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Review Article

Developing a Comprehensive Framework for Crowd Funding Factors by Using the Hexagon Technique

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Abstract

In recent years, crowd funding has been seriously considered as a novel method of financing start-up businesses and innovative ideas. In its short life so far, the method has significantly grown in different aspects, such as the number of proposed platforms, the number of campaigns and their success rate, the amount of capital provided, and the number of proposed models. In addition, various researchers have investigated the phenomenon from different points of view. Nevertheless, only a few studies have carried out a comprehensive review of the factors affecting this method. The main purpose of this research is to design and implement a comprehensive framework for factors that affect crowd funding. In order to achieve this goal, the effective factors in this regard were first identified through a systematic review of the literature on crowd funding. Then, they were classified and clustered in a hexagonal framework based on the stakeholder's model. In other words, a qualitative method is used to extract the factors affecting crowd funding. The hexagons extracted from the literature were in 82 clusters, of which 38 were accounted for by capital seekers, 16 by investors and platforms, and 12 by other stakeholders. This study is the first effort to design a comprehensive framework for factors that affect crowd funding.

Keywords: Crowd Funding; Hexagon; Clustering; Systematic Review.

1. Introduction

Recently, digital technologies, the World Wide Web, and its new capabilities, such as Web 2.0 and social networks, have triggered a revolution in business models and business management concepts [1]. Indeed, the World Wide Web and social networks have provided a powerful platform for public collaboration and participation through which a new paradigm has been developed based on the crowd in various fields, including business [2-6]. These networks, if managed properly, can serve as international phenomena with great potential to make positive changes in communities and organizations by supporting and creating cooperation networks [7].

The emergence of Web 2.0 and social networks in business models and financing methods has led to dramatic changes in start-up businesses and innovative entrepreneurs. One of these changes has occurred through the emergence of crowd funding in the field of financing [8]. Crowd funding is rooted in crowdsourcing and has been extracted from

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outsourcing. It is a method based on Web 2.0 and social networks and aims at financing creative and innovative start-up projects and businesses through small contributions by a large number of people (i.e. "crowd") [9, 10].

In the early stages of their formation, start-up businesses often face financing problems in traditional ways [11, 12]. To overcome those problems, some creative founders and entrepreneurs have developed a crowd funding method that deals with financing by tapping the crowd rather than a particular group of professional investors. This form of financing, in turn, leads to new forms of business in which the "normal" population is involved more than ever, as active consumers or investors or both [9].

Taking advantage of the Internet to attract the participation of a large number of people with a low fund to finance innovative projects, such as movies and music, dates back to the late 1990s. However, in recent years, thanks to Web 2.0 and social networks and due to the economic decline, crowd funding has been presented in its current form [13]. As an example of its pervasion, in 2013, a total of 536 crowd funding service-providing sites existed in the world, which financed about 5.1 billion dollars [14]. Crowd funding is a financing method focused on founders, including entrepreneurs who want to commercialize their ideas through businesses as well as owners of small businesses. The method allows these people to protect their business against fluctuations, maintain their growth once in need of financing [15], or get funds from the small contributions of many people using the Internet without interference and standard financial requirements [16].

Kleemann et al. (2008), Lambert and Schwienbacher (2010), and Belleflamme et al. (2014) defined crowd funding as a request made to the public mainly on the Internet for providing financial resources either as donations, in exchange for a rewards, or in return for voting rights in order to support initiatives for specific purposes [9, 17, 18].

Based on the above definition, Mollick (2014) proposed a new definition. According to him, "crowd funding refers to the efforts by entrepreneurial individuals and groups – cultural, social, and for-profit – to fund their ventures by drawing on relatively small contributions from a relatively large number of individuals using the Internet, without standard financial intermediaries" [16]. Valančienė and Jegelevičiūtė (2014) defined crowd funding from the perspective of content [19]. As they put it, crowd funding is a method of establishing a connection between entrepreneurs, who intend to increase their capital, and new investors, who serve as an emerging source of capital and mean to invest small funds, through Internet-based intermediaries. Our definition of crowd funding is, however, a novel one. As it reads, "crowd funding is a method for financing SMEs (small-to-medium-sized enterprises) using hordes of SMIs (small-to-medium-sized investments) via the Internet.

Crowd funding can be considered to have originated from three scientific fields. The first is financial management, which is a microfinance entity [2, 8, 20]. According to the definition provided in Britannica Encyclopedia, microfinance is a means of extending credit, usually in the form of small loans with no collateral, to nontraditional borrowers such as the poor in rural or undeveloped areas [21]. The second field is that of IT management, which has originated from crowdsourcing and the Internet capabilities, especially social networks and Web 2.0 [22]. The third field relates to business management topics and outsourcing in organizations. As noted, the concept of crowd funding, in its broad sense, is rooted in crowdsourcing which deals with the use of crowd to get ideas, suggestions, and criticisms and provides solutions to develop a company's activities [17, 23-25]. In particular, in this sense, it deals with raising money to investment through online social networks. Such investment may be in the form of buying shares, loans, grants, or pre-order the product) [16, 26-29].

Crowd funding projects can be different in both goal and scope. These projects may range from artistic small projects to technology and entrepreneurship projects and from hundreds of thousand dollars as an initial capital (cultivation stage or seed capital) to an alternative to traditional investments [30]. Crowd funding may be practiced in four models as follows:

- The donation or patronage model which is implemented more in human and artistic projects where investors do not seek the direct return of capital and have inner and spiritual motives rather than physical and outer ones;
- The lending model which offers loans with a specific interest rate;
- The reward-based model which accounts for the highest share among models: In this model, the funder is encouraged and rewarded for his support of the project. Here, the funder can be the first customer, which/who is associated with lower cost and other benefits. Pre-selling consumer products and hardware and software projects are also placed in this model;
- The equity-based model that was legalized in America in 2012, while other countries had already legalized it: Its share is still low at about 5% of crowd funding [31]. Of course, this model may be carried out in forms other than the stock including a share of future profits or royalties, part of the planned returns in the future or a share of real estate investments [32].

This method has been taken into great consideration in the world due to the explosive growth of Web 2.0 and its capabilities, recession, risk-taking of emerging businesses and the need to finance. It has had a relatively high and stable growth from different points of view such as the number of provided platforms, the number of campaigns and their success rate, the quantity of funded capital, the number of models offered, and the areas covered [10, 13, 16, 33, 34]. Although crowd funding is a newly emerging method, it has already grown significantly in terms of the number of platforms, the number of campaigns, the rate of success, and its fund-raising speed. For example, through the pre-order model, Pebble product collected about 10 million dollars within a few weeks [9].

The increasing expansion of this method has led many researchers to investigate the phenomenon in various dimensions and try to identify different aspects and factors affecting it. Nevertheless, just a little bulk of literature has been dedicated to the comprehensive and holistic study of factors influencing this approach. This paper aimed at investigates crowd funding through the systematic and structured identification and explanation of the factors that affect it. To achieve this goal, a systematic review of the literature is conducted on crowd funding to identify the factors (hexagons), cluster them, and design a comprehensive framework in that regard based on the stakeholder model.

This paper is organized as follows. First, makes a review of related literature on crowd funding. Then, the research method used in the research is explained. Afterward, there has been an attempt to identify and explain the factors influencing crowd funding via hexagon. Finally, the important factors are identified.

