
Crowdfunding: A Different Approach to Investment

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Abstract:

Purpose: This article examines the concept of crowdfunding. The term "Crowdfunding" combines "crowd" and "funding," illustrating the practice of sourcing funds from a collective group. It represents a form of grassroots microfinance where supporters voluntarily invest in projects, they find compelling.

Design/Methodology/Approach: The study reviews literature from Scopus and Web of Science focusing on crowdfunding and proposes a model of crowdfunding based on a game structure to solve the entrepreneur problem.

Findings: The research identifies three main types of crowdfunding, hedonistic, altruistic, and for-profit, along with the key participants, project initiators seeking funding, backers supporting specific projects, and crowdfunding platforms facilitating connections.

Practical Implications: Crowdfunding enables investors to collectively support individuals and organizations, fostering a grassroots approach to financing projects. As highlighted by the European Crowdfunding Framework, the surge in crowdfunding over the last decade is attributed to the proliferation of web and mobile platforms. These platforms facilitate dialogue between entrepreneurs, businesses, and creatives, enabling them to generate ideas, raise capital, and gather feedback.

Originality value: Crowdfunding serves as a critical funding source for approximately half a million European projects annually, which would otherwise struggle to secure financing. In 2013 alone, Europe raised approximately one billion euros through crowdfunding. With the advent of Web 2.0, crowdfunding is poised for exponential growth, projected to reach trillions by 2020, showcasing its potential to revolutionize traditional investment paradigms.

Keywords: Crowdfunding, alternative investment, FinTech, entrepreneurial finance, capital raising.

JEL codes: G11, G23, G24, L26, O16..

Paper type: Research article.

1. Introduction

Over the past decade, the advancement of Web 2.0 technologies has sparked the emergence of innovative business models, reshaped the role of digital users and transformed traditional consumption patterns (Ordanini, Miceli, Pizzetti, and Parasuraman, 2011). No longer merely consumers at the end of a value chain, digital users now actively participate as co-decision-makers, prompting industries to adapt to a digital-first mindset.

In this dynamic landscape, crowdsourcing stands out as a notable example, involving the delegation of tasks to a diverse group using information technologies (Riedl, Blohm, Leimeister, and Krcmar, 2012; 2013; Leimeister, 2012). It empowers companies to incorporate customer needs and preferences into their innovation processes, leveraging the collective wisdom and intelligence of the crowd (Leimeister, Chesbrough and Crowther, 2006; Surowiecki, 2004; Leimeister, 2010).

Among the various forms of crowdsourcing, crowdfunding emerges as a prominent avenue (Howe, 2006; Leimeister, 2012), defined as an open call, primarily through online platforms, for financial contributions from individuals rather than traditional financiers, often in exchange for future products or rewards (Belleflamme, Lambert, and Schwienbacher, 2014; Schwienbacher and Larralde, 2012). By aggregating small contributions from a large pool of backers, crowdfunding exemplifies the proverb "many a little makes a mickle," harnessing the power of the crowd to fund projects (Moritz and Block, 2014).

While regarded as an innovative funding mechanism, crowdfunding's roots trace back centuries. A notable historical example is the Statue of Liberty's pedestal, funded through contributions from New Yorkers in 1885, with the names of backers published in the newspaper (Harris, 1986). More recently, crowdfunding played a pivotal role in Barack Obama's 2008 presidential campaign, with a significant portion of donations coming from small contributions. Since then, crowdfunding has been embraced by ventures, startups, and individuals worldwide, with notable successes such as the film "Stromberg Der Film" (2011) and the Coolest Cooler project, demonstrating its effectiveness in mobilizing support and resources (BRAINPOOL Artist and Content Services GmbH, 2013; Kickstarter, 2014).

As crowdfunding gains momentum both theoretically and practically since 2007, researchers globally have explored its nuances, offering diverse perspectives and insights into this evolving field. Hence, crowdfunding does not entail a loan or personal capital investment. Rather, it represents a direct asset with no requirement for repayment to the contributor.

