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Innovative Reward-Based Crowdfunding Decision Model

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ABSTRACT

Due to the risky nature of newly creative projects for entrepreneurs, reward-based crowdfunding is currently an alternative fundraising channel for those who need seed funding to finance the creation of their prototype. The objectives of this research are to explore the success factors, including entrepreneurial, project and campaign factors, in project fundraising under a reward-based crowdfunding platform. We propose to develop a model for predicting the success of crowdfunding projects by machine learning. The datasets have been retrospectively gathered from historical records of campaigns in the Kickstarter website. The study's findings show that the logistic regression and decision tree models, respectively, had accuracy rates of 88.2% and 88.8%. The highest accuracy percentage of 94.1% originates from new testing data that has been externally validated for the technology industry. The practical implication of our research is that entrepreneurs can apply the proposed prediction model to identify the most influential topical features embedded in campaigns.

KEYWORDS

Reward-Based Crowdfunding, Success Factors, Funding Contribution, Machine learning, Logistic Regression, Decision Tree

INTRODUCTION

Crowdfunding is a method of obtaining money for a project from many individuals in small funds, usually through an online platform that is a digital fundraising form for innovative projects and ventures, and it has become popular as an alternative to bridge the financing gap of new ventures over the past few years (Da Cruz, 2018). The provision of financial resources happens through these online platforms that act as digital intermediaries matching fundraisers and funders through crowdfunding campaigns managed by the platform (Belleflamme et al., 2015; Beier & Früh, 2020). New entrepreneurs are traditionally at greater risk and have a higher rate of failure in comparison with other businesses as there is uncertainty about the development of unproven products and services (Valanciene & Jegeleviciute, 2013).

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A growing number of creative people use internet crowdfunding websites to crowdfund their new projects (Belleflamme et al., 2014). Increasingly popular crowdfunding platforms like Kickstarter enable project creators to raise hundreds of millions of dollars annually. Every crowdfunding project has a well-defined goal to be achieved within a given time frame. If the funding goal is achieved within the deadline, then the project is successful. The fundraising model is all-or-nothing and, after the campaign's deadline, a campaign is only deemed successful if it has achieved its funding target. In this case, backers actually pay the money they have pledged, and the project idea is realized. In cases where the goal is not reached, the campaign has failed and no exchange of money takes place. The creator's time, money, and effort spent in the entire exercise of planning, designing, launching, and promoting the project are in vain.

As a result, project creators are eager to discover the likelihood of a project's success as soon as possible. Moreover, knowing the project's outcome in advance helps the users to work out future strategies. Creators whose campaigns have a low probability of success may want to improve their chances by providing updates and improving information related to entrepreneurial, project, and campaign factors. These features of projects are used by the project creator to evaluate the success probability of a project.

Four categories can be used to categorize crowdfunding: donation-based, reward-based, lending-based, and equity-based. In donation-based crowdfunding, donors contribute money with no intention of receiving anything in return (Guan, 2016), while in reward-based crowdfunding projects are proposed in exchange for nonmonetary prizes (Bi et al., 2017; Yu et al., 2018). Reward-based crowdfunding offers some nonmonetary benefits such as validation of the business idea, definition of the product or service (through customer feedback), product promotion (Da Cruz, 2018; Brown et al., 2017), innovation (Song et al., 2020), identification of internationalization opportunities (Ahsan & Musteen, 2021), or encouragement of sustainable development (Laurell et al., 2019). Instead of receiving nonfinancial benefits for their contribution, backers of lending-based crowdfunding receive interest income. In equity-based crowdfunding, the project creator provides a reward in the form of an equity stake so that backers can partake in the projects' profits. (Bannerman, 2013; Beaulieu et al., 2015). Reward-based crowdfunding differs from the equity-based crowdfunding model in the nature of the exchange. While individual investors in equity-based crowdfunding receive shares in exchange for their investment, funders in reward-based crowdfunding receive rewards or perks according to their contribution levels (Cavalcanti & Soetanto, 2022).

There are two categories of financing models in each crowdfunding platform: "all-or-nothing" and "keep-it-all." The first category enables project creators to get cash only when backers' contributions have reached the project's funding target within the campaign's time frame. If the contribution falls short of the declared funding target, nothing is given to the project creators. The second category, on the other hand, allows project founders to keep the entire financing contribution—even for unsuccessful ventures (Cumming et al., 2020).

Several items of research on crowdsourcing platforms have been released. Mollick (2014) offered an explanation of the factors that influence the success and failure of Kickstarter campaigns, provided various pieces of information on the factors that determine success, and examined the relationships between various campaign aspects and the results. Greenberg et al. (2013) proposed a success predictor for Kickstarter campaigns based solely on their static attributes, that is, attributes available at the launch of a campaign and achieved a 68% prediction accuracy. The objectives of this research were to explore the success factors, including entrepreneurial, project, and campaign factors, in project fundraising under reward-based crowdfunding platform. In this study, we concentrated on developing models for forecasting the success of Kickstarter campaigns using machine-learning approaches to ascertain the likelihood that a crowdfunding project would succeed. Therefore, the study addresses this gap by developing a model for predicting the success of reward-based crowdfunding projects by machine-learning techniques including logistic-regression and decision-tree algorithms that have been employed.