics to detect influential factors and explanatory variables [3]; constructing decision tree models for explanatory power [4][5]; developing logistic regression models to validate predictive strength [6]; and finally, testing the usefulness of adjectives as explanatory variables [7][8]. A dataset of 10,000 randomly selected projects from major platforms was analyzed, revealing that success is influenced by frequent use of greetings, adjectives, verbs, punctuation, and comparative narratives between conventional and proposed solutions.This study also highlights the differences between regional revitalization and other project types, offering insights to refine success factor identification further. However, while the findings suggest important guidelines, replicating them does not ensure success. Crowdfunding, despite its growth, still sees an average success rate of only around 40%, and for first-time project creators, the rate drops to about 35%. This underlines the need for tailored support and better understanding of success factors to foster both regional economies and Japan's overall crowdfunding ecosystem.

2 Related Research

A growing body of research has been dedicated to investigating the factors contributing to the success of crowdfunding projects. Miura et al. regularly monitored major Japanese crowdfunding platforms such as Makuake and READYFOR, collecting data from 100 projects to analyze the determinants of crowdfunding success [9]. Employing decision tree analysis, their study identified key factors that influence project outcomes, achieving an accuracy rate of 83% in predicting success or failure. Based on this result, the study emphasized the importance of setting an appropriate target funding amount and actively promoting the project via social media channels.Similarly, Yazaki et al. conducted a study utilizing platform data to examine the determinants of successful fundraising, following a comparable approach to that of Miura et al. [10]. They used a Python-based web crawler to collect a dataset comprising 7,959 projects from CAMPFIRE and conducted a statistical analysis using multiple regression methods. Their analysis revealed that the target amount, the number of backers, and the average contribution per backer were statistically significant predictors of success, indicating that higher perceived project value enhances the likelihood of success. Additionally, the number of characters in project titles was found to be significant for both the number of backers and the achievement rate, suggesting that more descriptive and concrete project titles may contribute to success. Furthermore, the frequency of activity reports was found to be significantly related to total funds raised and the number of supporters, underscoring the importance of active public relations efforts and engagement with potential backers.Uchida et al. compared the determinants of successful fundraising between Japan and the United States using data provided by a cloud computing platform [11]. Their findings demonstrated that, in both countries, an increase in target funding amount and fundraising duration was associated with a lower probability of success, while active promotion enhanced the likelihood of achieving funding goals. Additionally, another study utilizing CAMPFIRE data identified multiple success patterns within crowdfunding projects and classified elements influencing price setting [12]. In this study, the dependent variable was defined as project success or failure, and the explanatory variables included: "target funding amount," "fundraising period," "number of rewards," "minimum reward price," "maximum reward price," "title length," "body text length," "presence of images or videos," "related URLs," and "whether the project was based in Tokyo" (a binary variable). The analysis suggested that higher target amounts were negatively associated with project success, while an increase in rewards, higher maximum reward prices, and the inclusion of images or videos were positively associated with

successful outcomes. Moreover, the minimum reward price and whether the project was based in Tokyo were found to have varying influences depending on the specific success pattern. Using logistic regression, the study reported an accuracy rate of 73% for predicting project outcomes.As illustrated by these preceding studies, significant progress has been made in identifying success factors for crowdfunding campaigns.

However, these studies primarily focus on major crowdfunding platforms and tend to overlook projects aimed specifically at regional revitalization. Furthermore, there has been limited research analyzing the differences in success factors between projects targeting regional revitalization and those that do not. Given that large-scale crowdfunding platforms typically handle a wide variety of projects, it is reasonable to assume that the success factors differ when the scope is narrowed to regionally-focused initiatives. Therefore, conducting dedicated analyses that target crowdfunding projects aimed at regional revitalization represents an important and underexplored area of research.