The organization of the article proceeds as follows: First, the term is defined, followed by an examination of various types of crowdfunding and the participants

involved. Subsequently, the model utilized by an investor in financing an entrepreneur is outlined. Lastly, the conclusions are provided.

2. Definitions

Crowdfunding is a facet of the broader crowdsourcing phenomenon alongside crowdvoting and crowdcreation (Leimeister, 2012; Blohm *et al.*, 2013; Blohm, Jan Marco, and Zogaj, 2014).

The term crowdsourcing combines "crowd" and "outsourcing," signifying the outsourcing of specific tasks to an external group rooted in the concept of the "wisdom of the crowd" (Surowiecki, 2004). It represents an innovative approach in scientific research (Howe, 2006). With Jeff Howe's definition remaining seminal since its introduction in 2006 (Brabham, 2009; Burger and Starbird, 2012).

Crowdfunding, closely linked to micro-lending, extends financial support to individuals without access to traditional credit institutions (Armendariz and Morduch, 2010). Despite its burgeoning popularity, crowdfunding lacks a universally accepted definition, leading to diverse interpretations by scholars (Tomczak and Brem, 2013).

Notably, the term was coined by Michael Sullivan (2006). The term crowdfunding was used for the first time by Mr. Michael Sullivan back in 2006, who was looking for financial support for starting his video project following the launch of fund blog with subsequent academic definitions emerging in the professional literature (Ordanini *et al.*, 2011).

The first academic definition of crowdfunding was proposed by Lambert and Schvienbacher in 2010, building upon the concept of crowdsourcing (Kleemann *et al.*, 2008). Various scholars subsequently contributed definitions, reflecting the multidisciplinary nature of crowdfunding research (Lehner, 2012; Ahlers *et al.*, 2015).

These definitions vary depending on authors' academic backgrounds and the specific crowdfunding models studied, with terms such as artists, entrepreneurs, borrowers, and fundraisers used to describe entities seeking funds (Agrawal *et al.*, 2013; Belleflamme *et al.*, 2014; Mollick, 2014). Conversely, fund providers are termed lenders, investors, or supporters (Agrawal *et al.*, 2013; Schvienbacher and Larralde, 2012).

Overall, these definitions aim to delineate crowdfunding from similar phenomena and highlight its constituent elements, facilitating a comprehensive understanding of the concept.

Hence, the fundamental aspects encapsulating the essence of crowdfunding are:

Crowd: Crowdfunding operates within the broader framework of crowdsourcing, drawing contributions from a diverse and widespread audience.

Financing: Contributions primarily manifest as modest financial inputs, typically of a small scale.

Alternative Finance: Crowdfunding presents an alternative avenue for sourcing funds, particularly advantageous in the initial stages of entrepreneurial endeavors. It supplements and competes with traditional venture capital channels. On one hand, successful crowdfunding initiatives generate momentum and interest among potential investors, aiding venture capitalists in identifying prospective ventures at reduced search costs. Conversely, the evolution of crowdfunding poses a potential challenge to established investment firms due to its disintermediation effects (Assenova and Amit, 2024.).

Models: In reciprocation for their contributions, participants may receive various incentives, ranging from tangible rewards as tokens of appreciation to equity shares, voting rights, loan interest, or the intrinsic satisfaction of altruistic giving.

Purpose: Funds are mobilized for specific objectives, encompassing cultural, social, or profit-driven endeavors. Fundraisers, often entrepreneurs, seek support for their initiatives. In some instances, individuals or groups seek financial assistance for personal needs such as health or education expenses.

Online Presence: As underscored by Colgren (2014), crowdfunding can be conducted both online and offline, though the prevalence of digital platforms is evident in modern crowdfunding practices.

However, since the inception of online crowdfunding platforms like Kiva, Kickstarter, DonorsChoose, and Indiegogo, scholarly attention has shifted toward this emerging trend in crowdfunding.

Upon scrutinizing each definition, it becomes apparent that none fully encapsulates all the essential elements of the concept. In response, a comprehensive definition is proposed:

"Crowdfunding is a novel approach to project financing, wherein a broad and dispersed audience engages in targeted projects by making modest financial contributions in exchange for tangible, financial, or social incentives. This process typically unfolds through web-based platforms, serving as intermediaries between the crowd and projects."

