



Review article

Crowdfunding A bibliometric analysis and future research Agenda

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ABSTRACT

This study offers a bibliometric and Scientometric examination of the existing body of literature on crowdfunding. The analysis incorporates a total of 1156 articles from the Scopus database. The data is presented using the bibliometric technique, employing R-studio and VOS viewer software. A Scientometric analysis was undertaken to ascertain the discoveries and patterns of research themes, current and future research orientations, impact, co-occurrence, co-citations, as well as trends in impact and collaboration. The literature on crowdfunding has exhibited significant growth from 2010 to 2023. The number of publications pertaining to crowdfunding has experienced substantial growth between the years 2020 and 2023. The highlighted research trends and collaboration trends encompass various aspects of crowdfunding and resource mobilization, including crowdfunding, fundraising, social capital, peer-to-peer lending, venture capital, and crowdfunding success. Additionally, this study offers an expanded scope for the study based on a comprehensive examination of existing literature. The outcomes of our study have the potential to offer valuable insights for forthcoming scholars, corporations, and regulatory bodies seeking to comprehend the present patterns and anticipated advancements in the field of crowdfunding research.

1. Introduction

Entrepreneurs frequently encounter difficulties obtaining the necessary funding, especially in the early and riskiest phases of their businesses [1]. More and more business owners are using crowdfunding to finance their ventures since it has become a new source of capital for start-ups [2,3]. Crowdfunding can be used to provide financial assistance to small and medium-sized enterprises (SMEs), who are affected by credit rationing and are essential for tackling employment concerns and stimulating economic growth. Crowdfunding not only speeds up information and transaction flow [4], but it also eliminates offline impediments to financial transactions and transforms the corporate fundraising process. Many people who start crowdfinancing projects are also corporate managers who can gain entrepreneurial experience while raising money by starting ventures [5]. revealed that experienced or inexperienced entrepreneurs have much lower success rates than serial entrepreneurs. By starting crowdsourcing initiatives, entrepreneurs can earn money and gain experience in a range of fields, including asset returns, knowledge acquisition throughout the entrepreneurial process, operations management abilities, and social networks that may be employed in later projects. Entrepreneurs can communicate

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in-depth with individuals from all walks of life and investors through crowdfunding [6].

Entrepreneurs should make use of the learning effect to continually improve the experience they have received through “learning by doing” [7]. The process of knowledge acquisition and experience accumulation of crowdfunding creators can be regarded as a learning process. The behavioral traits of market investors are greatly impacted by the presence of the learning effect [8]. highlighted the value of connections in terms of reciprocity, trust, and mutual support as they relate to the effects of entrepreneurial learning in the crowdfunding industry. Because of its distinctive community-building strategy, serial crowdfunding is different from serial entrepreneurship [6]. Through project updates and talks with investors, entrepreneurs can directly grasp the needs of investors for products and services, which will help them develop and broaden their entrepreneurial expertise. The continuous updating of objective knowledge is a component of this learning process [7]. Entrepreneurs can frequently establish investment thresholds, investment levels, and goal financing amounts sensibly in subsequent re-crowdfunding campaigns by drawing on their prior experience with crowdfunding projects. Entrepreneurs can learn from the crowdfunding mistakes of others by supporting the projects of others as investors [9]. The success of later projects’ fundraising may be greatly influenced by the prior projects’ success with crowdfunding and by the experience of those crowdfunders.

Through the use of an IT-based technique called crowdfunding, people and organizations can raise money for their endeavors by soliciting small amounts from a sizable audience [4,10]. Serial backers, or people who have given to numerous campaigns in the past, are receiving more attention as research on crowdfunding develops [11]. The importance of serial backers to crowdfunding reflects the fundamental goal of the practice, which is to encourage the public to support new businesses [4]. Due to their herding effect, serial backers have a significant impact on the outcome of crowdfunding campaigns [11]. Additionally, because of their high level of self-entrepreneurship [12] and the satisfaction they derive from achieving their self-orientation [13], serial backers frequently engage in recurring support (i.e., loyalty). Higher campaign success percentages are the result of these internal impulses’ normative social influence on other possible backers [11]. However, the majority of studies on serial behavior in the setting of crowdsourcing have overlooked serial backers in favor of the entrepreneurs’ side [6,14].

Generally speaking, backers are essential to the development of crowdfunding. Their involvement and engagement are essential for the development and success of the campaign [15,16]. Since only pledging was initially considered in research on supporter involvement [4], increasingly intricate features of backers’ contributions have been examined. Evidence suggests that investors have dual motivations since they simultaneously want to boost entrepreneurs’ success and meet their own needs [17]. By promoting [18], endorsing [19], and co-creating [20], supporters contribute to the success of a campaign. Accordingly, backers go after activity [21], engagement [22], and personal values [17] as well as experiencing homophiles. The significance of backers to the success of crowdfunding has prompted an in-depth study to determine what drives backers to participate in crowdfunding. With this in mind, studies on cognitive motivation have discovered that receiving prizes or choosing desirable products has a significant influence on a backer’s choice to support a campaign [23,24]. These motives occasionally seem to outweigh other motives [25]. [26] demonstrated that backers’ emotional reasons, such as altruism and helping others, have a significant impact on crowdfunding success and cannot be ignored.

The role of backers and their reasons for contributing to campaigns have been examined in empirical studies on crowdfunding [27, 24]. The different research classified the pre-order aspect provided by entrepreneurs in the form of rewards as an extrinsic motivator for backers [28]. The complex perspectives of the backers on the benefits of crowdfunding show the adversities they face. These studies also considered elements like as self-venture, participation, and relationships with the entrepreneur and the campaign’s supportive network in addition to motivating factors including altruism, common beliefs, and early acquaintance [12,22]. Given the variety of motivational factors, it can be concluded that backers are not a homogeneous group and that one-time and serial backers have different motivational factors [11].

This is a comprehensive study with full coverage of the keywords to cover the gap in the previously conducted studies. The study will cover the following important research questions.

RQ1. What are the emerging trends in crowdfunding research from 2010 to 2023?

RQ2. What are the most productive documents, authors, journals, and organizations?

RQ3. What are the most frequently used keywords in crowdfunding Research?

RQ4. What are the authorship patterns of crowdfunding research?

RQ5. Which is the most potential area of research in crowdfunding?

In order to answer these important questions, the study employed descriptive, bibliometric, and Scientometric analysis, centrality analysis, co-citation analysis, social network analysis, performance analysis, and science mapping.