2. Literature Review

A review of the literature shows that the discussion of crowd funding in academic circles dates back to 2006 [10] although the concept already existed in various forms. The following diagram (Figure 1) shows the number of articles available on the databases of Elsevier and Wiley Online Library whose main focus is on crowd funding. The first paper dates back to 2012. As it is clear, not much academic work has been done on this issue, and only a total of 60 papers have been conducted on the subject.

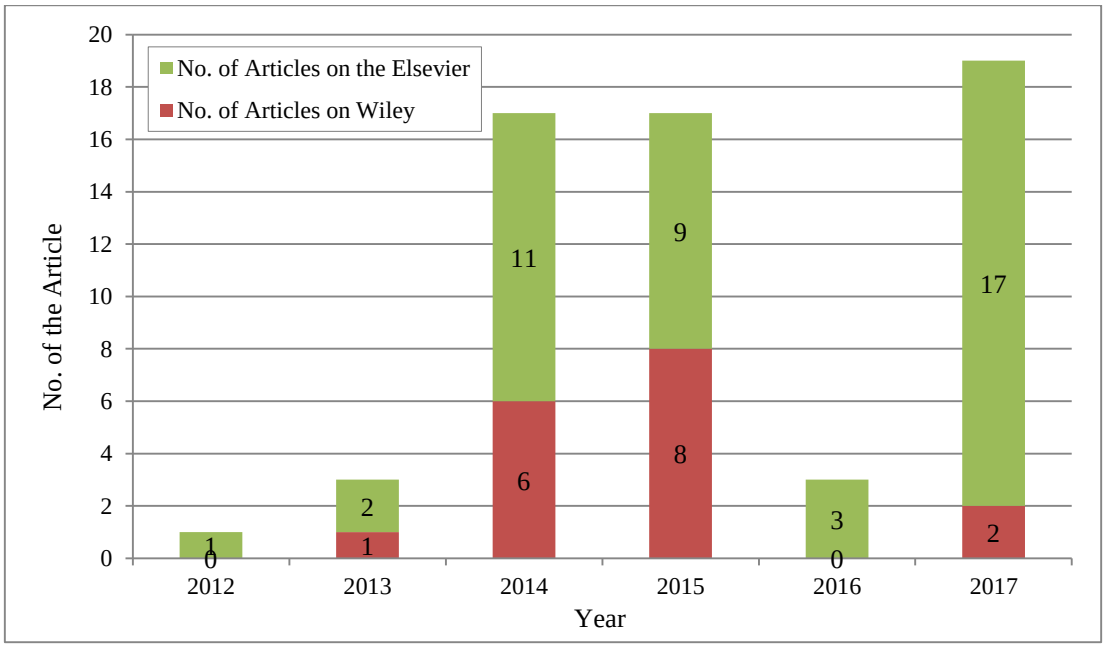

Figure 1. Diagram of the number of articles related to crowd funding available on the Elsevier and Wiley databases

Ibrahim and Verliyantina (2012) designed a business model of crowd funding for small businesses in Indonesia and modified the typology of the model based on the Hamer model. The model includes donors/funders (investors), volunteers, partners of that discipline, educators and non-profit organizations which are all involved in the process screening, supervision, and management of funds (Figure 2). Also, in the modified model typology shown in Fig. 3, they added payment gateways and field workers, as two parts, to the Hamer model [21]. They determined the variables affecting crowd funding, such as repayment rate, service platforms including examination of proposals and consulting, investor confidence, Web technology infrastructure and the Internet, compliance with community features, and quality of life capital.

PARTNER NETWORK	KEY ACTIVITIES	OFFER	CUSTOMER RELATIONSHIP	CUSTOMER SEGMENTS
- Banks - Payment Gateway Institutions (BCA klikPay, Mandiri ClickPay) - Non-government Organizations - Koperasi - Universities (part of community services)	- Risk management - Screening SMEs - managing the platform/system **KEY RESOURCES** The platform (crowdfund web based system)	- Lend to SMEs - Give chances to contribute in community developments - Loans for SMEs	- Progress tracking - Regular progress report **DISTRIBUTION CHANNELS** - The platform - NGO - Koperasi - Universities partners	- Crowdfunders - SMEs
COST STRUCTURE - Risk management fee - System development/maintenance - Screening fee			**REVENUE STREAMS** - optional donations	

Figure 2. Business Model Canvas [21]

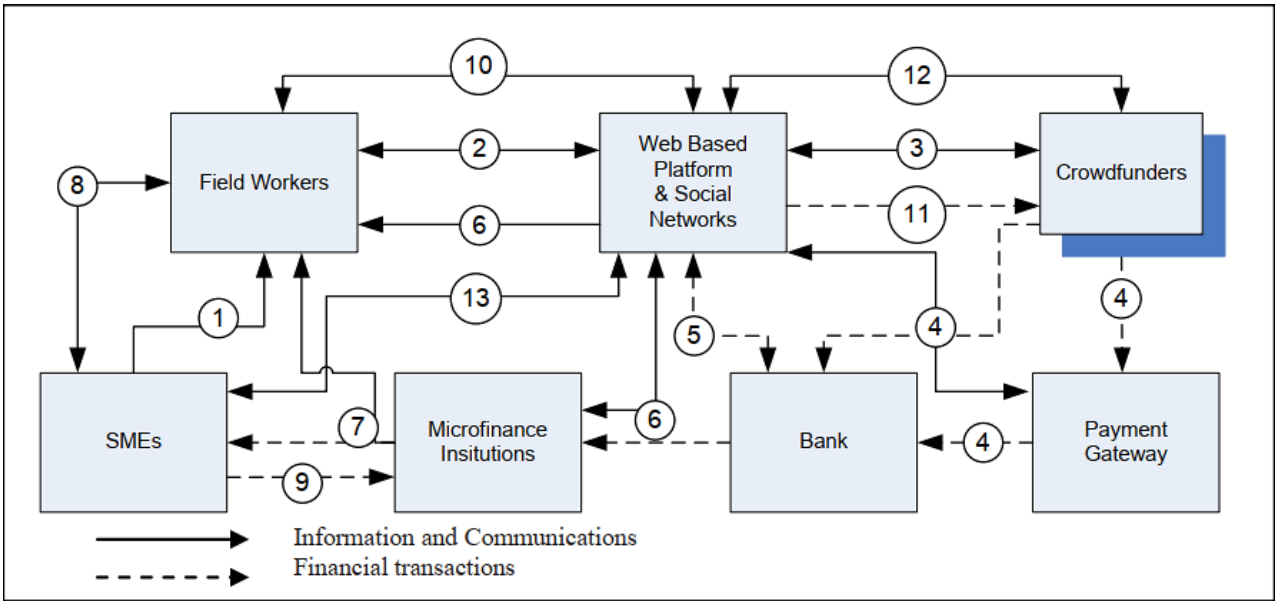

Figure 3. Modified typology of Hamer model [21]

Valančienė and Jegelevičiūtė (2014) stated that the main stakeholders might be classified into two broad interactive groups: contextual and organizational. Contextual stakeholders (i.e. society, government and state's regulators) are those who form external environments and business conditions, though they are not directly involved in the organization's activities or value creation. Contextual stakeholders are partially discussed in the PEST analysis. Organizational stakeholders (i.e. shareholders, customers, suppliers, financial institutions, managers, and employees) are, on the contrary, involved in a particular organization's activities and its value creation process. So, in the case of crowd funding, traditional customers and suppliers shift to users, which include both businesses (startups) and backers (investors) [19].