This refined definition encompasses key components such as the involvement of a diverse audience and the provision of funding through small-scale contributions. It underscores crowdfunding as an innovative financing mechanism, highlighting its proactive nature. Furthermore, it acknowledges the various rewards offered to participants, which represent distinct crowdfunding models. Finally, emphasis is placed on the online dimension, acknowledging the pivotal role of internet-based platforms in facilitating connections between the crowd and projects.

3. Participants

Crowdfunding typically involves three key participants-stakeholders, project promoters seeking funding, supporters willing to back specific projects, and matchmaking crowdfunding platforms serving as intermediaries (Belleflamme *et al.*, 2014). Each stakeholder exhibits distinct characteristics that shape the basic tenets of crowdfunding. From these principles emerge three archetypal forms of crowdfunding.

Project promoters and financiers are predominantly private individuals (Gerber, Hui, and Kuo, 2012; Verstein, 2011), although organizational projects, including startups and NGOs, are also prevalent (Belleflamme *et al.*, 2014; Bradford, 2012; Schwienbacher and Larralde, 2012). Additionally, the enactment of the JOBS Act in the USA has seen the emergence of organizational supporters (Mollick, 2014; Ordanini, Miceli, Pizzetti, and Parasuraman, 2011).

Much of the research on crowdfunding stakeholders centers on lenders, whose investment decisions are influenced by social networks (Lin, Prabhala, and Viswanathan, 2013; Zvilichovsky, Inbar, and Barzilay, 2013), herding behavior (Burtch, 2011), and free-riding tendencies (Burtch, Ghose, and Wattal, 2013). Lin, Boh, and Goh (2017) argue that crowdfunding caters to diverse interests. Similarly, supporters exhibit varied motivations for participation (Bretschneider, Knaub, and Wieck, 2014b).

In the context of crowdfunding, supporters are attentive to the decisions of other lenders, influencing their own behavior (Bretschneider *et al.*, 2014). Family and friends often play pivotal roles as supporters in crowdfunding endeavors (Agrawal, Catalini and Goldfarb, 2011).

Agrawal *et al.* (2011) posit that advocates may support projects they have personal connections with or those initiated by individuals they identify with. This phenomenon, termed direct identification, is further explored in the context of regional ties, where proximity between project promoters and funders influences support decisions (Agrawal *et al.*, 2011; Lin *et al.*, 2013). Investors are suggested to exhibit a "domestic bias" in credit allocation (Lin and Viswanathan, 2013), with the rationale for returns predominantly discussed within the context of equity-based crowdfunding.

Bretschneider *et al.* (2014) explore this motive in relation to lenders' objectives of attaining profits and/or capital gains on their invested capital. Additionally, there is the motive of recognition, which is widely regarded as a fundamental human need, providing individuals with a sense of self-worth (Martins *et al.*, 2008). Hars and Ou (2001) identified this motive within open-source software communities, where users anticipate positive feedback from peers and feel a sense of pride when their contributions are acknowledged by third parties.

Applied to crowdfunding, Bretschneider *et al.* (2014) argue that supporters may perceive their prominent display on crowdfunding platforms, alongside their names, as an opportunity for recognition. More broadly, lenders may invest in projects to receive acknowledgment for their investments from peers, the community, and society at large.

Evaluation of intermediary crowdfunding platforms reveals several distinct characteristics pertaining to the funding mechanism, platform specialization, and types of support/returns (Haas *et al.*, 2014a).

4. Funding Mechanism

Regarding the funding mechanism, crowdfunding platforms differ from traditional financial intermediaries in that they do not directly borrow, pool, or lend money themselves. Instead, they facilitate interactions between project promoters and funders by furnishing project information and functionalities aimed at mitigating investment risks. Consequently, crowdfunding intermediaries offer specific funding mechanisms, such as tiered commitment levels, minimum pledge amounts, and the all-or-nothing/keep-it-all principle (Gerber *et al.*, 2012; Mitra and Gilbert, 2014; Mollick, 2014; Walsh, 2014).