3 Methodology: Text Mining

3.1 Text Mining Using Text Mining Studio

This study employs text mining to analyze crowdfunding project descriptions, as part of constructing a predictive model for crowdfunding success (to be discussed in later sections). For text mining, we utilized Text Mining Studio (Version 5.2; hereafter referred to as TMS), a dedicated text analysis software. Unlike other text mining tools, TMS is noted for its high accuracy in Japanese word segmentation, which involves inserting spaces between words in a sentence [14]. This is achieved through the use of a proprietary dictionary that enables more accurate semantic segmentation.The analysis in this study focuses exclusively on the project descriptions among the various data fields available for each crowdfunding project. While previous studies, such as those analyzing approximately 8,000 projects on the CAMPFIRE platform, have examined large-scale data, this research focuses on a more localized sample: 110 projects conducted in the Chugoku region, hosted on the GoodMorning crowdfunding platform.

3.2 Analysis Procedure Using TMS

The analytical focus of this study is the GoodMorning platform, a crowdfunding service specialized in supporting individuals and organizations addressing social issues. As GoodMorning is dedicated to "social good" initiatives—activities and services that generate positive impacts on communities—it was deemed an appropriate subject for this research, which explores crowdfunding in the context of regional revitalization.We analyzed the project descriptions of 110 crowdfunding campaigns launched in the Chugoku region via GoodMorning. To identify factors associated with project success, the dataset was divided into two groups: 40 successful projects and 70 unsuccessful ones. The analysis began with a morphological parsing process, commonly referred to as wakachigaki, which involves inserting spaces between words to clarify sentence structure.Following segmentation, we conducted word frequency analysis and visualized keyword associations using a word network approach. Word frequency analysis quantifies and graphs the frequency of word occurrence and syntactic dependencies in the text. The word

network clusters semantically or syntactically related words, offering a visual representation of underlying themes in the project descriptions.

3.3 Word Frequency Analysis

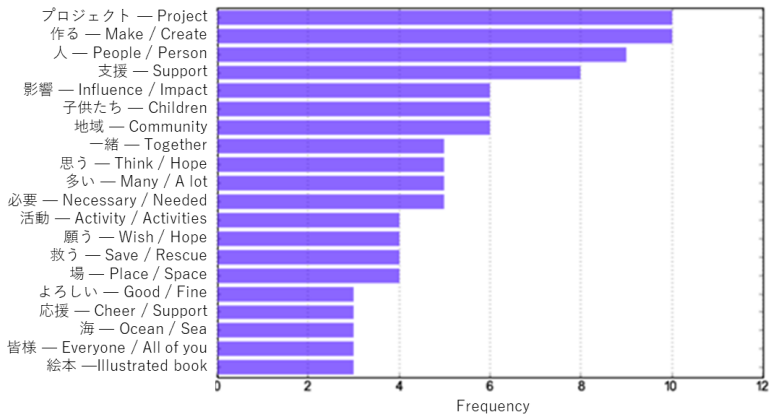

Figure 1: Word Frequency Analysis of Successful Projects.

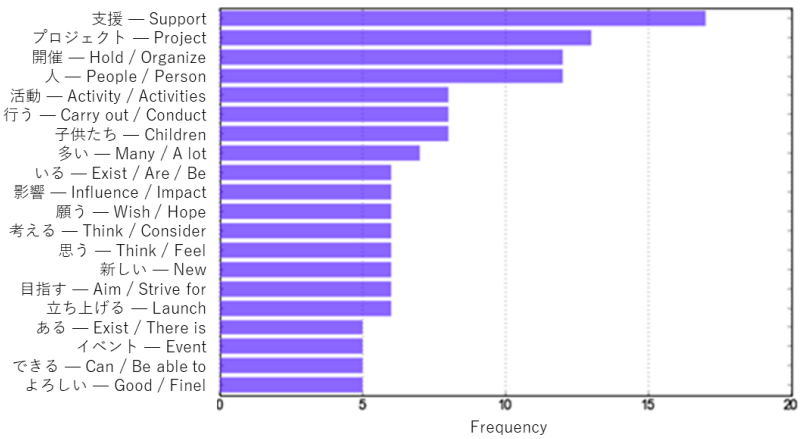

Figure 2: Word Frequency Analysis of Failed Projects.