Stemler (2013), Zilgalvis (2014), Turan (2015), Kshetri (2015), Eniola and Entebang (2015), and Jegelevičiūtė and Valančienė (2015) have emphasized the importance of legislation to increase trust in crowd funding [15, 35-39]. They argue that, in order to expand crowd funding, especially in an equity-based model, it is vital to establish the corresponding laws. Platforms must design specific regulatory rules for evaluating founders, their plans, and investors.

In this regard, Stemler (2013) examined crowd funding in terms of the JOBS Act (Article 3 of the Act is related to the CROWDFUND Act) and provided guidelines to capital demanders (entrepreneurs and business owners) as well as investors [15]. Zilgalvis (2014) reviewed two case studies and concluded that the rules should be clear and relatively simple and, by getting feedbacks from the environment and improving the environment, the rules for the growth of innovation should be strengthened [39]. Kshetri (2015) provided articulate propositions of the effects of legal (official)

entities as well as normative and cognitive (informal) institutions on the success of a crowd funding project through the institutionalism theory and experimental data. The propositions are about the effect of laws related to businesses as well as rules related to the equity-based model, political structure, cultural cognitive institutions and normative institutions [37]. Eniola and Entebang (2015) stressed the necessity of creating a regulatory environment to strengthen this method [35]. Turan (2015) discussed the evolution of equity-based model within the technology push-demand pull framework. He expressed the risks of the equity-based model throughout the life cycle of crowd funding (including five steps: pre-launch, launch, post-launch, living stage, and exit) for three main stakeholders including entrepreneurs, investors, and platform. He ultimately provided solutions for reducing them [38]. Jegelevičiūtė and Valančienė (2015) stated the main measures to strengthen crowd funding and reviewed the corresponding laws in America, Britain, Canada, Germany, Australia, and Italy, which have the largest number of successful projects, according to the crowd funding center in 2014. In these countries, the most important measures are the creation of legal frameworks, training entrepreneurs, promotion of successful crowd funding cases and enhancing quality labels for platforms and training investors [36]. By referring to the JOBS Act in the US, Huang and Zhao (2017) suggested that modern laws on securities make an active response to the demand of equity crowd funding development [40]. Their findings on the effect of the regulations are consistent with the results gained by Renwick, and Mossialos (2017) [41].

Wheat et al. (2013), Harris and Russo (2015), and Siva (2014) took into consideration the role of public engagement in crowd funding and its power, especially in research projects [14, 42, 43]. Wheat et al. (2013) specifically addressed the use of the crowd funding method in the financing of research projects. Stating that various platforms are similar in terms of design and structure, they classified them into two categories of general and specialized websites. They acknowledged that charisma and important projects were already thought to be the only funded factors, but their findings indicated that the project is not as important as the crowd is. The crowd funding method has a good potential to encourage scientific transparency and public involvement in the first stage of a research process and to reinforce lasting relationships between scientists and non-scientists. Finally, they stated that science projects are usually funded with less than $ 10,000, which is an optimal value for research projects [43].

Harris and Russo (2015) explored the role and relevancy of public movements in policy-making for the fields of aerospace and astronomy. While referring to the dynamics among projects, start-ups business (e.g. space or astronomical research), the public, and the government, they stated that, nowadays, the public as a powerful factor can be completely replaced by the state in financing [42]. Siva (2014) argued that involving the public through social media, choosing the right financial goal, and arbitrating projects in order to prevent fraud and ensure the attraction of investors are important in crowd funding in the field of medicine [14]. The results obtained by Dragojlovic and Lynd (2014) suggested that crowd funding is a viable approach to support early proof-of-concept research, allowing researchers in oncology and rare diseases to succeed in traditional grant competitions or to attract private investment [44].

Zheng et al. (2014), Belleflamme et al. (2015), Agrawal et al. (2015), Colombo et al. (2015), and Bruton et al. (2015) emphasized the positive effects of social networks and the social capital of crowd funding stakeholders on the success of crowd funding campaigns [25, 45-48].

Zheng et al. (2014) analyzed the impact of entrepreneurs' social networks in crowd funding based on the social capital theory with the culture as a mediating variable and real data from a comparative study of Kickstarter (in America) and Demohour (in China) platforms. They found that an entrepreneur's social network ties (structural dimension), obligations to fund other entrepreneurs (relational dimension), and the meaning of a crowd funding project shared by the entrepreneur and the sponsors (cognitive dimension) had significant effects on crowd funding performance in both China and the U.S. The predictive power of the three dimensions of social capital was stronger in China than the U.S. Obligation also had a greater impact in China [25].

Belleflamme et al. (2015) studied crowd funding and its different models. They examined cross-group and within-group external effects between funders and fundraisers and argued that a diversified platform, the existence of a variety of campaigns and fundraisers, and a co-funding opportunity with a variable mediator is suitable for investors. They also believed that fundraisers prefer a platform with a lot of investors. Of course, not only does the number of funders and fundraisers matter, but their composition is important too. In respect to the within-group external effect, they stated that the greater the number of similar and competing campaigns, the less the likelihood of funding for a fundraiser. They also examined the price structure of platforms, the problem of asymmetric information and different ways to deal with it, covert actions, approvals, disclosure of information, guarantees as well as the dynamic behavior of donors [46].

Colombo et al. (2015) examined the effect of internal social capital on the early stages of a campaign success. They stated that crowd funding has a self-reinforcing pattern whereby contributions received on the early days of a campaign accelerate its success, which is due to the internal social capital. They mentioned two types of social networks that are effective in the success of crowd funding campaigns. External social networks are the same as entrepreneur social networks in public networks such as Facebook, Twitter, etc. Internal social networks are the same

as communication within a campaign platform. In other words, platforms both pave the way for financing and strengthen the communication among investors [48]. The findings of Colombo and his colleagues about entrepreneur social capital are consistent with those of Roma et al. (2017), Skirnevskiy et al. (2017), and Vincenzo et al. (2017) [49-51].

Bruton et al. (2015) argued that, along with traditional approaches of financing, new innovative approaches such as microfinance, crowd funding and peer-to-peer lending are currently on a rapid growth. These approaches have certain common characteristics as follows:

A) The innovations, although initially formed in a part of the world, have quickly spread throughout the world. For example, microfinance was for the poor in developing countries, but it is now also used in developed countries for entrepreneurs.

B) Compared to mediatory platforms, such as crowd funding platforms, these approaches use more people to finance a little.

C) They use the social networks of entrepreneurs and investors for more effectiveness and efficiency.

Then, as shown in Fig. 4, the researchers presented a framework for new financing approaches and alternatives at an early stage of entrepreneurship. The framework includes institutional context, supply of capital (resources and types of capital), demand for capital, ownership and governance considerations [47].