2. Data and methodology

The present study employed a bibliometric approach to obtain the quantitative findings about the body of literature on crowdfunding. Bibliometric refers to the interdisciplinary field that uses mathematical and statistical approaches to quantitatively analyze various forms of knowledge bearers [29]. The bibliometric analysis combined with content analysis is becoming increasingly popular among researchers [30]. The proposed knowledge system is a full integration of mathematics, statistics, and philology, with a particular emphasis on quantitative analysis. Currently, there is a growing emphasis on this particular area of study. One notable benefit is that it enables researchers to explore certain fields of study through the analysis of citations, co-citations, geographical

distribution, and term frequency, hence deriving valuable insights [31]. In alternative terms, it is feasible to investigate the internal framework of publications and the landscape of citations inside a specific study domain [32,33]. Currently, it is extensively employed in the identification of research trends [34–36], analysis of author collaboration [37], advancement of academic journals [38], progress of entire subject domains [39–41], clustering of research Topics [42]. In addition, some recent studies related to bibliometric analysis and future research directions [43–46].

2.1. Study Design

This study used a three-step methodological process as shown in (Fig. 1). The method was originally developed by Paltrinieri, which is modified for the present study. In the first step, recognized databases are searched for relevant publications for the meta-literature search. The next stage is to find the relevant literature from the selected database and the third step is to analyze the selected literature data through a bibliometric review to conclude.

2.2. Data selection strategy

The dataset for the bibliometric review is obtained from the Scopus database, which is a well-acknowledged database owned by Elsevier. There were several factors considered in the decision to choose the Scopus database. Scopus is frequently utilized in bibliometric research because of its extensive inclusion of peer-reviewed papers dating back to 1970, which surpasses the coverage provided by the Web of Science [47,48,49]. [50] assert that Scopus is well acknowledged for its comprehensive coverage of various publication houses and academic subjects. In a recent scholarly investigation [51], conducted a bibliometric examination on the subject of crowdfunding, employing data sourced from the Web of Science (WOS). The research yielded a total of 521 documents about crowdfunding, which were subsequently subjected to examination. This observation indicates that the coverage of Web of Science (WOS) is comparatively lower than that of Scopus. The Scopus database also enables functionalities, such as lacks the analysis on the co-occurrence of keywords, co-citations of keywords, bibliographic coupling of countries, and co-authorship of authors and countries which are not feasible within the WOS platform. The Scopus database was chosen for the current investigation due to its comprehensive data coverage and distinctive features.

The initial search query conducted was focused on the topic of “crowdfunding,” yielding a total of 2942 documents as search results. The active participation of researchers is often necessary to exclude papers that do not correspond with the study’s aims. The data underwent additional screening by conducting a search limited to article titles within the subject areas of business, management and accounting, economics, econometrics, and finance. The document type was restricted to articles and conference papers, and the language was limited to English. The source type was specifically limited to journals. This research is the inaugural attempt to comprehensively examine the complete population of crowdfunding. On August 25, 2023, the Scopus databases was accessed to conduct a search using a range of keywords, as detailed in Table 1. The ultimate dataset comprises 1156 items, encompassing both journals and conference papers.

2.3. Tools of Analysis

This study uses three bibliometric analysis tools: R-Studio, VOSviewer, and Excel. R-Studio is commonly used to generate bibliographic data for the analysis. VOSviewer was used to perform network and content analysis. VOSviewer allows users to create and visualize bibliometric networks [52]. Bibliometrix tools are used to extract data about documents, authors, sources, and extract

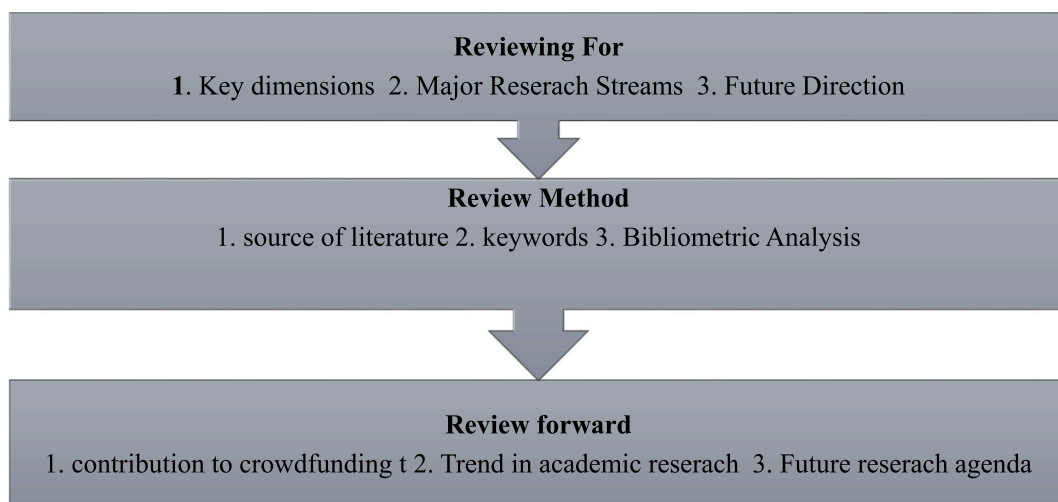


Fig. 1. Research approach.

Table 1

Final query used for data collection.

Query Wording	Final only English
TITLE ("crowdfunding") AND (LIMIT-TO (SUBJAREA, "BUSI") OR LIMIT-TO (SUBJAREA, "ECON")) AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "cp")) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (SRCTYPE, "j")	1156

subjects. Microsoft Excel was used for creating high-quality charts.

2.4. Type of analysis

Three types of analysis were used in this study: general performance, citations, and content. The general performance shows general information about the data, the general trend of publication, the most relevant authors, and leading countries. Citation analysis shows frequently cited journals, countries, and authors, while network and content analysis shows bibliographic coupling, co-citation, and co-occurrence analysis to perform clustering.

3. Results

Table 2 explains the overall view of data collected from 1156 documents over the period 2010–2023. This data includes published research articles only. There are a total of 2160 authors who have contributed to this research area. Documents per author is 0.53 and the author per document is 1.86.

Fig. 2 shows the annual distribution of the 1156 articles published from 2010 to 2023. This figure shows that research on crowdfunding has an increasing trend. The last year 2022 has the highest number of publications and the year 2023 has already 175 publications till August 2023 when the data is extracted. This shows that crowdfunding is an interesting research area worldwide that is still growing and has gained researcher's interest. The yearly data shows that there is a considerable rise in publications after the year 2020.