Project promoters define various pledge levels, each corresponding to a specific return that typically increases with higher pledge amounts. For instance, the minimum pledge amount varies widely, ranging from nearly zero for charitable projects to €100 or €1,000 for startup funding.

Most crowdfunding platforms operate on the all-or-nothing principle, wherein project promoters only receive funds if they reach their predetermined funding goal. This principle is predicated on the belief that project creators can fulfill their commitments and deliver promised returns only with the full resources required to do so.

However, some platforms operate on a "keep it all" principle, where project promoters retain all funds raised regardless of whether they reach their funding goal. This funding principle is often used for charitable projects or those utilizing crowdfunding as a supplementary funding source (Blohm *et al.*, 2013).

4.1 Specialization

The digital landscape of the Internet economy is characterized by what is known as hyperspecialization (Malone, Laubacher, and Johns, 2011). Crowdfunding platforms, recognizing the diverse needs and preferences of project promoters and supporters, often specialize in catering to specific niches within the crowdfunding market.

Hence, the specialization of crowdfunding platforms can manifest in various forms, from catering to innovative and creative projects or products (Agrawal, Catalini, and Goldfarb, 2010), to focusing on startups and emerging ventures (Ahlers, Cumming, Günther, and Schweizer, 2012; Schwienbacher and Larralde, 2012), and even sustainability and charity initiatives (Burtch *et al.*, 2013).

4.2 Type of Support and Return

One of the most distinctive features of a crowdfunding platform is the type of return offered by the project initiator. In crowdfunding, project promoters present a diverse array of potential returns, ranging from altruistic benefits to financial compensation.

Bradford (2012) classifies five types of returns from a legal perspective: (1) No compensation, where lenders make donations to support projects for the common good. (2) Reward, lenders receive non-monetary rewards. (3) Pre-ordered product, Backers make upfront payments for products. (4) Interest, lenders participate in loans. (5) Profit shares, lenders receive shares of participation in the project, such as in startups.

The complexity of capital provision and resulting returns increases from donations, rewards, pre-sales, loans, to equity, is presented in Hemer, Schneider, Dornbusch, and Frey (2011).

5. Types of Crowdfunding

To encapsulate these distinguishing features, crowdfunding platforms vary across numerous dimensions. Hence, it is unsurprising that various types of crowdfunding exist. In an effort to systematize crowdfunding and devise a classification scheme, researchers have proposed several approaches in recent years, primarily based on the type of return offered to backers. In addition to Bradford's (2012) legal categorization, scholars and industry experts have put forward different classifications.

Belleflamme *et al.* (2014) highlight the endpoints of pre-order and profit sharing, while the consulting firm Massolution (2012) has developed a widely recognized classification, distinguishing between reward-based crowdfunding (which includes pre-orders), crowdlending, crowdinvesting, and crowddonation.

However, these classifications primarily focus on return type, overlooking the fact that crowdfunding platforms diverge along various dimensions. Recognizing this, Haas *et al.* (2014b) identified 13 distinguishing characteristics of crowdfunding platforms by integrating crowdfunding with financial intermediation theory.

Through cluster analysis, they identified three overarching crowdfunding archetypes. Taking a comprehensive approach and considering multiple criteria, these archetypes are differentiated by their offered value proposition, which determines the types of project promoters attracted and the specific preferences of lenders regarding project type, return, risk, and platform functionality.

This article delves into the definition of crowdfunding, its various types, the key stakeholders involved, and the investor's decision-making model. Ultimately, it underscores crowdfunding as a distinct form of asset, distinct from loans or equity, presenting no obligation for repayment.

Haas *et al.* (2014) categorize crowdfunding into three distinct types, as presented below, Hedonism, Altruistic, and For Profit.