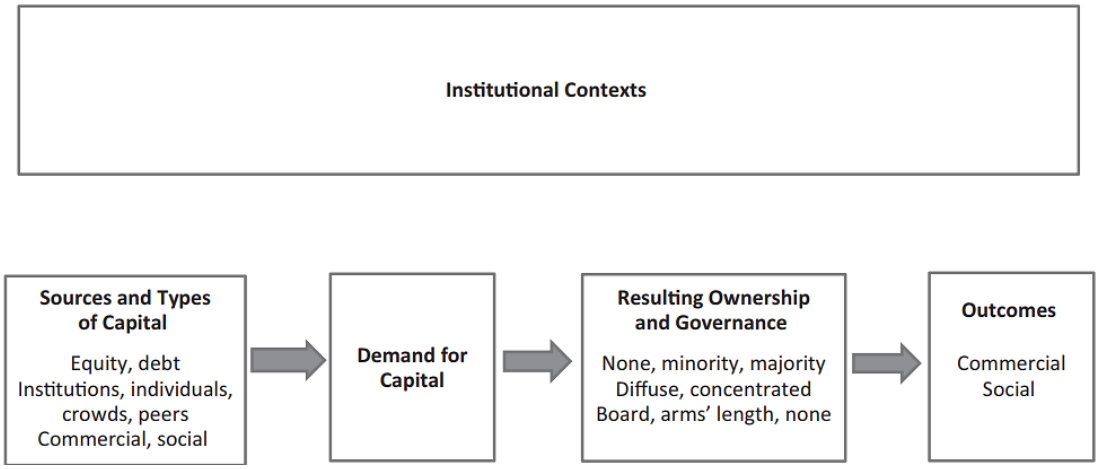

Figure 4. The framework for new financing approaches and alternatives at the early stage of entrepreneurship [47]

Mollick (2014), Agrawal et al. (2015) and Yu et al. (2017) have found that, despite the fact that the effect of geographical distance is limited on crowd funding, it is still of effect on investors' course of action [16, 45, 52]. Mollick (2014) analyzed the dynamics of the success and failure of projects. He realized that personal networks and the quality of a project are effective in the success of crowd funding efforts, and geography depends on both the type of the proposed project and its successful financing. This is why founders offer projects that reflect the underlying cultural products of their geographic region and, similarly, investors put more money in projects related to their cultural conditions [16]. Such findings about regional effects are consistent with those of Yu et al. (2017) [52]. Agrawal et al. (2015) found that the average distance between the artist-entrepreneur and the investor is about 5,000 km. They suggested that, in this method, the vicinity has faded to some extent though it still has a role. They also found that displaying the accumulation of capital leads to a herding behavior, which stems from investment at early stages by local investors, especially friends and family (F&F) [45]. Also, Cho and Kim (2017) analyzed a total of 510 crowd funding projects in the U.S. and Korea by cross-cultural comparisons. They found that culture influences crowd funding performance as the factors of successful crowd funding sites between two countries are different [53]. This finding, which regards the effects of geographic distance, is consistent with the result of Kang et al. (2017) [54].

Contrary to the above mentioned studies, which emphasizes the role of social networks in the success of a crowd funding campaign, Kandhway and Kuri (2014), Ahlers et al. (2015), Bi et al. (2017), Allison et al. (2015), and Kim et al. (2017) pointed to the role of campaign information quality and the appropriate publication of information in attracting individuals and, ultimately, in the success of crowd funding [9, 33, 55, 56].

Kandhway and Kuri (2014) addressed the issue of modeling the spread of information and the problem of its optimal control in a homogeneous population using Maki Thompson rumor model in various areas including crowd funding. They argued that, during a campaign, information spreads epidemically [55]. Ahlers et al. (2015) found that successful crowd funding projects are dependent on valid signals, the quality of start-up businesses, and the disclosure of relevant information to the crowd. The results of their experimental study showed that the remaining shares and the

detailed information provided about risks (level of uncertainty) and human capital (percentage of managers with MBA degrees) are signals of a great effect on the probability of success. However, intellectual capital (patents) and social capital (alliance and collation) were found to have no effect on success [28]. Bi et al. (2017) results showed that higher introduction word counts and video counts make funders feel the project has a higher quality, but higher "Like" counts and online reviews make funders feel the project has a good electronic reputation [57].

Allison et al. (2015) addressed the effect of linguistic cues in entrepreneurial narratives on the decision of lenders to use the cognitive evaluation theory. They found that lenders respond positively to narratives that highlight the venture as an opportunity to help others, and less positively when the narrative is framed as a business opportunity. In other words, they found that greater degrees of profit and risk-taking language are associated with a decrease in the attractiveness (increased financing time) of microloans among prosocial investors. Also, the presence of linguistic cues of human interest is associated with an increase in the attractiveness (decreased financing time) of microloans among investors. The linguistic cues of diversity, however, are not associated with an increase in the attractiveness of microloans among prosaically investors. Finally, although overall intrinsic language and overall extrinsic language were both found to be significant predictors of investor's preferences, intrinsic cues proved to be five times stronger than extrinsic ones [33].

Kim et al. (2017) showed that most founder features (i.e., identity disclosure and prior experience) and project features (i.e., comments, updates, description elaborateness, and campaign duration) have a positive effect on successful crowd fundraising. Also, they found the scope of the funding goal has a negative effect on successful fundraising [56].

Deutsch et al. (2017) analyzed the dynamics of private voluntary contributions in public goods and the role of initial capital in signaling the quality of goods to the subsequent potential participants. They provided a theoretical model by studying the data from two sets of crowd funding platforms. The results of their study point to the statistical significance of switch points in the distinction between seed contributions and subsequent contributions as well as a positive change in the behavior of participants after the switch point, which represents an increase in the perceived value of public goods. In that study, the quality signal involved the number of participants and their average contribution (as a part of the financial objective) [58].

Allison et al. (2017) used the elaboration likelihood model of persuasion (ELM) to develop and test a model of persuasive influence in crowd funding. The results suggested that issue-relevant information, such as entrepreneurs' education, matters the most when funders possess greater ability and motivation to make careful evaluations. In contrast, cues such as adopting a group identity have the strongest influence among inexperienced, first-time founders when the requested funding amounts are small [59].

Belleflamme et al. (2014) examined the factors affecting the selection of founders [9], and Parker (2014) and Zhao et al. (2017) investigated the factors affecting the selection of investors (funders) [60, 61].

Belleflamme et al. (2014) examined the situations affecting how entrepreneurs choose between two profit-based and pre-order models. Their results showed that, when the needed initial investment is low as compared to the market size, entrepreneurs prefer to use a pre-order model instead of a profit-sharing model [9].

Parker (2014) modeled investment choices among multiple projects on a crowd funding platform. His research had two interesting results. First, surprisingly, investors with less knowledge can cause further good projects to reach their financial goals. The logic is that, when most investors are uninformed, they tend to follow the few informed investors, who predominantly back up good projects. However, numerous informed investors tend to concentrate funding on only good projects, and this causes lack of concentration and dispersal of the projects, leading to a failure of financial targets and less success. Second, those few good projects may be further funded. This also leads to more focus and the attainment of goals. Both of these results are due to the signal of capital accumulation in a campaign as a sign of project quality. In this case, the signal is, indeed, given through the release of information which allows anyone to observe the capital accumulation (i.e. the rate of the capital funded) in any project at any time [60].