3.1. Most influential authors, affiliations, countries, and journals

The progression of the research papers in the crowdfunding field is linked with the systematic community of different authors, affiliations, countries, and sources. **Fig. 3** represents the most significant authors on this interesting topic. Baber, H., Schwiendbacher, A., Vismara, S., Hornuf, L. are the most impactful researchers with 19, 15, 15, and 13 articles respectively. The details of the rest of the authors are given in **Fig. 3**.

Table 3 shows the lists of different author affiliations, ordered from most to least frequent, and **Fig. 4** denotes the countries covered in the previous crowdfunding-related research. The list of countries is dominated by the developed countries USA is the leading country followed by China and Italy. This shows that most of the research is carried out in developed countries.

Fig. 5 shows the lists of the frequency of crowdfunding in different journals. *Small Business Economics and Technology Forecasting and Social Change* are the two leading journals that publish crowdfunding-related research. *Journal of Business Research and Entrepreneurship Theory And Practice* are also the leading journals publishing crowdfunding-related Research.

3.2 Keywords and Thematic Analysis.

Fig. 6 shows the keywords analysis and co-occurrence of keywords. Fintech and regulations, social media, social capital, and social networks are the key areas in crowdfunding research. Key themes and clusters are shown in **Table 4**. Fintech and regulations, social capital, crowd investing, social networks, startups, and joint ventures are the areas of research focus.

Fig. 7 illustrates the evolving study focus in the field of crowdfunding over the years. The diagram presented below illustrates that the initial focus of research encompassed social capital, peer-to-peer lending, decision-making, venture capital, and open innovation.

Table 2
Descriptive statistics for bibliometric data.

Description	Results
Timespan	2010:2023
Sources (Journals, Books, etc.)	423
Documents	1156
Average citations per document	30.35
References	56,809
Authors	2160
Authors of single-authored docs	116
Author of Multi-author documents	1040
Single-authored docs	143
Document per author	0.53
Author per document	1.86
Co-Authors per document	2.79

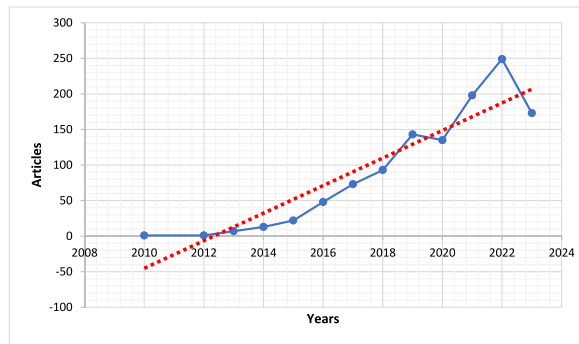


Fig. 2. Number of publications per year.

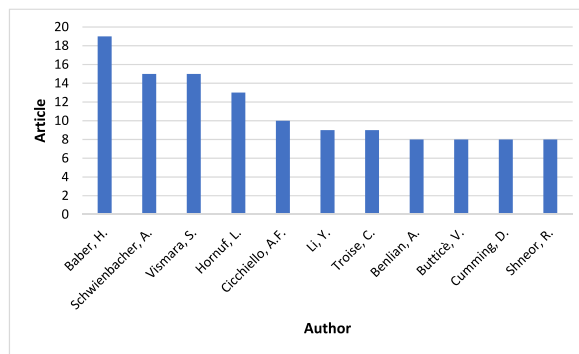


Fig. 3. Most frequently published authors.

Table 3
Authors Affiliated Institutions.

S No	Affiliation	Articles
1	University of Science and Technology of China	20
2	Copenhagen Business School	19
3	Politecnico di Milano	19
4	Università degli Studi di Torino	18
5	SKEMA Business School	17
6	Hefei University of Technology	16
7	Università degli Studi di Bergamo	16
8	Universiteit Gent	16
9	University of Agder	16
10	Parthenope University of Naples	15
11	Florida Atlantic University	14

In recent times, there has been a notable movement in attention towards the domains of COVID-19, fintech, and machine learning. This demonstrates that the integration of technology into crowdfunding research has become crucial for fundraising purposes, enabling researchers to access sufficient data for conducting studies in this field.

Fig. 8 shows the trend of the keywords since 2019 when the literature in this field started growing. Crowdsourcing has been the most prolific area in crowdfunding literature. Sustainable development has been a growing area along with equity crowdfunding.

3.2. Citation analysis

The different citation analysis is a form of bibliographical reference analysis. It detentions a link between the two documents. The different research scholars reveal that it distorts the paper’s overall quality. Therefore, sometimes the citation analysis contains a negative sense of citations and self-citations. Although this criticism and the controversial arguments, the citation analysis is still a good element of influence. It helps us to learn more about a field or any interesting topic by recognizing an influential piece of work.

Rather than calculating all citations, the analysis of this study measures citations between the authors who published in quality journals and then shows the influence of top authors. Table 5 denotes the particular author’s impact. H-index value of 13 seems to be

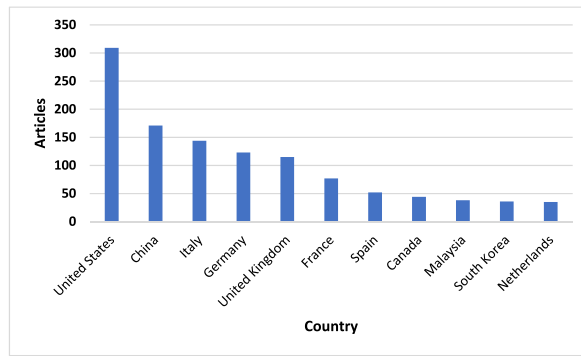


Fig. 4. Different countries covered in crowdfunding.

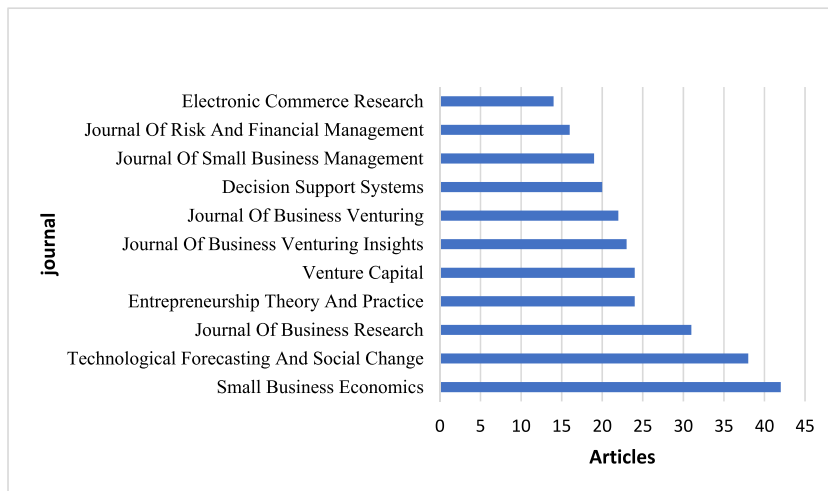


Fig. 5. Top ten journal (crowdfunding).