The results of the word frequency analysis are presented in Figures 1 and 2. This analysis allowed us to identify commonly used terms across the dataset. Words such as "project," "support," "people," and "children" appeared frequently regardless of project outcome, though their rankings varied slightly between the successful and unsuccessful groups.However, one notable distinction emerged: the verb "tsukuru" (to make/create) appeared significantly more often in the descriptions of successful projects. Specifically, 10 out of 40 successful projects (25%) included the term "tsukuru," compared to only 5 out of 70 unsuccessful projects (approximately 7%). A chi-squared test with Yates' continuity correction yielded a p-value of .069. While the null hypothesis could not be rejected at the 0.05 significance level, the relatively low p-value suggests a potential association between the presence of the word "tsukuru" and project success.This result may be attributable to the ease with which concrete outputs such as systems or facilities can be visualized. For example, a project titled “Creating a Universal Design Sweet Potato Farm” pre-

sents a tangible goal, whereas a project titled “Promoting Universal Design” lacks the same immediacy or concrete impact. Clearly articulated plans may also contribute to increased engagement and trust from potential backers.If this hypothesis holds true, then project success or failure should not be determined solely by the length of the project description. To verify this, we examined the character counts of descriptions that included the term “tsukuru” across successful and unsuccessful projects. The average description length was 135.9 characters for successful projects and 119.2 characters for unsuccessful ones. A Welch's t-test revealed no significant difference ($p = .12$, one-tailed), indicating that the length of the description is not a contributing factor.Based on these results, we conclude that it is not the length of the text but rather the inclusion of terms like “tsukuru” that enhances the concreteness of the content, which in turn may influence project success. This finding supports our hypothesis regarding the importance of specificity in crowdfunding project descriptions.

4 Research Methodology: Logistic Regression Analysis

4.1 Research Subjects

In order to construct a predictive model for crowdfunding projects aimed at regional revitalization, this study analyzed project descriptions from five crowdfunding platforms: CAMPFIRE, Booster, ReadyFor, Makuake, and Kibidango. Specifically, we targeted 8,554 projects identified as related to regional revitalization and 37,721 projects unrelated to this purpose, all of which had concluded by June 30, 2024. The data were collected via web scraping techniques from the respective platforms.The classification of whether a project was related to regional revitalization was determined based on the following platform-specific criteria:

- CAMPFIRE: Projects categorized under "Community Development / Regional Revitalization."
- Booster: Projects categorized under "Community Development / Regional Revitalization."
- ReadyFor: Projects that include hashtags such as "region" or "society."
- Makuake: Projects that include the hashtag "region."
- Kibidango: Projects categorized as "Social Contribution."

4.2 CAMPFIRE

CAMPFIRE, operated by CAMPFIRE Inc., is one of Japan’s largest crowdfunding platforms. It serves as a fundraising venue for a wide range of users, including individuals, creators, companies, universities, nonprofit organizations, and local governments. CAMPFIRE’s mission is to “democratize funding, creating a world where anyone can raise their voice.”To date, the platform boasts a cumulative total of 69 billion yen in funds raised and 9.2 million supporters. Its hallmark feature is the diversity of its project categories, which range from technology, products, food and beverage, anime and manga, fashion, game and service development, business, art, community development, music, sports, and beauty.Additionally, one of the platform's distinctive traits is its risk-free challenge environment: fees are only incurred if the project meets its funding goal, making it easy for anyone to start a project without upfront financial burden.

4.3 Booster

Booster is a joint crowdfunding platform operated by CAMPFIRE Inc. and PARCO Co., Ltd., a commercial real estate company. The platform operates under the philosophy of “Delivering the future that doesn’t yet exist into your hands.”It covers various categories, including technology, food and beverage, anime and manga, and game/service development.One of Booster's major strengths lies in its partnership with Shibuya PARCO, offering a showroom where creators can display their products. This provides opportunities for test marketing and channel expansion, making it especially suitable for those seeking to refine and commercialize their ideas.