Zhao et al. (2017) conducted a study based on the social exchange theory to examine the key factors influencing backers' funding intention. Their results showed that commitment has a remarkable and positive effect on funding intention. Interestingly, perceived risk was found to be positively associated with funding intention [61].

Many researchers such as Wheat et al. (2013), Belleflamme et al. (2014), Parker (2014), Siva (2014), Mollick (2014), and Pitschner and Pitschner-Finn (2014) have pointed to the importance of setting a financial goal to lead a crowd funding campaign to success [5, 9, 14, 16, 43, 62]. Among them, Parker (2014) highlighted the role of target values in technology projects as compared to dance and theater. As he put it, the more the target value, the less the probability of achieving the goal; only 29% of technology projects get funded compared with over 60% of dance and theater projects [60]. Dragojlovic and Lynd (2014) showed that crowd funding is more suitable for medium projects that need a fund of less than $ 100,000. They found that public sites and platforms attract more investors and, thus,

have a lower average fund, while the people who go to specialized sites are usually fewer but interested in or equipped with the relevant expertise [44]. Pitschner and Pitschner-Finn (2014) investigated the success of profit and non-profit campaigns in crowd funding. They found that non-profit campaigns are more likely to achieve their financial goals. These campaigns usually target a little money and receive more money from fewer suppliers. Their research showed that a lower number of for-profit campaigns are very successful, and their results are contrary to non-profit campaigns results. Their findings are consistent with a simple selection mechanism where entrepreneurs choose between for-profit and nonprofit campaigns based on the project returns. That is, in a situation where everything is equal, higher expected returns on a project give a greater incentive to the entrepreneurs to participate in a non-profit campaign [62]. Their findings are consistent with those of Belleflamme et al. (2013) which are based on a contract failure model using the data for 44 projects [63].

Meer (2013) investigated the effect of charity price on crowd funding. He found that an increase in charity price leads to less likely funding of a project. He also calculated the price elasticity of donations, finding estimates between -0.8 and -2. These are likely to be the upper bounds on the tax price elasticity of charitable donations. Finally, he examined the effect of competition on donations and found that increased competition reduces the likelihood of funding a project [64].

Several studies have focused on the benefits of crowd funding. Macht and Weatherston (2014), Gleasure (2015), Renwick and Mossialos (2017), and Vasileiadou et al. (2016) have emphasized the financial benefits of this method [10, 41, 65, 66]. This is while Valančienė and Jegelevičiūtė (2014), Mollick (2014), Belleflamme et al. (2014), Zheng et al. (2014) Dragojlovic and Lynd (2014), Cholakova and Clarysse (2015), and Royal and Windsor (2014) have highlighted non-financial benefits [9, 16, 19, 25, 40, 44, 67, 68]. Also, Macht and Weatherston (2015) and Baumgardner et al. (2017) have pointed to the fact that financial benefit in combination with non-financial benefit is considered as a feature of crowd funding [13, 69]. There is a framework provided by Macht and Weatherston (2014) to describe the benefits of crowd funding for entrepreneurs and academic researchers (Figure 5) [10].

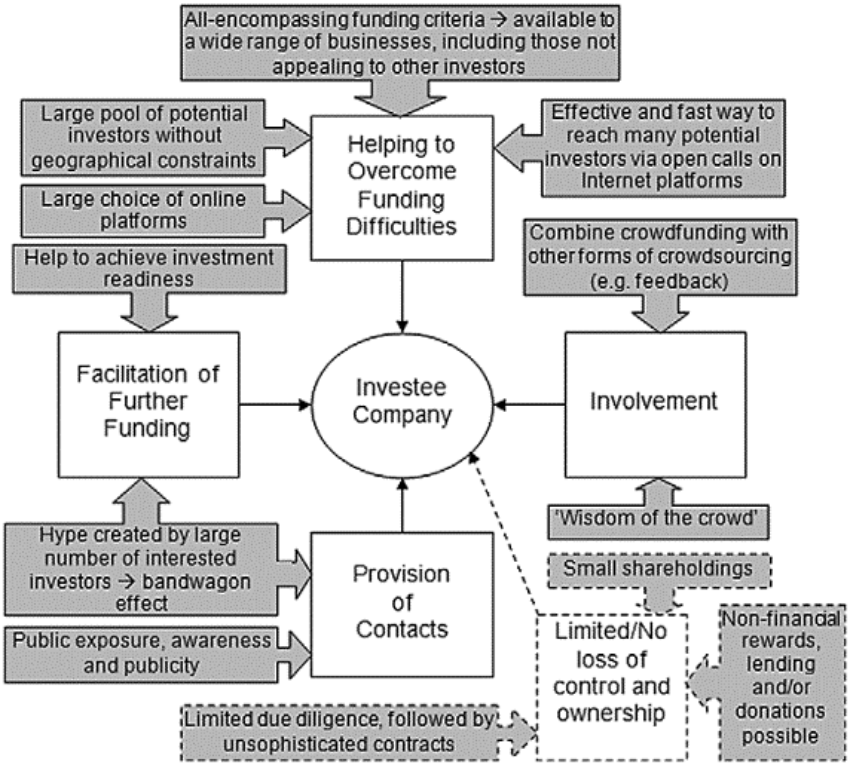

Figure 5. The benefits of crowd funding [10]

Cholakova and Clarysse (2015) explored the extent to which financial or nonfinancial motivations determine the decision to invest for equity or to pledge. They also looked at whether investing in equity can crowd out individuals' motivation to keep a pledge in the same project. Their results showed that nonfinancial motives play no significant role. Furthermore, they found that investment in equity is a positive predictor of keeping a pledge [67]. Vasileiadou et al. (2016) investigated crowd funding in the field of renewable energy. They believe that crowdfunders hold a variety of normative, gain and even hedonic rather than inner motivations. Reduction of overhead costs for users by crowd funding leads to a boom in this method. According to them, this is because of giving information about the project and investment opportunities, the simplicity of the registration process, no need for geographical proximity, and lower risk due to the monitoring of platforms by the corresponding organizations [66].

Through examining 25 relevant articles, Macht and Weatherston (2015) provided topics of concern before investment, including investor's (financial and nonfinancial) motivation, reasons for the decision to invest, and issues after investment such as the value-added of the investor's active and passive involvement in business [69]. Gleasure (2015) modeled entrepreneurs' resistance against crowd funding from the viewpoint of impression management. He showed that resistance is affected by entrepreneurs' fear of disclosure, fear of visible failure, and fear of disappointment. His article refers to the important point that business owners have recently put the crowd funding approach on their sites without reference to a platform. In that study, the model is at a proposition level, and it introduces the factors of individual resistance, including switching benefits and costs, fear of disclosure, fear of visible failure, and fear of disappointment. This model is shown in Figure 6 [65].