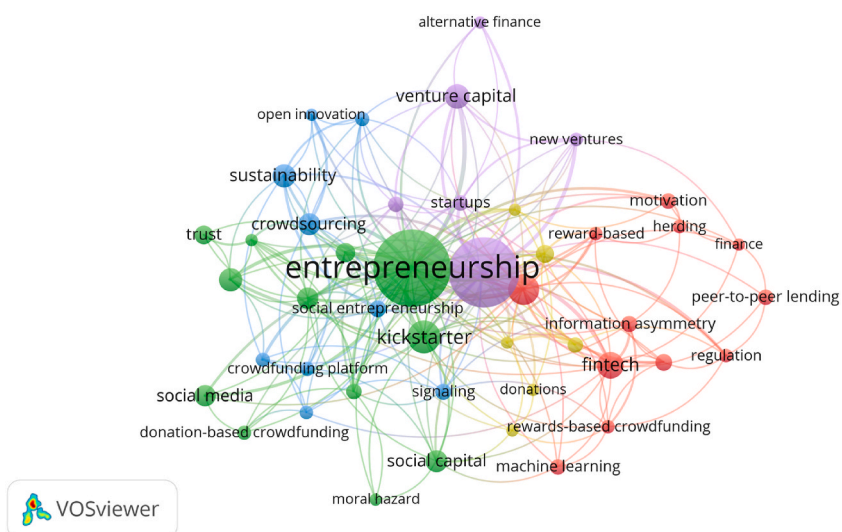


Fig. 6. Co-occurrence of keywords.

Table 4
Keyword analysis.

No/Colour	Most Frequent Keywords (n2010)	Area of Focus
Cluster 1-Red	Fintech, regulation, peer-to-peer lending, machine learning,	Fintech and regulations
Cluster 2-Green	Donation-based crowdfunding, social capital, social media, trust, moral hazard, equity-based crowdfunding, reward-based crowdfunding	Social capital
Cluster 3-Blue	Covid 19, Social entrepreneurship, Innovation, venture capital, fintech, crowd investing, sustainability	Crowd investing
Cluster 4-Yellow	Donations, social networks, entrepreneurs' rewards	Social networks
Cluster 5-Purple	Starts ups, venture capital entrepreneurial finance, alternative finance	Startups, venture capital

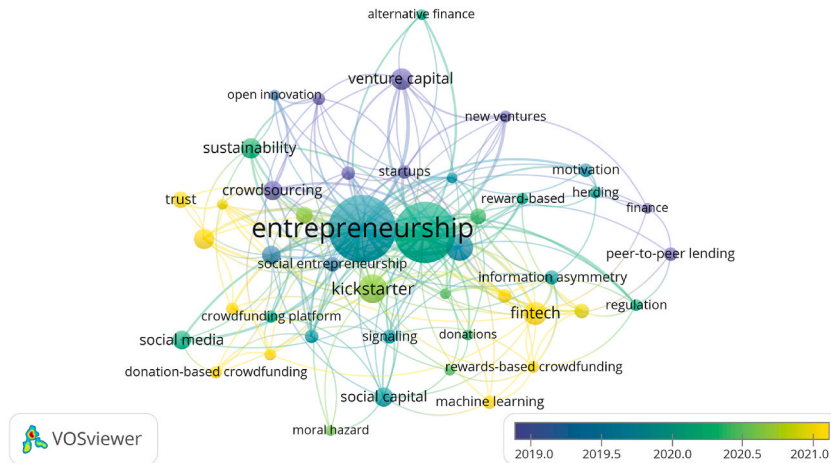


Fig. 7. Co-occurrence of keywords (overall).

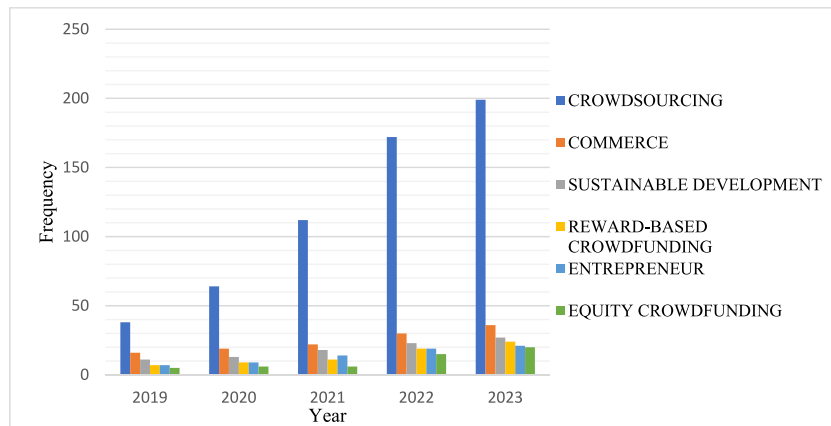


Fig. 8. Keywords frequency analysis.

the most cited author in crowdfunding research. Table (6) explains the influence of different sources. *Small Business Economics* is the most substantial and appropriate journal in crowdfunding, followed by *Technological Forecasting and Social Change*, *Journal of Business Venturing*, *Entrepreneurship: Theory And Practice*, *Journal of Business Research*, and *Venture Capital* (see Table 6).

The nodes in Fig. 9 represent a single reference and size shows the number of citations per paper. The link between these nodes shows the co-citation relationship. The relationship strength is higher for thicker lines. These nodes belong to different clusters depending upon the similarities.

This figure shows the existence of four groups. Green and red clusters are bigger than yellow and blue ones containing 58 and 40 documents respectively. These documents are mainly related to crowdfunding, equity funding, crowdsourcing, social capital, fundraising, and open innovation. A very important research paper titled “The Dynamics of Crowdfunding: An Exploratory Study” by

Table 5
Author's impact.

S No	Author Names	H-index	G-index	M-index	TC	No	Year
1	Vismara S	13	15	1.625	1380	15	2016
2	Schwienbacher A	12	15	1.091	2602	15	2013
3	Hornuf L	9	13	1.125	830	13	2016
4	Li Y	9	20	1	563	20	2015
5	Cumming D	8	8	0.727	1337	8	2013
6	Baber H	7	11	1.4	141	19	2019
7	Butticè V	7	8	1	405	8	2017
8	Cicchello Af	7	9	1.4	90	10	2019
9	Troise C	7	9	1.75	144	9	2020
10	Zheng H	7	8	0.7	722	8	2014

Table 6
Journal impact.

