

Research on the Influencing Factors of Crowdfunding Project Financing Performance: Based on the Six Basic Theories of Finance

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Abstract: Crowdfunding has emerged as a popular method for financing innovative projects. This study examined the impact of six basic theories of finance on the success of Kickstarter crowdfunding projects in the creative and innovation categories, with a funding goal between \$10,000 and \$1,000,000. Collected data on a sample of 5,270 successfully funded projects and used web scraping techniques to extract the relevant information, along with conducting interviews with the project creators to gather additional information. The six basic finance theories were operationalized as time value of money, risk and return, diversification, asset allocation, market efficiency, and behavioral finance. Used a multiple regression model to analyze the data and found the time value of money, return, diversification, behavioral finance, and asset allocation have a positive impact on the success of crowdfunding, while risk and market efficiency have a negative impact on the success of crowdfunding, albeit weak. This study contributes to the existing literature on crowdfunding and provides insights for project creators and investors on optimizing crowdfunding success.

Keywords: crowdfunding success factors, six basic theories of finance, multiple regression model

1. Introduction

Through the use of online platforms, crowdfunding is a type of financing that enables people or organizations to gather money from many diverse sources. as a way to determine whether there is a market for their products before making sizable investments. What is novel about this idea of intermediation, which is made possible by technological advancements, is how it is used [1]. By using crowdfunding, businesses can lower their production and storage expenses while also determining the level of user interest in their goods. Typically, intermediaries are crowdfunding platforms, which link and match fundraisers with the crowd as their primary goal [2].

The concepts of "crowdsourcing" and "collaborative finance" are at the foundation of the growth of crowdfunding. According to the World Bank's forecast, the industry is anticipated to generate up to USD 90-96 billion annually by 2025. During the 2008 financial crisis, banks became more cautious about lending, which led companies to seek out alternative sources of funding. Additionally, declining interest rates prompted investors to search for new investment opportunities that could generate higher returns [3,4].

The six basic theories of finance are fundamental concepts that are widely used in financial management. These theories include the time value of money, risk and return, diversification, asset allocation, market efficiency, and behavioral finance. Each of these theories has important implications for crowdfunding projects.

The purpose of this study is to examine the influencing factors of crowdfunding project financing performance: Based on the Six Basic Theories of Finance Specifically, we will investigate whether these theories are associated with the success or failure of crowdfunding projects.

2. Literature Review

Recent years have seen a lot of interest in crowdfunding as a fresh source of capital for entrepreneurs, start-ups, and small enterprises. A 2017 research from fundly.com shows that between 18,000 and 22,000 projects are launched each day, with a new crowdfunding campaign being initiated every three minutes. There are already 191 platforms in the US, and that number is extending rapidly at a pace of 350% annually. Thus far, crowdfunding has developed into several substantial businesses, including listed companies such as Segway-Ninebot, Anker, etc., for market validation of new products or concepts.

2.1. Review of Existing Research on Crowdfunding and Financial Theory

Over the past ten years, a lot of research has been done on crowdfunding, with scholars from numerous fields investigating different facets of this fundraising mechanism. The motivations of crowdfunding backers, the variables that impact the success of crowdfunding, and the effects of crowdfunding on entrepreneurship and innovation have all been the subject of studies. But not much research has looked at the relationship between financial theory and crowdfunding.

This section summarises the literature published on crowdfunding and financial theory, examines how these theories relate to crowdfunding initiatives and points out any gaps in the body of knowledge.

2.2. Research Examining the Relationship Between Financial Theory and Crowdfunding Projects

The connection between financial theory and crowdfunding has been the subject of numerous research. For instance, Belleflamme et al. looked at the effect of information asymmetry on the success of crowdfunding. According to the study [5], there is a higher chance of crowdfunding success when the information is of excellent quality. Cumming et al. looked at the effect of investor heterogeneity on the success of crowdfunding in a different study [6]. In the light of the report, crowdfunding initiatives are more likely to receive funding from different groups of investors, which emphasizes the importance of diversification in investment portfolios. Lukkarinen, A. et al. centered a separate study on the function of investor networks in crowdfunding [7]. The study found that investors who are part of a network are more likely to invest in crowdfunding campaigns and that the success of a campaign is positively correlated with the size and variety of the investor network.

Similarly, Lee and Kim found that social capital has a beneficial effect on the success of crowdfunding campaigns [8,9], while Kuppuswamy and Bayus found that past business experience can have a favorable impact on the success of crowdfunding [10]. These findings suggest that financial theory, which emphasizes the importance of social networks and founder expertise in markets, can also be applied to crowdfunding projects.