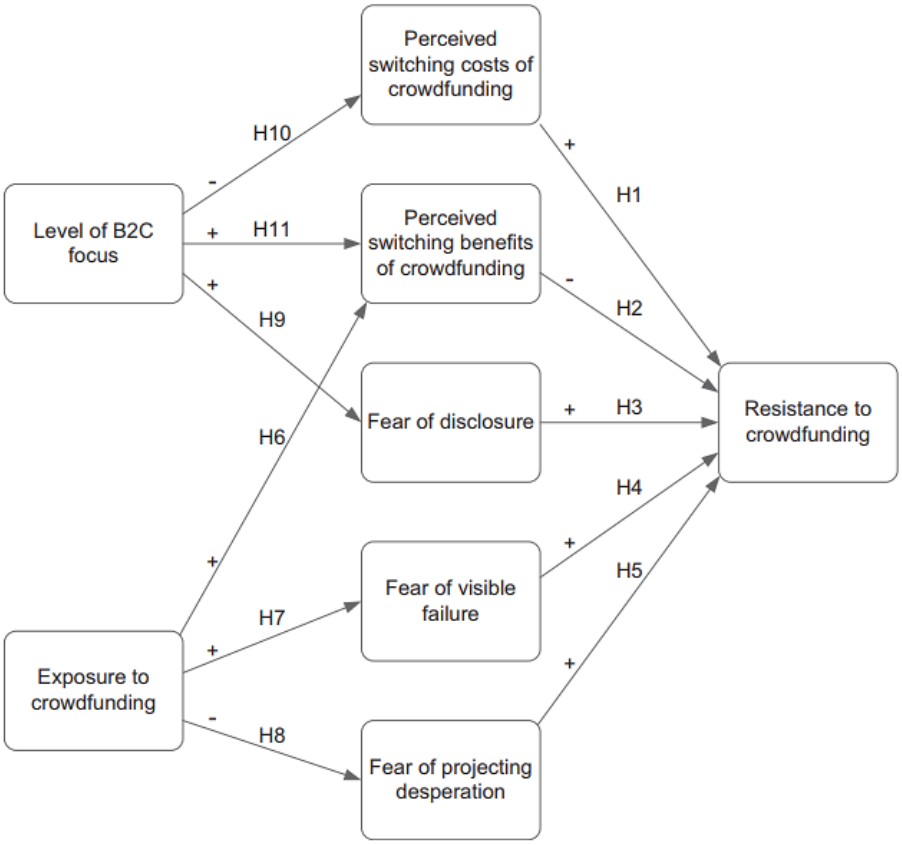

Figure 6. The proposed model for entrepreneurs' resistance against crowd funding [65]

Ashta et al. (2015) investigated the strategic challenges that organizations face when moving toward crowd funding. They detected four challenges including the challenge of governance and legal status, challenge of the balance between profit and social activities, challenge of transparency, and challenge of withdrawal of the crowd from the market [70].

Barasinska and Schafer (2014) examined the existence of gender discrimination in microloans (P2P model) on the German site of Smava. They referred to some studies that indicate gender discrimination in taking loans. For example, as on the Prosper site, a study in America conducted on peer-to-peer (P2P) loans has shown that women have a greater chance, while these researchers rejected it and showed that gender discrimination has declined in giving collective loans. Of course, they attributed this difference to the differences between the two sites as well as the social-macroeconomic environments of Germany and America [32].

Cefkin et al. (2014) and Jian and Usher (2014) mentioned the effect of individual's interest on choosing campaigns for investment. Contrary to that, Hörisch (2015) denied such a relationship [71]. Cefkin et al. (2014) also found that crowd funding weakens bureaucracy through a bottom-up approach and leads to democratic budgeting and accountability of people in favor of their projects and their success. In this way, opportunities are created for personal growth and development. They also found that a criterion for choosing an investment is the extent to which it is altruistic and benefits the public. The choice is based on the differences and similarities between the project and the expertise and interest of the people. For example, chemists were found to invest less on computer projects [71]. Jian and Usher (2014) examined the effect of journalism crowd funding on news production. They found that the audience invests more in the news that offers practical tips for everyday life, such as the news related to public health rather than the news giving public awareness. Also, journalists' working experience was not very important for the audience to finance [72].

Hörisch (2015) found that there is no positive connection between environmental orientation and crowd funding success. It is noteworthy that reaching the financial goal and the ratio of accumulated capital to objective capital proved to be criteria for success. As the other results showed, projects with a huge target are more likely to fail. Also, project length, existence of videos, non-profit projects, and constant financial goals has a positive effect on crowd funding success. There is no positive effect of reward on funding success, but reward quality is important. More successful projects have visible outputs. In other words, projects with the output of tangible goods are more successful than services. The signal of quality to the investor is important, such as a video that presents the project quality [73].

Attuel-Mendès et al. (2014) compared the effects of identity and image (branding) on crowd funding with traditional methods. They found that, for financing in both cases, good communication with the support of a valid and consistent identity is essential. In addition, the use of marketing tools for crowd funding is significant [74]. Corazzini et al. (2015), Belleflamme et al. (2015), and Cason and Zubrickas (2015) emphasized the effect of coordination of investors on attracting investment and campaign success [34, 46, 75].

Corazzini et al. (2015) investigated the impact of an increasing number of projects on the likelihood of coordination of donors and total contributions. They found that multiple products or increased competing projects reduce the coordination among participants, discourage donors, and ultimately reduce the likelihood of success in financing. Their analysis also indicated that making one of the contribution options salient, either through its merits or by arbitrarily choosing one to feature during the experiment helps to overcome the increased coordination problem [34]. Cason and Zubrickas (2015) investigated the extension of the provision point mechanism in a laboratory experiment by testing its properties in terms of allocative and distributive efficiency, equilibrium coordination, and invariance to information distribution. They improved this mechanism by giving a refund in campaigns where contribution is insufficient. Thus, the interest in creating public goods or bonuses increases contribution. The results of testing this model in the laboratory showed that the amount of bonus should not be enormous [75].

Cordova et al. (2015) showed that an increase in the amount of campaign funding causes the lower probability of a project to succeed. They also found that an increase in the duration of the campaign leads to increased chances of success which, in turn, represents an increase in the number of dollars contributed per day. This process is indicative of the reinforcement model [76]. Xu et al. (2016) used the asymmetric analytic method to study the satisfaction of sponsors in crowd funding and its effect on the success of crowd funding projects during the implementation phase. The results of the survey confirmed their proposed model for satisfaction or dissatisfaction of sponsors (Fig. 7). There are a few factors affecting the consent of sponsors with the performance of the implemented projects. These factors include the timeliness of product delivery, product quality, novelty of the project, sponsor participation, entrepreneur's activeness and sponsor's demographic features (age and gender) [77].