S No	Element	H-index	G-index	M-index	TC	No	Year
1	Small business economics	23	42	2.875	2288	42	2016
2	Technological forecasting and social change	20	33	3.333	1139	38	2018
3	Journal of Business Venturing	17	22	1.7	5813	22	2014
4	Entrepreneurship: theory and practice	16	24	1.778	4475	24	2015
5	Journal of Business Research	16	31	2	1221	31	2016
6	Venture capital	16	24	1.455	1398	24	2013
7	Decision support systems	11	20	1.375	711	20	2016
8	Journal of Business Venturing Insights	11	22	1.375	492	23	2016
9	Management Science	9	12	1.125	856	12	2016
10	Research policy	9	11	1.286	655	11	2017

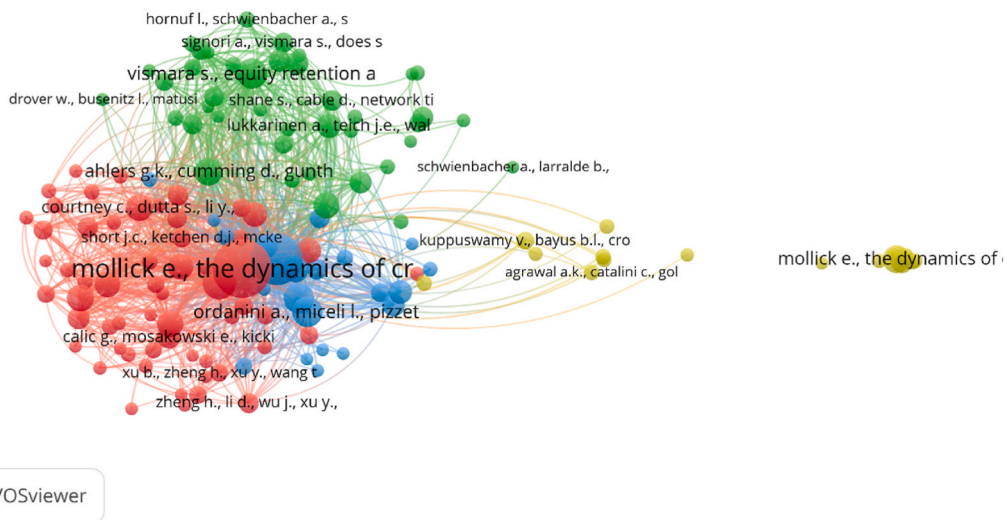


Fig. 9. Co-citation network of documents in the field of crowdfunding.

Mollick E. is also included in this cluster. The paper examines the dynamics of crowdfunding by using a dataset of 48,500 projects with a total funding of 237 million combined by all sources. The finding revealed that the founders fulfill all their obligations but face delays in amounts and levels of funding. The paper provides insights into how the actions of founders affect entrepreneurial financing ability.

Appendix I shows the top ten most cited research papers in crowdfunding literature. Out of the total research paper articles composed, the top 10 most cited research papers were nominated for citation analysis. The citations of the top 10 cited papers were found in the range of 391–2243. The total citation of the ten articles is 7938, and the average citation per document is 793. The most cited ten articles in crowdfunding were published in 4 different journals over ten years by different authors. Out of the ten cited documents, 2 documents have only one author, and the rest of the eight documents have more than one author.

The research paper titled “The Dynamics of Crowdfunding: An Exploratory Study” by Mollick E. Published in the year 2014 has the highest citation of 2243 reflected in the Journal of Business Venturing. The finding revealed that the founders fulfill all their obligations but face delays in amounts and levels of funding. The paper provides insights into how the actions of founders affect the

entrepreneurial financing ability. The research paper titled “Crowdfunding: Tapping the Right Crowd” by Belleflamme P.; Lambert T.; Schwienbacher A. In the year 2014, the same journal i.e. Journal of Business Venturing collects 1412 citations. The study compares two forms of crowdfunding: Entrepreneurs ask individuals to either pre-order the product or advance a fixed amount of money in exchange for a share of future profits (or equity). It extends the impact of information asymmetry and quality uncertainty. The study has implications for managers in the early life cycle of the firm where the development of the individual and social community is very important for the firm to remain alive.

3.3. Network analysis

3.3.1. Bibliographical coupling

The bibliographic coupling permits us to discover the main items in our sample set (Boyack & Klavans, 2010). This method is very useful for recognizing the commonly cited articles in the bibliographies. Fig. 10 presents the commonly cited articles with the literature on crowdfunding. The minimum citation threshold was to be set by 15. The results reveal that most cited articles are written by Mollick E. (2011) titled “The dynamics of crowdfunding: An exploratory study”. Therefore, most of the work on crowdfunding has cited these articles.

Fig. 11 shows that small business economics has the strongest links with other sources publishing on crowdfunding.

4. Content analysis and conclusion

One of the most challenging components of launching and effectively operating a new firm for entrepreneurs is finding the appropriate capital [13,62]. Entrepreneurs encounter substantial difficulties when trying to secure the funding required to create new goods and advance technologically in the early phases of business initiatives [53]. According to Refs. [54,55] crowdfunding is an appealing choice for many business owners because it allows them to obtain the necessary finance without experiencing the problems associated with angel investors, bank loans, and venture capital financing. Therefore, according to Mollick’s definition of crowdfunding from 2014, “crowdfunding enables founders of for-profit, artistic, and cultural ventures to fund their efforts by leveraging relatively small contributions from a relatively large number of individuals using the internet, without standard financial intermediaries.”