4.4 READYFOR

READYFOR, Japan’s first crowdfunding platform, is operated by READYFOR Inc. and is widely used by nonprofit organizations. It has a strong track record of hosting projects related to community development. The platform's philosophy is to “create a world where anyone can realize what they want to do.”As of today, READYFOR has raised approximately 10.8 billion yen from about 680,000 supporters.A distinctive feature of READYFOR is that the platform serves not only as a fundraising tool but also as a means for PR and outreach activities. Supporters can remain engaged even after the fundraising concludes, thanks to the platform’s focus on post-project communication and relationship-building

4.5 Makuake

Makuake is operated by Makuake Inc., which originated as a new business venture within CyberAgent Inc. Unlike traditional crowdfunding platforms, Makuake positions itself as a “Supportive Purchase Service for New Products and Experiences,” and deliberately avoids using the term “crowdfunding” in its official communications.Makuake has raised over 100 billion yen in total with more than 2.9 million supporters. Its primary project categories include products, fashion, food, sake, and restaurants. The platform is widely used for test marketing, as it enables project initiators to estimate demand and forecast sales for new products prior to a full market launch.Additionally, leveraging the PR power inherited from its parent company CyberAgent, Makuake boasts a robust promotional network, including approximately 10,000 media mentions per month, which is particularly attractive to larger enterprises.

4.6 Kibidango

Kibidango is operated by Kibidango Inc. The platform is known for its unique focus on assisting overseas startups and creators to enter the Japanese market, primarily through its division “Kibidango Overseas Product Discovery Team,” commonly known as “Kibitan.”To date, the platform has introduced around 200 international products to Japanese consumers. Kibidango aims to establish an in-house infrastructure that handles everything from certification and logistics to customer support, ensuring users can safely purchase overseas products. The platform enables individuals to share their ideas or prototypes with the public and to directly collect funds from those who resonate with the project vision, thus transforming ideas into reality.

4.7 Platform Selection Rationale

All five platforms share a common feature: service fees are only charged if the project succeeds. This risk-mitigated structure lowers the entry barrier for first-time project initiators, encouraging broad participation regardless of experience. This characteristic also ensures the availability of a wide variety of both successful and unsuccessful project examples, making these platforms ideal data sources for the present study.

4.8 Analytical Methodology

Similar to the study by Uchida et al., this research uses logistic regression analysis, with project success or failure as the dependent variable and multiple explanatory variables to construct the prediction model. Following Uchida's methodology, the dataset was divided into training and testing subsets at a 7:3 ratio.Unlike prior studies, which focused exclusively on projects using the "All-In" funding model, this study includes both "All-In" and "All-or-Nothing" funding models.The explanatory variables were selected based on both precedent research and newly introduced factors identified through text mining, using the Text Mining Studio software to compare project descriptions of successful and failed cases. As a result, a total of 443 explanatory variables were identified.In contrast to Uchida et al.'s study, which incorporated numerical variables such as target amount and text length, this research employed only binary dummy variables, where the presence of a specific string in the project description is coded as (1) and its absence as (0).

・Dependent Variable
Success / Failure: A dummy variable set to (1) if the project's final raised amount met or exceeded the target, and (0) if it did not. This variable served as the dependent variable for the logistic regression model.

・Explanatory Variables
URL: Presence or absence of a URL in the project description.
NPO: Whether the project was organized by a nonprofit organization (identified by the ".or" domain in the URL).
Educational Institution: Whether the project was organized by an educational institution (".or" domain).
Government: Whether the project was government-initiated (".go" domain).
Corporate: Whether the project was initiated by a corporation (".co" domain).
Frequent Words: Using Python's mecab library, the top 303 frequent words were extracted by part of speech. The following parts of speech were included: nouns, verbs, adjectives, adjectival verbs, adverbs, particles, auxiliary verbs, interjections, and symbols.