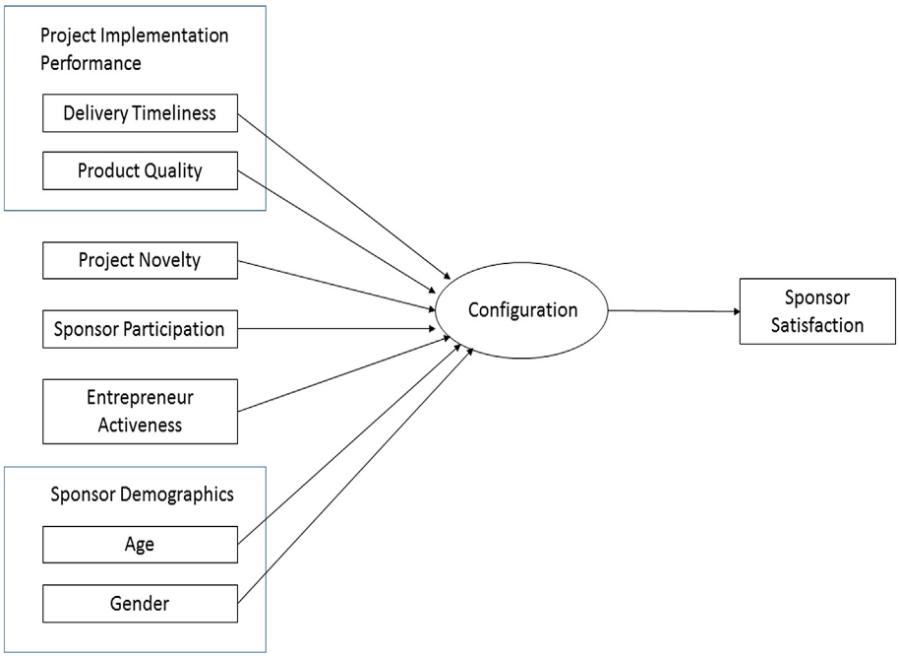

Figure 7. Conceptual model of factors influencing the satisfaction of sponsors [77]

Stanko and Henard (2017) analyzed the data from Kickstarter platform and investigated the role of crowd funding in market performance. Their results indicated that the amount of funds raised during a crowd funding campaign does not significantly impact the later market performance of the crowd funded product, while the number of backers attracted to the campaign does [78]. Also, Brown et al. (2017) referred to crowd funding as a marketing tool [79].

Attuel-Mendès (2017) and Paulet and Relano (2017) explored the influence of the banking system on crowd funding. They found some collaboration between banks and crowd funding could cause diffusion of crowd funding [80, 81].

Haji Gholam Saryazdi et al. (2019) first develop a qualitative model of crowd funding dynamics through the document model building (DMB) [82] and then they designed a quantitative system dynamics model of crowd funding for support of new Iranian knowledge-based IT startups. The results of model simulation suggest that the reward model will develop to a higher extent due to higher alignment with IT business designs. Also, the model suggested that pass of relevant regulations and monitoring of platforms improved the quality of IT business designs and secured the success of the companies after funding [83]. Langley et al. (2020) stated crowd funding is invoked in urban governance that valorizes social entrepreneurship. Also, they showed Berlin shapes its distinctive and multiple crowd funding ecologies [84]. Taeuscher et al. (2020) challenged the underlying assumption that distinctiveness necessarily counteracts the attainment of legitimacy and propose that distinctiveness can become a source of legitimacy that affects crowdfunding success [85].

Of course, there are many papers each reviewing one of the dimensions of this new approach. For example, Kuppuswamy and Bayus (2015) investigated how backers' support for the Kickstarter would vary depending on the success of projects and their schedules. Their evaluation of financing projects for the Kickstarter showed that social information (e.g. financial decisions of other investors) plays a key role in the success of a project [29]. Furthermore, Schwienbacher and Larralde (2010) presented the first description of crowd funding and performed a case study of crowd funding for a startup business in the field of French music. Then, they tried to establish a theoretical model based on which people choose the crowd funding method [30]. Finally, Burtch et al. (2013) investigated how timing and display affect financing for new stories in journalism [86].

3. Research Methodology

This research is based on the qualitative system dynamics approach. Through this approach, we use library resources about crowd funding to identify and explain the factors influencing crowd funding and grouped them within the framework of hexagons. Data collection is, thus, done via a systematic review of literature. In other words, a qualitative method is used to extract the factors affecting crowd funding. Compared with the traditional or narrative literature review methods, a systematic review of the literature deals with one specific specialized field through a more precise and well-defined approach [87]. In this method, based on an already set issue or question, the conducted studies are reviewed, and their relevance is evaluated. The evidence obtained for that issue or question is then summarized and analyzed [87, 88]. This method declines the chance of orientation (or bias) and makes it possible to acquire accurate information on the phenomenon in consistence with the literature, identify factors affecting the phenomenon and create a model of the phenomenon using the literature. The method consists of five steps including defining the issue or question to investigate, identifying and seeking out sources in the literature, assessing and recognizing the relevant and appropriate literature, reviewing the findings from the literature, and, ultimately interpreting, combining and presenting them in a suitable form [89].

As mentioned, in a systematic review of the literature, the extracted data should be organized in an appropriate form. In this study, we used the hexagons method proposed by Hodgson (1992) to identify and cluster the factors affecting crowd funding [90]. This method serves to extract factors from various sources such as literature and mental models and to detect the relationships among them via modeling. Thus, the identified factors were firstly drawn in the context of hexagons and then clustered based on a certain method such as semantic similarity or the models provided by the literature. Hexagons can include events, processes, objects, and a group of concepts related to the subject under study [91]. In the present study, after the hexagons were drawn, the frequency of each of them in the literature was calculated, and they were clustered based on the stakeholder approach of crowd funding.

To deal with the subject matter of crowd funding, such keywords as crowd funding, crowd funding, crowd-funding, and crowd-funded were logged on to search on the Elsevier and Wiley Online Library databases. The major focus was placed on journal and conference papers. The survey was conducted on those sources until 2017, and only English documents were studied. The number of documents was about 134 only 60 of which were journals and conference papers. At this stage, all the papers related to the hexagons method in the Elsevier and Wiley scientific databases were investigated. The number of these papers was 60. A review of them provided the following points (Figure 8):

- The number of studies by this new method is not very high but is on the rise;
- Most studies have examined only one aspect of crowd funding. Some have checked only one site or have examined only one side of crowd funding, for example, backers (i.e. funders) or founders (i.e. businesses);
- The dominant approach in the study of this phenomenon is empirical and exploratory without a theoretical framework and a case study [25];
- Since the studies are exploratory, people’s attitudes and insights into this phenomenon have not been surveyed yet [25].

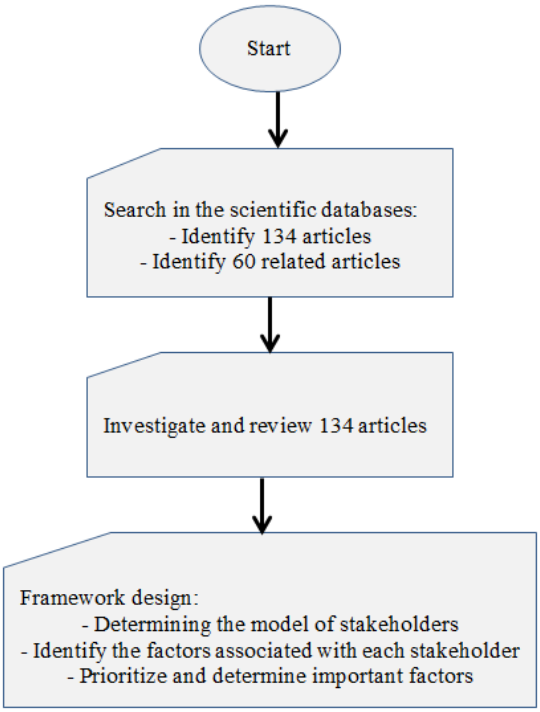

Figure 8. Research methodology flowchart

4. Explanation and Classification of the Factors Affecting Crowd Funding

As mentioned in the previous section, in this study, we sought to identify and explain the factors influencing crowd funding through a systematic review of the literature. Table 1 (Appendix) summarizes the various research works on crowd funding and compares them. In this section, various factors affecting crowd funding are displayed in the form of hexagons, and the frequency of each one in the literature is calculated shown in hexagons. Ultimately, these hexagons are clustered based on the stockholder model proposed by Valančienė and Jegelevičiūtė (2014) [19]. Then, for each stockholder, based on the hexagons with the highest frequency, practical implications are expressed for the development of crowd funding. In this model, organizational stockholders include entrepreneurs and business owners who are the same as capital seekers (founders), backers and users who are the same as capital-providers (investors/funders), platforms that are crowd funding websites, and contextual stakeholders comprising community, government, and legislators. Figure 8 that follows shows the clustering consisting of hexagons and their frequencies. Factors with the greatest frequency are shown in yellow. As it can be seen in the following figures, 82 hexagons were extracted from the literature.