A crowdfunding campaign on Kickstarter is deemed successful if the entrepreneur secures the required cash within the allotted timeframe [56]. Numerous studies look at the factors that influence the success of crowdfunding, frequently concentrating on the traits of the campaign or the traits, personality, and prior crowdfunding performance of the entrepreneur. Women are reported to have higher rates of crowdfunding success when it comes to entrepreneur traits that influence campaign outcomes [57]. According to Ref. [58], this happens because benevolent backers desire to provide financial support to historically underprivileged businesses. Recent research suggests that women may be more likely to choose homophily and support campaigns started by businesspeople who are similar to themselves, which may be another factor influencing their success with crowdfunding. Regarding personality traits, studies have concentrated on the use of narcissistic rhetoric by business owners and discovered that narcissistic business owners launch

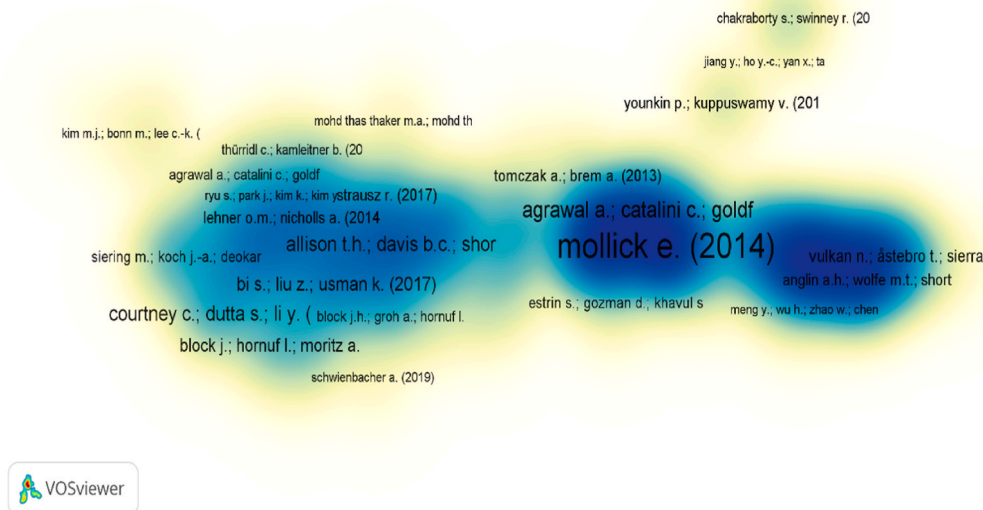


Fig. 10. Bibliographic coupling of the documents.

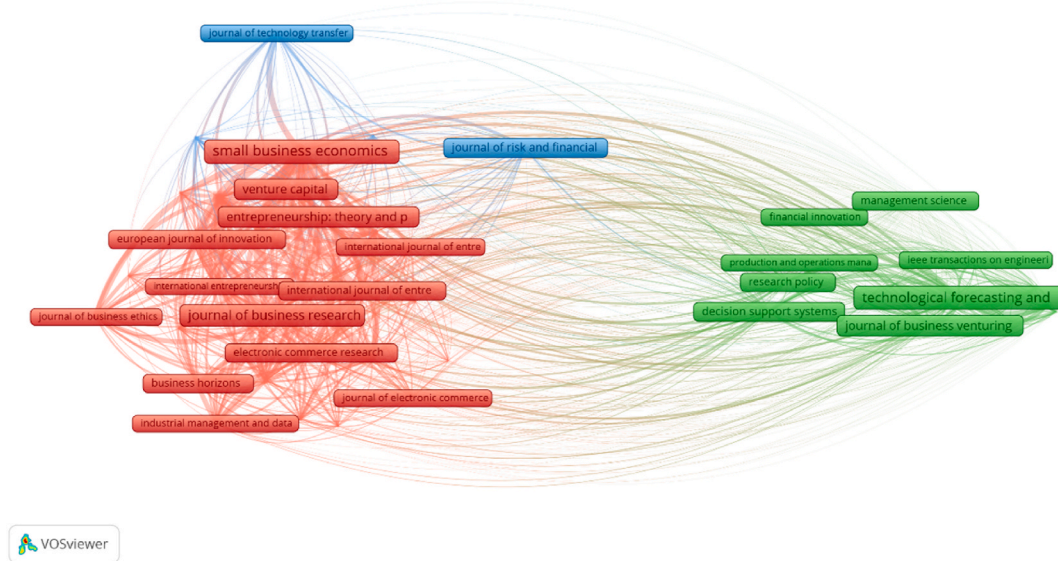


Fig. 11. Bibliographic coupling of the sources.

less successful campaigns [59].

According to organizational learning theory, past experiences may be used to inform present and future behavior. This is especially true for entrepreneurs. Entrepreneurs gain knowledge and skills through learning from real-world experiences, which improves performance [60,61]. [61] demonstrated that the success of crowdfunding could be favorably impacted by the learning experiences of entrepreneurs in launching and supporting initiatives, with the influence of the experience in initiating projects being particularly substantial. The active performance of serial entrepreneurs has drawn more attention in recent years. These people are widespread in the entrepreneurial landscape and have prior entrepreneurial experience [28].

[7] found that serial entrepreneurs are typically more seasoned than beginning ones, particularly if they have a track record of success. According to Ref. [62], serial entrepreneurs have a higher propensity for success due to their superior entrepreneurial skills and social network resources compared to first-time business owners. Additionally [63], revealed that serial entrepreneurs who have a successful track record and strong social networks had a much higher probability of achieving future entrepreneurial success.

The successive creators are a particular form of serial entrepreneur in the crowdfunding sector, and some academics have just recently started to pay attention to this distinctive set of crowdfunding participants. According to Ref. [55], the early internal social capital built up by creators has a strong favorable impact on the number of backers, the percentage of funding, and ultimately the success of a crowdfunding project. According to empirical research by Ref. [64], succeeding creators who renew crowdfunding campaigns can build internal social capital that first-time creators are unable to, which improves financing performance. The amount of financing, the percentage of support, and the total number of supporters in the initial project started by subsequent producers all have an impact on the success of later crowdsourcing projects [65]. Additionally, the success of future crowdfunding initiatives can be positively influenced by the previous creators' experience in starting and funding earlier ones [61]. According to Ref. [10], the second project's succeeding creators' entrepreneurial behavior can also be influenced by their gender.

Direct experience and indirect experience are the two basic categories into which the learning process is divided in the learning theory literature. In contrast to indirect experience, which is learned through seeing other people's activities, direct experience is information gained via personal practice and "learning by doing" [66]. In their pursuit of ongoing entrepreneurship, entrepreneurs can gain from both types of learning [67]. The creators can earn direct experience in the crowdfunding sector by starting their initiatives, as well as indirect experience by backing the efforts of others [61]. Direct experience enables creators to identify critical elements that affect financing success, such as the financing ratio of crowdfunding initiatives, and learn from the success or failure of their ideas. Negative feedback drives the investigation of alternate solutions, whilst positive feedback inspires producers to apply successful experiences to future initiatives. The creators can learn from others' experiences playing the role of investors through indirect experience, which helps them better plan their future ventures [9]. Through interpersonal connections and entrepreneurial education, the effective use of serial crowdfunding can enhance financing performance. Entrepreneurs with prior start-up experience may have valuable skills and knowledge that investors identify as signs of a high-quality start-up [68].