Hedonism: This type of crowdfunding focuses on innovative and creative projects like the Pebble smartwatch or the Oscar-winning film *Inocente*. Backers receive non-monetary returns such as pre-ordered products or rewards. Platforms like Kickstarter or Indiegogo typically apply the all-or-nothing principle and set minimum commitment amounts to ensure adequate funding and encourage higher spending. These platforms aim to evoke a sense of interest or joy, creating hedonistic value for supporters.

Altruism: Altruistic crowdfunding emphasizes charitable projects where supporters contribute for the "greater good" without expecting compensation. Platforms like Crowdrise and Kiva facilitate loose funding mechanisms, without minimum commitment amounts, applying a "keep it all" principle to maximize support for altruistic endeavors.

For Profit: This type targets profit-oriented crowdfunding, often for start-up financing or consumer credit. Investors expect monetary returns such as interest or profit shares. Platforms like FundedByMe or Prosper apply moderately rigid funding mechanisms, incorporating commitment levels and minimum amounts while offering flexibility for start-up needs, employing both the "keep all" and "all or nothing" principles.

6. The Model

6.1 Game Structure

The model is formulated as a dynamic game within a discrete environment featuring interdependent agents. Time is represented by $t \in [0, T], T_d$ s.t. $T_d \geq T$.

Two types of agents are involved: At $t = 0$ the entrepreneur, who determines exogenous parameters and endogenous variables, and the investor, who independently evaluates investment opportunities based on normally distributed valuations. The game concludes at $t = T$ if the funding threshold is met, signifying a successful loan where products are delivered to all interested investors at $t = T_d$

6.2 Entrepreneur's Problem

This aspect of the model centers on the interaction between a single entrepreneur and a limited number of potential investors. The entrepreneur has a predetermined financial need $S_t > K$ s.t. $K - costs \geq F$ for the project and sets prices, costs, and quantitative controls for investment opportunities to maximize the likelihood of successful funding.

6.3 Investment Opportunities

Entrepreneurs offer investors three types of investment opportunities, donations, passive investments, and active investments. Donations and passive investments allow passive participation in the project, while active investments permit active involvement. Passive and active participation are associated with fixed costs for the entrepreneur (c^{PI} and c^{AI} respectively). Due to the lower margins earned on passive and active investments, entrepreneurs often institute quantitative controls referred to as Q^{PI} and Q^{AI} .

There is also evidence that quantity controls lead consumers to purchase items at an earlier date for fear that the product will run out.

Donations, passive and active investments are: p^D , p^{PI} and p^{AI} .

6.4 Investor's Problem

Investors try to maximize their utility by deciding between four possible actions for each of the active ones. The potential shares of an active investor are to donate, passively invest, actively invest or wait and do nothing until $t + 1$. They are indicated as $A_{i,t} = D, PI, AI$ or $WAIT$.

Investors can only contribute once per game, so an active investor is the one who has been waiting for each period until now. An inactive investor is one who has decided to invest in some form in a previous t ; his actions at each successive t are indicated with $A_{i,t} = DONE$.

To make their decisions, investors are aware of the current and past states of the game, all prices, costs, quantity controls, timing, funding threshold and common expectations. The state of the game at time t is the number of each investment made prior to the investor's decision and the amount of collection raised; these measures are indicated q_t^D , q_t^{PI} , q^{AI_t} , and

$$S_t = p^D q_t^D + p^{PI} q_t^{PI} + p^{AI} q_t^{AI}$$

With this information, investors develop linear forecasts using a search period of 3.

These forecasts will be useful in estimating the likelihood of financing success and the likelihood that passive or active investments will "sell out" within the next period. The probabilities are evaluated as follows:

$$P_{t,t+1}^{PI} = \max \left(0, \min \left(1, \frac{1}{Q^{PI}} \left(\frac{q_{t-1}^{PI} - q_{t-3}^{PI}}{3} + q_t^{PI} \right) \right) \right) \quad (1)$$

$$P_{t,t+1}^{AI} = \max \left(0, \min \left(1, \frac{1}{Q^{AI}} \left(\frac{q_{t-1}^{AI} - q_{t-3}^{AI}}{3} + q_t^{AI} \right) \right) \right) \quad (2)$$

$$P_{t,T}^S = \max \left(0, \min \left(1, \frac{1}{K} \left(\frac{S_{t-1} - S_{t-3}}{3} (T - t) + S_t \right) \right) \right) \quad (3)$$