However, Hornuf and Schwienbacher argue that financial theory is not always essential for successful crowdfunding campaigns [11]. Their research implies that other elements, such as the project's quality and marketing strategy, maybe more crucial to success.

In addition to examining the impact of financial theory on crowdfunding campaigns, Agrawal et al. explored the relationship between crowdfunding and traditional financial models [12]. They found that crowdfunding can be a viable alter-native to traditional financing methods, such as venture capital, as it provides entrepreneurs with greater control over their projects and can lead to more di-verse funding sources.

2.3. Identify gaps in the literature

Despite these studies, there are still significant gaps in the literature on the relationship between financial theory and crowdfunding. For example, there has been little research on the impact of financial concepts such as the time value of money, risk and return, diversification, asset allocation, market efficiency, and behavioral finance on crowdfunding projects. Additionally, most of the studies reviewed have focused on rewards-based crowdfunding, where backers receive non-financial rewards such as products or services in exchange for their contribution.

Given the importance of financial theory in traditional finance, it is likely that these concepts also play a significant role in crowdfunding. Further research in these areas could help to better understand the dynamics of crowdfunding and inform best practices for crowdfunding project creators and backers.

In conclusion, while there has been significant research on crowdfunding, there is still much to be done in terms of exploring the relationship between financial theory and crowdfunding. Research has shown that factors such as information asymmetry, investor heterogeneity, social capital, and founder experience can impact crowdfunding success. However, there has been limited research on the impact of financial concepts on crowdfunding. Future research in this area could provide valuable insights into the dynamics of crowdfunding and help to inform best practices for crowdfunding project creators and backers.

3. Methodology

3.1. Description of the dataset and data collection process

This study collected data on a sample of 5,270 successfully funded Kickstarter crowdfunding projects from the creative arts or technology categories, with a funding goal between \$10,000 and \$1,000,000. The dataset was obtained from the official Kickstarter website using web scraping techniques to extract the relevant information. Also conducted interviews with the project creators to gather additional information.

3.2. Operationalization of the six basic theories of finance in relation to crowdfunding projects

To investigate the impact of the six basic theories of finance on Kickstarter crowdfunding projects, we operationalized these theories as follows:

Time value of money: The concept of the time value of money states that the value of money changes over time due to inflation and the opportunity cost of investment. This study aims to measure the relationship between the time value of money and the number of backers by calculating the net present value (NPV) of the project's expected cash flows. The backer number can reflect the popularity and market demand of the project, which indirectly reflects the time value of money. A 12% discount rate will be used in this study.

Risk and return: The theory suggests that higher returns are associated with high-er risk. In this study, risk was measured as the financing target amount, while return was measured as the ratio of the difference between the target return and the actual return.

Diversification: This theory suggests that spreading investments across different assets can reduce risk. In this study, measured diversification as the number of reward tiers offered by each project creator.

Asset allocation: This theory states that the mix of assets in a portfolio should be selected based on the investor's risk tolerance and investment objectives. In this study, the total 15 categories were divided into creative and innovative categories. The creative category includes art, comics, crafts, design, fashion, film and video, photography, publishing and theatre. The innovative category includes projects in dance, food, games, journalism, music and technology.

Market efficiency: This theory suggests that financial markets are efficient and that it is difficult to consistently beat the market. In this study, the popularity of each project was measured by calculating the ratio of the target return to the number of supporters.

Behavioral finance: This theory suggests that investors' behavior deviates from rational expectations, leading to market inefficiency. In this study, we measured behavioral finance by analyzing the number of questions and answers in the creators' comments sections during funding campaigns, as well as the interactions between creators and users. These measures can provide insights into the behavioral biases of investors and creators, which can affect the efficiency of the crowdfunding market.

3.3. Statistical methods used to analyze the data

STATA was used for regression analysis. Descriptive statistics were also calculated to provide an overview of the data set and the class distribution of the sample.