Due to the economic slump and the epidemic, real companies have recently seen a fall in company performance and returns on assets. Corporate financialization has emerged because more businesses investing capital in the virtual economy to recover from losses and improve their economic conditions. According to Ref. [69], excessive financialization harms long-term corporate growth and real economic development. China has therefore reemphasized the necessity of giving priority to economic development in the real economy and creating an institutional framework to deliver efficient financial support in 2021. Fintech has the potential to improve financial inclusion, and resilience, and enable the high-quality development of the real economy as a key driver of China's economic

transformation [70,71]. Fintech is still a relatively new phenomenon, and the requisite legislative and regulatory frameworks are still being developed. The development of fintech could lead to businesses obtaining money illegally and investing it. Financial regulation can successfully reduce fraudulent behaviors within the fintech and encourage its controlled development as a form of external oversight. In addition, as fintech develops, market information asymmetry can be reduced, resource allocation efficiency for businesses can be improved, and financialization can be reduced as a result [72].

Crowdfunding can take many various forms, depending on how the return or incentive is created. In equity crowdfunding, contributors donate money in exchange for start-up firm stock. The hallmark of reward-based crowdfunding is providing rewards to backers in the form of a good or service. In this instance, the choice to fund a project is driven by the expectation of using the good or service in some way. Understanding the elements that contribute to the success of crowdfunding projects is a crucial area of research [73,74]. examined the effects of geography and the local environment on funding success. A high-risk investment, similar to an asymmetric information problem, is equity crowdsourcing [75]. A severe moral hazard issue with an equity instrument exists, such as inaccurate reporting [76]. However, stock crowdsourcing gives investors a simple option to diversify their holdings. Due to the low initial investment requirements, equity crowdfunding has a low entrance barrier. According to Ref. [77], equity crowdfunding investors are aware of the high level of risk involved. They can invest in a variety of enterprises because the investment value is usually low. Investors assume risk and are happy when their projects are finished and their objectives are accomplished [78]. Otherwise, according to Ref. [79], investors might logically postpone their investment to find out more about the initiative they want to fund.

Crowd-sourcing is recognized as a cutting-edge socio-technical activity with the ability to open up new doors for sustainable business owners and inventors [80]. The question of whether a project's sustainability orientation affects its ability to raise money on Kickstarter is still being debated. On the one hand [81], discovered that a prosocial or environmental approach not only enhances the likelihood that a project will receive its financing target but also the possibility that it will receive funding over the initial aim [82]. showed that crowdfunding platforms that are entirely devoted to renewable electricity initiatives perform better than platforms with a broader emphasis; and provide more empirical evidence for this premise. On the other side [83], revealed that a project's environmental focus is not significantly associated with its likelihood of receiving funding. One of the arguments is that since sustainability is commonly characterized as a community good, the issue of freeriding affects backers' behavior. According to rational choice theory, backers will not likely fund collective goods because doing so does not offer personal incentives or immediate access to the advantages [83].

In a crowdfunding transaction, three parties are involved: the entrepreneurs, who are the owners of the idea or project; the funders, who elect to support the concept with financial resources; and the online business platforms that provide crowdfunding services. An open call is made and a social media campaign is started to entice potential funders to participate, making social networks an essential aspect of the transaction centered on these three players. A well-known and academic definition of reward-based crowdfunding is provided by Ethan Mollick: "Crowdfunding refers to the efforts made by entrepreneurial individuals and groups—cultural, social, and for-profit—to fund their ventures by enlisting the assistance of a large number of relatively small online contributions from individuals without the use of traditional financial intermediaries." [4]. The reward-based model of crowdfunding, which uses an online open call, pays back the donors by giving them a gift or reward in exchange for their support of the entrepreneur's concept or project. The model is also known as a pre-sales model since it assumes that customers would be prepared to plan their purchases and will hence support the entrepreneurs' production strategy [84]. According to the process, business owners should start a significant internet campaign that lasts between 30 and 90 days. They have that much time to do their task. If not, they are unable to get back any money they have collected. This is called the "all or nothing" model.

This study examines crowdfunding research using bibliographic analysis. In this unique study, the performance of publications of authors, different journals, and countries is evaluated. This study shows a bibliographic review of crowdfunding to ascertain areas within which different researchers are studying elements of crowdfunding, the overall inclination of total articles from year to year, the most productive and cited researchers of crowdfunding, and the most suitable journals for the literature review. Additionally, this research examined the networks of co-citations, thematic maps, three-fold maps, and co-occurrence. This research gives comprehension by appraising the literature and summarizing the existing research. The bibliometric review of crowdfunding research articles was collected from the Scopus database. The most common language for the articles is English, and the area with most of the published articles is Crowdfunding, fundraising, social capital, crowdfunding, Peer-to-peer lending, and Venture capital. The country that has done a greater number of crowdfunding research is the USA, China, and Italy. Mostly Small Business Economics has published several research papers on crowdfunding. The most substantial crowdfunding author is Baber, H.

5. Future research agenda

Crowdfunding is a new method for bypassing conventional financial intermediaries and obtaining money directly from sizable groups of investors. It effectively lowers investment thresholds and transaction financing costs. According to the kind of payment, crowdfunding can be categorized into four categories: reward, charitable giving, debt, and equity [85]. In the case of crowdfunding, the goal is to gather capital for investments, typically through online social networks. In other words, it is claimed that crowdfunding can assist businesses in raising capital from vast audiences, where each participant may only contribute a small sum. According to Ref. [86], such an investment could be made by an equity purchase, loan, and contribution of the goods. According to a different explanation, crowdfunding is a brand-new method of financing that relies on an intermediary, to connect backers/investors—regular people willing to put small sums of money into worthwhile projects—with entrepreneurs/start-ups, which typically represent bold new ideas and struggle to raise money through other channels.

The high failure rates in crowdfunding campaigns are a result of the fierce competition among entrepreneurs to access these sectors

[4]. For instance, Kickstarter recorded a success percentage of under 40 %, meaning that more than 60 % of its campaigns were unsuccessful in generating the desired amount of money. Since a lot of time and effort has been invested, many creators who had their initial ideas rejected are still driven to try again with new, innovative ideas on the crowdfunding market. The relaunching of a crowdfunding campaign as a result has grown in popularity and visibility. The success of campaigns in terms of fundraising has been extensively studied in the crowdfunding literature [87,88]. These conversations normally treat crowdfunding campaigns as static, independent publications, illuminating the factors that influence the success of a single campaign. However, the failure-relaunch of a campaign is a connected dynamic process in which business owners can gather and analyze experience to strategically adjust to upcoming financing operations [21,89]. To comprehend the effectiveness of campaign relaunches more fully, new theoretical viewpoints and conversations are needed. Therefore, Table 7 shows the future research direction, which are the most important questions for future research.