Breakdown of terms used as explanatory variables:
・Nouns: e.g., "everyone," "development" (33 types)
・Verbs: e.g., "work," "come" (69 types)

・Adjectives: e.g., “good,” “new” (45 types)
・Adjectival verbs: e.g., “clean,” “quiet” (14 types)
・Adverbs: e.g., “more,” “further” (38 types)
・Particles: e.g., “tari,” “nitsuite” (50 types)
・Auxiliary verbs: e.g., “gozai,” “desho” (11 types)
・Interjections: e.g., “good morning,” “hello” (5 types)
・Symbols: e.g., “■,” “★” (38 types)

5 Results

5.1 Prediction Accuracy

Table 1: Prediction results

	TN	FN	FP	TP
Lo(Local)	401	309	498	1359
NoLo(Not Local)	709	475	2196	7937

Table 2: Predictive evaluation results

	Accuracy	Precision	Recall	F-measure
Lo(Local)	0.69	0.73	0.81	0.77
NoLo(Not Local)	0.76	0.78	0.94	0.86

The prediction outcomes for projects related to regional revitalization and for those unrelated are presented in Table 1, and the corresponding performance evaluation results are shown in Table 2. In both tables, "Lo (Local)" refers to projects classified as related to regional revitalization, while "NoLo (Not Local)" denotes projects unrelated to regional revitalization.As a result of logistic regression analysis, the model demonstrated a prediction accuracy of 69%, precision of 73%, recall of 81%, and an F-score of 0.77 for Local projects. For Non-Local projects, the prediction accuracy was 76%, precision was 78%, recall was 94%, and the F-score reached 0.85. Since the F-scores for both categories exceeded 0.7, it can be concluded that the developed prediction model possesses an adequate level of accuracy.

5.2 Odds Ratios of Explanatory Variables

In this study, the odds ratios of explanatory variables were also analyzed. The use of odds ratios aimed to identify variables with a high degree of relevance, thereby enabling the construction of a more precise prediction model. In future research, these findings will be further utilized to refine and improve the model’s predictive performance. This paper specifically discusses the differences in odds ratios between projects related to regional revitalization and those unrelated, and considers the implications of these differences for understanding the factors contributing to project success.The following figures present the explanatory variables ranked in descending order according to their odds ratios. Table 3 lists the top 20 explanatory variables for Local projects, while Table 4 presents the corresponding top 20 for Non-Local projects. The rightmost

column in each table shows the ranking of the same variable in the opposite category (e.g., for "Lo," the rank in "NoLo" is shown).

Table 3: Top 20 words with the highest odds in local revitalization (Lo) projects

Japanese Word	Explanatory variables	Lo	NoLo	NoLo
としまして	As / In the capacity of	3.774	0.653	417
出張	Business trip	3.682	0.955	304
すてき	Lovely / Wonderful / Nice	3.516	2.870	2
習う	Learn / Take lessons	3.350	1.215	40
苦い	Bitter	3.137	1.553	10
下手	Poor / Unskilled	2.763	1.107	96
黒い	Black	2.674	1.102	101
うるさい	Noisy / Annoying / Loud	2.319	0.748	404
気をつける	Be careful / Watch out	2.218	1.339	20
まずい	Bad-tasting / Awful / Poor	2.179	0.687	413
おはよう	Good morning	2.118	1.164	56
運転	Driving / Operation	2.094	1.012	221
NPO	Nonprofit Organization	2.048	0.990	253
覚える	Memorize / Remember	2.038	0.905	358
ピッタリ	Perfectly / Exactly	1.990	1.036	189
生まれる	Be born	1.888	0.995	244
教育機関	Educational organization	1.883	1.030	196
薄い	Thin / Light/ Weak	1.851	1.143	73
まるで	Just like / As if	1.822	1.158	62
着る	Wear / Put on	1.770	0.835	392