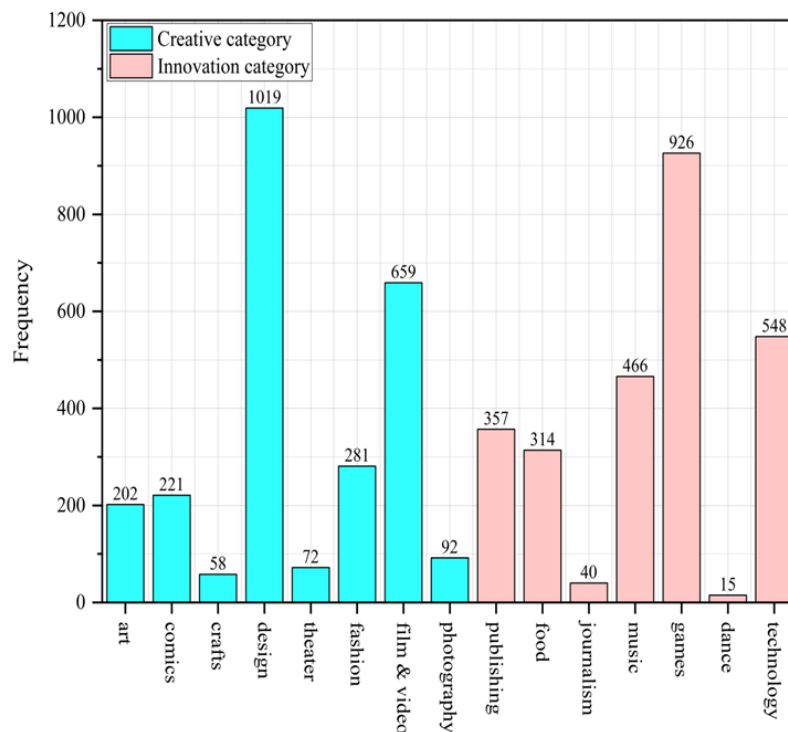


Figure 1: Class distribution of samples.

The analysis showed that majority of the projects (49%) were in the creative category, the success of these projects usually depends on the talent and creativity of the artist or creator, as well as their ability to attract and sustain the interest of the investors. And about 51% were in the innovation category. The most popular categories for on kickstarter are design and games, followed by film and

technology. The success of these projects usually depends on the technology and innovation of the project, as well as its ability to meet market demand and attract investor interest.

Table 1: The descriptive statistics for the variables are presented in the table Descriptive statistics.

Heading level	mean	sd	min	max	skewness	p50
Comment_count	95.40	174.7	0	991	2.703	16
Behavioral_finance	3.094	5.904	0	54	3.089	0
Funding_lastdays	32.59	8.987	1	60	1.162	30
Is_video	0.0112	0.105	0	1	9.292	0
Image_number	26.36	21.33	1	207	1.351	21
Time_value_of_money	106,889	308,262	9,041	8.975e+06	12.45	32,439
Investors_count	677.0	1,902	4	79,794	19.02	252
Diversification	10.74	7.131	1	107	3.109	9
Risk	43,507	78,440	10,095	1,000,000	7.525	25,000
Return	1.937	6.083	0	170.2	10.12	0.252
Market_efficiency	592.9	2,533	15.18	110,259	20.49	139.4
Asset_allocation	0.438	0.496	0	1	0.249	0

There are 11 variables. The standard deviation of Time value of money, Investors count, and Risk is large, indicating that the data distribution of these variables is relatively dispersed. However, the mean and median (p50) of these variables are similar, suggesting that their data distribution is close to a normal distribution.

Next, ran a multiple regression model to investigate the relationship between the six basic theories of finance and crowdfunding success. The independent variable is the six basic theories of finance, and the dependent variable is the number of investors. In calculation, the financing performance is mainly measured by the number of investors. The multiple regression model used in this study is as follows:

$$\text{Investors_count}_i = \alpha + \beta_1 D'_i + \beta_2 C'_i + \varepsilon_i$$

Where represents the dependent variable, which is the number of supporters for crowdfunding projects. represents the independent variables related to financial theory, while represents the control variables. represents the random disturbance factor, which is assumed to follow a normal distribution, i.e., $\sim N(0,1)$.

The table of phase relation number of main variables is shown, and most independent variables show small correlation.

Table 2: Correlation analysis.

	Invest ors_c ount	Com ment_ count	Fundi ng_las tdays	Is_ vid eo	Imag e_nu mber	Time_va lue_of_ money	Ris k	Ret urn	Diver sifica tion	Asset _alloc ation	Marke t_effic iency	Behavi oral_fi nance
Investor s_count	1											
Comme nt_count	0.217 ***	1										
Funding _lastday s	0.041 ***	0.013	1									
Is_video	- 0.020	0.012	0.045 ***	1								
Image_n umber	0.183 ***	0.364 ***	0.055 ***	0.0 49 ** *	1							
Time_va lue_of_ money	0.556 ***	0.172 ***	0.091 ***	0.0 04	0.185 ***	1						
Risk	0.096 ***	0.013	0.073 ***	0.0 30 **	0.042 ***	0.522** *	1					
Return	0.556 ***	0.287 ***	0.095 ***	- 0.0 07	0.268 ***	0.561** *	- 0.0 08	1				
Diversifi cation	0.055 ***	- 0.071 ***	0.016	- 0.0 48 ** *	- 0.007	-0.009	- 0.0 07	- 0.0 08	1			
Asset_al location	0.060 ***	0.171 ***	- 0.065 ***	0.0 33 **	0.010	0.018	0.0 12 0	0.0 02	- 0.029 **	1		
Market_ efficienc y	- 0.058 ***	- 0.061 ***	0.053 ***	0.0 37 ** *	- 0.008	0.278** *	0.5 47 ** *	0.0 09	- 0.066 ***	- 0.029 **	1	
Behavio ral_finan ce	0.272 ***	0.270 ***	0.089 ***	0.0 62 ** *	0.382 ***	0.236** *	0.0 53 ** *	0.2 93 ** *	- 0.027 **	0.087 ***	- 0.037* **	1