Crowdfunding is the practice of using small amounts of money from a large number of people to finance a new business venture. Crowdfunding uses social media and websites to connect investors and entrepreneurs. By enlarging the pool of investors beyond the traditional circle of owners, relatives, and venture capitalists, crowdfunding has the potential to boost entrepreneurship. The ability to generate hundreds of thousands or millions of dollars from anyone with cash to invest has been made possible through crowdfunding. Anyone with an idea can present it to potential investors in a venue provided by crowdfunding. Table 7 explains the future research avenues for the researchers and regulating authorities. Equity crowdfunding entails giving investors a piece of your company in exchange for their money. Equity funding is commonly known to exist, with private equity, venture capital, and angel investing having long-standing roles in growing businesses. Therefore, the equity-based model plays a substantial role in socially responsible crowdfunding projects. The economic position of a country is important for new startups and different crowdfunding projects. The increases in economic policy uncertainty raise systematic risk and, as a result, the cost of capital in the economy. Platforms for crowdfunding are very important for those who want to fund their projects and for people who want to help bring other people's ideas to life. Platforms like Indiegogo and Kickstarter present projects in-depth, allowing people to get in touch with authors and look through links to previous works. Users have the opportunity to work with causes that interest them thanks to the option of making small financial contributions to projects. A crucial element of the success of crowdfunding is the ability to draw potential investors. The success of a crowdfunding project may depend on a variety of variables, including the gender of the investors, their investing history, herd (or crowd) behavior, the advantages to the local community, and the amount of rewards offered. Depending on the form of crowdfunding you participate in, you could be able to get a return on your investment through equity (increases in share value) or interest (if you use P2P lending), or you might merely get other advantages or benefits.

Similar to financial crowdfunding methods like equity crowdfunding, blockchain-based crowdfunding uses currency and security tokens. Payment tokens, like Bitcoin, that resemble fiat currency but have higher transaction costs are functional but unworkable for a Bitcoin exchange. There, it is important to analyze how blockchain technology influences the decision of different crowdfunding projects. The role of greenfield investment is important for new projects, funding, and social capital because they are more helpful for the green economy and also for working on new renewable projects. Some investors might back online campaigns as a result of external online social connections they have made with the fundraisers, which are frequently gauged by the number of followers. As a result, external social connections offer a consistent method of communication and promotion, expanding the funding catchment area and increasing the likelihood of funding success. Additionally, because social connection involves peer communication that promotes online influence, the more online followers a fundraiser has, the more influential that fundraiser is in society. In developing economies, tax evasion and money laundering are unlawful activities. Crowdfunding sites must be aware of fraud prevention measures and the risk of money laundering, just like any other investment platform. Companies and investors can prevent fraud among projects and platforms with the use of anti-money laundering laws (AML) controls and technology solutions. Additionally, the danger can be somewhat minimized by the use of electronic payment systems on crowdsourcing platforms. After all, these questions and debates are helpful for researchers and policymakers.

Consent for publication

All authors provided written informed consent to publish this study.
Availability of data.

Table 7
Future research direction.

S No	Future Research Questions	Reference
1	How the equity-based model is effected Socially responsible crowdfunding across the globe.	[90]
2	To examine the effects of economic uncertainty on crowdfunding performance.	[91]
3	How platform context influences the crowdfunding performances on other platforms.	[92]
4	To examine the impact of non-material returns on crowdfunding decisions.	[93]
5	How the Blockchain technology empowers the crowdfunding decision-making of the consumer market.	[94]
6	Nexus of equity crowdfunding and renewable energy sources: Are enterprises from green field investment economies more performant?	[95]
7	Crowdfunding in times of crisis the interplay of economic uncertainty and backers' well-being in large business rescue campaigns.	[96]
8	Further research should explore whether the influence strength varies with the progress of fundraising.	[97]
9	Tax evasion and money laundering through crowdfunding in developing economies.	[98]
10	Future research about whether social interaction effects before and after the "threshold" are different.	[99]

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Shahab Aziz: Data curation, Conceptualization. **Muhammad Rizwan Nazir:** Investigation, Formal analysis. **Muhammad Imran Nazir:** Writing – review & editing, Writing – original draft, Software. **Sidra Gazali:** Visualization, Validation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix

Appendix I

Top Ten Globally Cited Documents on Crowdfunding

Sr#	Authors	Title	Year	Source Title	Cited by
1	Mollick E.	The dynamics of crowdfunding: An exploratory study	2014	Journal of Business Venturing	2243
2	Belleflamme P.; Lambert T.; Schwienbacher A.	Crowdfunding: Tapping the right crowd	2014	Journal of Business Venturing	1412
3	Ahlers G.K.-C.; Cumming D.; Günther C.; Schweizer D.	Signaling in Equity Crowdfunding	2015	Entrepreneurship: Theory and Practice	998
4	Colombo M.G.; Franzoni C.; Rossi-Lamastra C.	Internal social capital and the attraction of early contributions in crowdfunding	2015	Entrepreneurship: Theory and Practice	643
5	Agrawal A.; Catalini C.; Goldfarb A.	Crowdfunding: Geography, Social Networks, and the Timing of Investment Decisions	2015	Journal of Economics and Management Strategy	565
6	Bruton G.; Khavul S.; Siegel D.; Wright M.	New financial alternatives in seeding entrepreneurship: Microfinance, crowdfunding, and peer-to-peer innovations	2015	Entrepreneurship: Theory and Practice	475
7	Allison T.H.; Davis B.C.; Short J. C.; Webb J.W.	Crowdfunding is a prosocial microlending environment: Examining the role of intrinsic versus extrinsic cues	2015	Entrepreneurship: Theory and Practice	417
8	Vismara S.	Equity retention and social network Theory in equity crowdfunding	2016	Small Business Economics	402
9	Cholakova M.; Clarysse B.	Does the Possibility to Make Equity Investments in Crowdfunding Projects Crowd Out Reward-Based Investments?	2015	Entrepreneurship: Theory and Practice	392
10	Courtney C.; Dutta S.; Li Y.	Resolving Information Asymmetry: Signaling, Endorsement, and Crowdfunding Success	2017	Entrepreneurship: Theory and Practice	391

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