Table 4: Top 20 words by odds ratio in other (NoLo) projects

Japanese Word	Explanatory variables	Lo	NoLo	Lo
をもちまして	As of / With this	1.169	3.040	105
すてき	Lovely / Wonderful	3.516	2.870	3
←	←	0.949	2.391	266
履く	Wear (shoes, pants, skirts)	0.730	2.043	383
修理する	Repair / Fix / Mend	1.077	1.751	167
貸す	Lend / Loan / Rent out	1.264	1.697	68
下ろす	Lower / Take down / Unload	0.686	1.670	393
ござい	Be / Exist	1.278	1.600	63
に際して	On the occasion of / When	0.900	1.594	305
苦い	Bitter	3.137	1.553	5
えらい	Great / Admirable	0.047	1.499	425
にぎやか	Lively / Bustling	0.634	1.479	403
本当に	Really / Truly / Honestly	1.138	1.392	128
$	$	1.267	1.388	67
わずか	Only / A few / Merely	1.248	1.375	72
重い	Heavy	0.945	1.372	269
親切	Kind / Kindness / Helpful	0.942	1.360	272
おいしい	Delicious / Tasty / Yummy	0.976	1.350	243
厚い	Thick / Deep	0.921	1.340	291
気をつける	Be careful / Pay attention	2.218	1.339	9

A total of 37 explanatory variables (words) appeared in the top 20 rankings across both project categories. Among these, only three words—suteki (“lovely”), nigai (“bitter”), and kiwotsukeru (“be careful”)—were ranked within the top 20 for both Local and Non-Local projects, indicating their relatively high odds ratios in both contexts. The remaining 34 words exhibited a high odds ratio in only one of the two categories.Notably, the word with the highest odds ratio in Local projects, toshimashite (“as for”), ranked only 417th in Non-Local projects, highlighting its low relevance outside of the regional revitalization context. Furthermore, among the top 20 variables for Local projects, 12 were ranked below 100 in the Non-Local group, while for Non-Local projects, 13 of the top 20 variables were ranked below 100 in the Local group. These results suggest that the success factors for regional revitalization crowdfunding projects differ significantly from those of other types of projects.Additionally, the odds ratios for explanatory variables related to education, such as “educational institution,” narau (“to learn”), and oboeru (“to memorize”), were particularly high in regional revitalization projects. This implies that many such projects are likely associated with learning, training, or skill development. It is plausible that these projects emphasize acquiring new skills and preserving traditional culture, which may explain why terms like narau and oboeru are closely linked to project success in this domain.

6 Conclusion

In this study, the focus was placed on crowdfunding as a potential method for regional revitalization — a persistent and serious social issue in Japan characterized by the decline and revitalization of local economies — with particular attention to its ability to support projects with minimal reliance on financial resources. The research aimed to identify the success factors behind crowdfunding projects intended for regional revitalization by analyzing data extracted exclusively from five major Japanese reward-based crowdfunding platforms: CAMPFIRE, Booster, ReadyFor, Makuake, and kibidango. A total of 8,544 projects classified as related to regional revitalization were selected for analysis.The collected project descriptions were subjected to word frequency analysis, in which words were categorized by part of speech to determine which terms exert a positive influence on project success. Furthermore, to investigate the differences in success factors, the odds ratios of explanatory variables were compared between regional revitalization projects and projects unrelated to regional revitalization.The analysis revealed that only three words exhibited high odds ratios in both categories, while the remaining 34 words demonstrated high odds ratios in only one of the two. This outcome suggests that the success factors for regional revitalization crowdfunding projects differ substantially from those of general crowdfunding projects.

Building upon these findings, future research will aim to develop a more accurate prediction model tailored to the unique characteristics of crowdfunding projects for regional revitalization. and it does not address the subsequent activities of project implementers or their impacts.

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