Equations (1) and (2) derive the probabilities with which passive and active investments will "sell out" between t and $t + 1$ by predicting the quantity of investments sold at $t + 1$ and dividing it by the quantity limit. The result is therefore limited between zero and one as all probability must be. Equation (3) derives the probability with which the total amount raised exceeds the funding threshold at $t = T$

It does this similarly to the previous two equations, although it looks directly at the period T since that is the relevant period for such a probability.

The active investor must now make a decision. To do this, it evaluates the three investment opportunities, subject to availability, as well as the value of the wait. The equations follow:

Value of donation:

$$V_{i,t}^D = P_{t,T}^S (\beta_i c^{PI} - p^D \delta^{T-t}) \quad (4)$$

(if $q_t^{PI} < Q^{PI}$)

Value of passive investment:

$$V_{i,t}^{PI} = P_{t,T}^S (\beta_i c^{PI} + \alpha_i c^P \delta^{T_d-t} - p^{PI} \delta^{T-t}) \quad (5)$$

(if $q_t^{AI} < Q^{AI}$)

Value of active investment:

$$V_{i,t}^{AI} = P_{t,T}^S (\gamma_i c^{AI} + \alpha_i c^P \delta^{T_d-t} - p^{AI} \delta^{T-t}) \quad (6)$$

(if $t < T$)

Value of waiting:

$$V_{i,t}^W = \max \begin{cases} 0, \\ \delta^{-1} P_{t,T}^S (\beta_i c^{PI} - p^D \delta^{T-t+1}), \\ \delta^{-1} P_{t,T}^S (1 - P_{t,t+1}^{PI}) (\beta_i c^{PI} + \alpha_i c^P \delta^{T_d-t+1} - p^{PI} \delta^{T-t+1}), \\ \delta^{-1} P_{t,T}^S (1 - P_{t,t+1}^{AI}) (\gamma_i c^{AI} + \alpha_i c^P \delta^{T_d-t+1} - p^{AI} \delta^{T-t+1}). \end{cases} \quad (7)$$

(if $A_{i,t-1} = Wait$ i.e. player is active)

Action:

$$A_{i,t} = \max \begin{cases} V_{i,t}^D, \\ V_{i,t}^{PI}, \\ V_{i,t}^{AI}, \\ V_{i,t}^W. \end{cases} \quad (8)$$

Upon action, all aggregate variables and expectations are immediately updated. In a sense this creates n sub-periods $\forall t \in [0, T]$ since each agent potentially faces a unique environment within a given t . The game runs up to $t > T$.

7. Conclusions

The landscape of crowdfunding is currently characterized by rapid changes and innovation. More and more projects across various domains are exploring crowdfunding as an option, leading to a proliferation of crowdfunding platforms experimenting with diverse business models.

As interest in crowdfunding grows, it will continue to attract increased attention from researchers and media outlets, resulting in a clearer understanding of the crowdfunding landscape. This dynamic is expected to persist in the coming months, but over time, we anticipate a period of consolidation in the industry.

Crowdfunding-funded projects will serve as valuable learning experiences, highlighting both successful strategies and pitfalls to avoid. Additionally, the performance of crowdfunding platforms in the market will help identify sustainable business models.

However, it's inevitable that the crowdfunding ecosystem will encounter failures, disappointments, and possibly instances of fraud. Currently, there is limited regulation in the crowdfunding market, allowing for experimentation but also leaving room for undesirable developments.

For crowdfunding to become a respected and widely used funding tool, policymakers will likely need to introduce regulations to protect both project promoters/start-up founders and supporters/investors. Furthermore, there is potential for crowd-motivated backers to evolve into active investors in innovative start-ups in the future.

Given these factors, crowdfunding deserves to be encouraged and supported as a significant means of mobilizing private capital, extending beyond its origins in the creative sector to become a topic of broader interest in both political and scientific arenas.

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