Table 3: The main regression data is presented in the table.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Comment_count	1.190***	0.614***	1.950***	1.821***	1.858***	1.537***	0.375***
	(0.133)	(0.136)	(0.156)	(0.159)	(0.156)	(0.155)	(0.127)
Funding_lastsdays	-2.185	-3.967	6.760**	7.496***	7.530***	3.940	-4.109*
	(2.407)	(2.420)	(2.826)	(2.837)	(2.833)	(2.781)	(2.216)
Is_video	-	-348.990*	-466.610*	-	-	-	-267.433
	454.856*			549.066*	496.875*	686.793*	
	*			*	*	**	
	(204.819)	(205.432)	(241.551)	(241.859)	(241.695)	(237.060)	(187.896)
))		
Image_number	4.243***	1.489	10.540**	10.857**	10.728**	4.493***	-1.219
			*	*	*		
	(1.094)	(1.107)	(1.279)	(1.283)	(1.280)	(1.321)	(1.054)
Time_value_of_money	0.003***						0.003***
	(0.000)						(0.000)
Risk		0.002***					-0.002***
		(0.000)					(0.000)
Return		168.188**					85.966***
		*					
		(3.779)					(4.499)
Diversification			17.904**				15.302***
			*				
			(3.567)				(2.777)
Asset_allocation				130.522*			140.206***
				*			
				(52.139)			(40.534)
Market_efficiency					-		-0.105***
					0.035***		
					(0.010)		(0.009)
Behavioral_finance						69.485**	25.757***
						*	
						(4.629)	(3.754)
Constant	178.722*	279.950**	-194.343*	-78.284	-1.975	76.187	169.124**
	*	*					
	(84.114)	(84.724)	(105.705)	(103.051)	(99.098)	(97.304)	(85.538)
)			
Observations	5,270	5,270	5,270	5,270	5,270	5,270	5,270
Adjust R2	0.326	0.323	0.0653	0.0619	0.0630	0.0993	0.437
Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1							

The results show that time value of money ($\beta = 0.003$, $p < 0.01$), return ($\beta = 85.966$, $p < 0.01$), diversification ($\beta = 15.302$, $p < 0.01$), behavioral finance ($\beta = 25.757$, $p < 0.01$), and asset allocation ($\beta = 140.206$, $p < 0.01$) have a significant positive impact on the success of crowdfunding. Risk ($\beta = -0.002$, $p < 0.01$) and market efficiency ($\beta = -0.105$, $p < 0.01$) have a significant negative impact on the success of crowdfunding.

Furthermore, the active information disclosure behavior of financiers is conducive to reducing the information mismatch between investors and financiers and promoting the participation of investors in the project. This finding is consistent with previous studies that have reported the significant impact of behavioral finance on crowdfunding success [13,14]. However, further research is needed to explore the factors that contribute to successful crowdfunding campaigns and the role of behavioral biases in the process.

4. Results

4.1. Presentation of the findings related to the impact of the six basic theories of finance on Kickstarter crowdfunding projects

The study found a significant positive correlation between the number of backers and NPV ($\beta = 0.003$, $p < 0.01$), indicating that as the number of backers increases, the popularity and market demand of the project also increase, thereby increasing the time value of the funds. Therefore, the conclusions of this study support the time value theory of money, which suggests that the value of money increases over time.

In terms of risk and return, projects with higher expected returns were more likely to be successfully funded, but this relationship was moderated by risk. Projects with higher expected returns and lower risk were more likely to be successful, while projects with higher expected returns and higher risk were less likely to be successful.

Diversification has a positive relationship with successful Kickstarter projects. Specifically, successful Kickstarter projects usually provide diversified rewards and incentives, which attract more supporters and increase the probability of project success.

Research has shown that innovative projects are more likely to attract investors on Kickstarter and receive funding on the platform. These projects offer novel, interesting and unique experiences that satisfy investors' curiosity and desire to explore.

Behavioral finance suggests that investors' behavior can be influenced to increase their willingness to participate, reduce information asymmetry. For instance, social media can be used to engage supporters in high-frequency interaction or advertising can be utilized to attract more supporters and increase the likelihood of project success.

The study found that when the ratio of target return to the number of supporters is higher, the popularity and market efficiency of a project are lower. This is because when the ratio of target return to the number of supporters is higher, the return rate of the project is higher, but supporters need to pay a higher price for it. This may reduce the popularity of the project because fewer people are willing to pay a higher price for a high return. In addition, when the ratio of target return to the number of supporters is higher, the success rate of the project may also decrease because a higher target return may make the project more difficult to achieve.

4.2. Discussion of significant results and their implications

The findings of this study provide important insights into the factors that contribute to the success of Kickstarter crowdfunding projects. The results suggest that investors are influenced by the time value of money, risk and return, and market efficiency when making funding decisions. This

highlights the importance of considering these factors when developing and promoting crowdfunding projects.

In terms of practical implications, project creators should consider offering re-wards that provide higher expected returns to investors, while also managing risk through diversification and careful asset allocation. They should also aim to out-perform the market through innovative and unique project ideas.

Furthermore, these findings can inform the development of crowdfunding platforms and policies. Platforms can provide tools and guidance to project creators on how to incorporate the time value of money, risk and return, and market efficiency into their projects. Policymakers can use these insights to create regulations that promote transparency and accountability in crowdfunding projects, thereby increasing investor confidence and participation.

4.3. Comparison of findings to existing research

The findings of this study are consistent with previous research on crowdfunding and finance. For example, studies have shown that investors are influenced by the time value of money and risk when making investment decisions [13-14]. However, the results of this study differ from the previous study by Belleflamme, Lambert, & Schwienbacher [5]. This may be due to the use of different methods and datasets in this study, or because the focus of this study is on the relationship between market efficiency and project popularity, rather than other factors. Therefore, although the results of this study differ, but does not mean that there is a contradiction between the two studies.

This study expands the research on crowdfunding by examining the impact of six basic financial theories on crowdfunding success. The results show that diversification, asset allocation, and behavioral finance may have less influence in crowdfunding than in traditional finance, highlighting the unique characteristics of crowdfunding as another source of financing.

Overall, the results of this study provide valuable insights for project creators, crowdfunding platforms, and policy makers, and contribute to the literature on crowdfunding and finance.

5. Conclusion

The implications of this study are twofold. First, those results provide valuable insights for crowdfunding platforms, project creators, and investors, as they can use the knowledge of behavioral biases to improve their decision-making processes. Second, our study contributes to the existing literature on the intersection of finance and crowdfunding by providing empirical evidence on the impact of basic financial theories on crowdfunding.

The main findings of this study indicate that the time value of money, risk and return, and behavioral finance have a significant impact on the success of Kick-starter crowdfunding projects. Projects that offer higher expected returns and manage risk through diversified investments and cautious asset allocation are more likely to receive successful funding. Additionally, projects that offer re-turns higher than the market average and outperform the market are more likely to attract investors. However, market efficiency is not a significant predictor of crowdfunding success, and risk factors of the project need to be considered.

The results of this study have important theoretical and practical implications. In terms of theory, this study contributes to the growing literature on crowdfunding and finance by providing insights into the unique factors that influence crowdfunding success. The study emphasizes the importance of considering the time value of money, risk and return, and behavioral finance in crowdfunding projects, as these factors are important predictors of project success.

In terms of practice, the findings of this study can inform the development and promotion of crowdfunding projects. Project creators can use these insights to design projects that offer higher

expected returns, while also managing risk through diversification and careful asset allocation. Crowdfunding platforms can provide tools and guidance to project creators, thereby increasing the likelihood of project success. Policymakers can use these insights to create regulations that promote transparency and accountability in crowdfunding projects, thereby increasing investor confidence and participation.

One limitation of this study is that it focused solely on Kickstarter crowdfunding projects. Future research could examine the impact of the six basic theories of finance on other crowdfunding platforms, such as Indiegogo or GoFundMe, as well as specific markets where there is a bias in local user buying behavior, such as Japan/Taiwan/South Korea. Additionally, the study relied on self-reported data from project creators, which may be subject to bias. Future studies could use objective measures of project success, such as actual investment amounts or the number of backers, to confirm the findings of this study. Finally, future research could also examine the impact of other factors on crowdfunding success, such as creator experience.

Overall, this study adds to the growing body of research on crowdfunding by shedding light on the importance of six basic idea of financial in shaping crowd-funding outcomes.

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