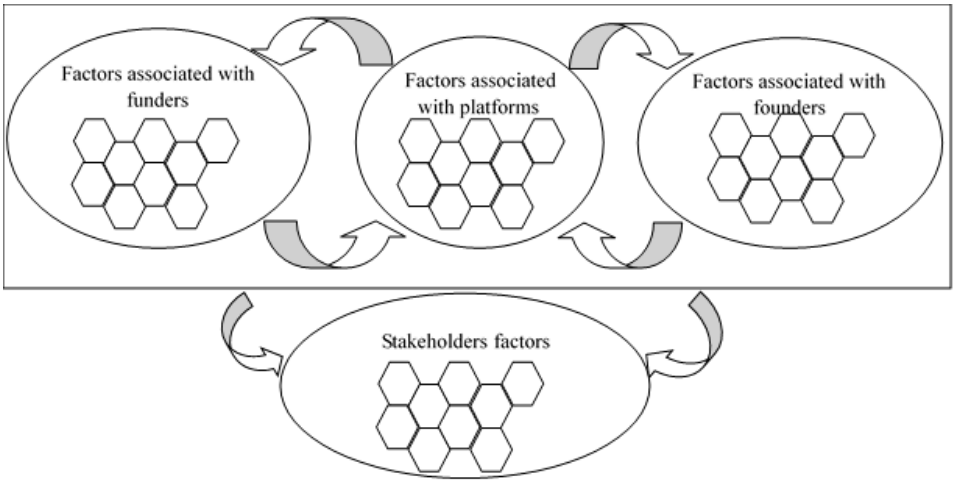

Figure 9. Clustering hexagons based on the stakeholder model

In hexagon cluster 6 belonging to capital seekers, financial goal setting, non-financial benefits, entrepreneur social network, quality of the project or the idea, quality of providing the project, upgrading and frequent communication, duration of the campaign, funding level at any time, and the geographical location of the founder were the most frequent hexagons mentioned in the literature.

As Figure 10 illustrates, the better the quality of the project or its presentation by the founder and the more professional the creation of the campaign, the greater is the likelihood of attracting investors and the campaign success. Creating a campaign depends on the quality of the project presentation, the timing of the campaign (i.e. its duration), and the financial goal of the campaign. According to the literature, alongside these factors, the founder's virtual and actual social networks are considered as another major factor in the success of the campaign. Throughout the campaign, upgrading, constant contact with audiences and campaign signals such as the amount of capital attraction are of utmost importance in enhancing the campaign success rate. With regard to these findings and based on hexagons with the highest frequency, certain practical implications may be offered for founders to increase the success rate of capital attraction. They are as follows:

- Creating and proposing attractive projects with an appropriate identification of the audience (i.e. investors) and focusing on their demographic and geographic characteristics;
- Designing an appropriate campaign by determining the proper size of the financial target, the duration of the campaign and its proper presentation through making videos, images etc. in order to introduce the project correctly;
- Attracting investors through commercials and social networks where the founders are active, especially at the early stages of the campaign;
- Keeping contact with the audiences and upgrading the campaign during the campaign period.

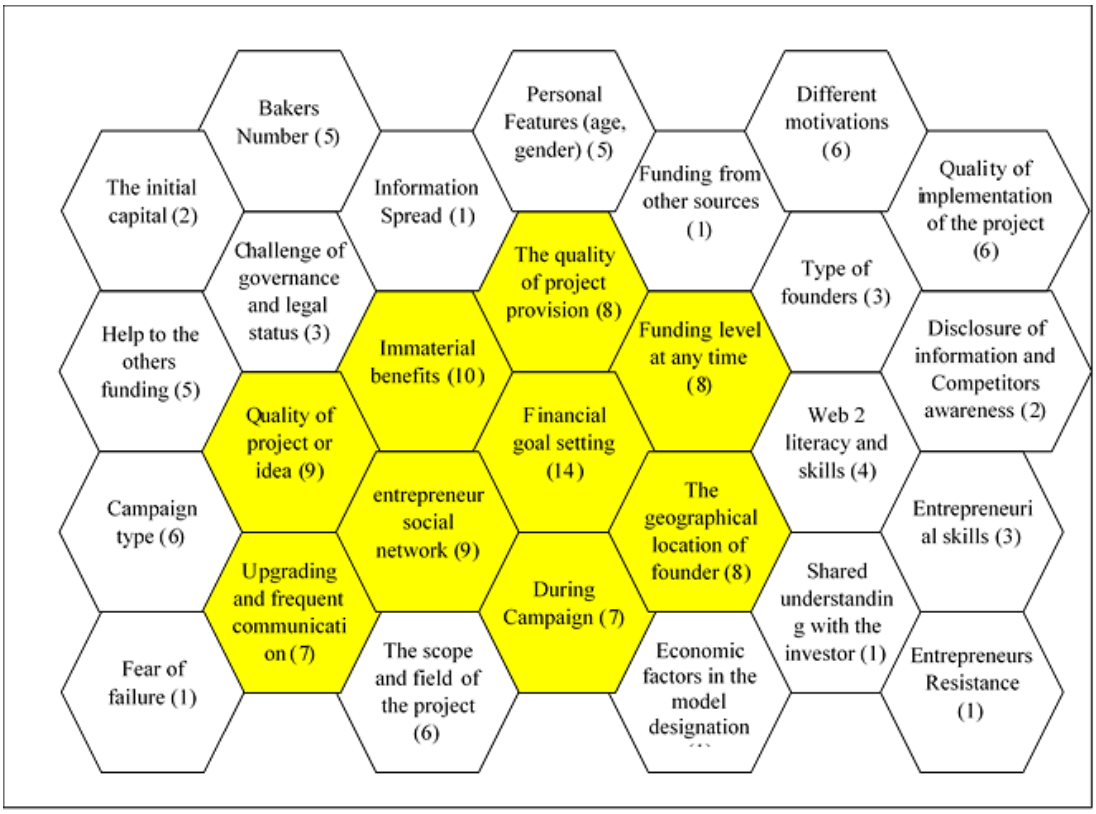

Figure 10. Clustering hexagons associated with capital seekers (founders)

In the case of the platform belonging to hexagon cluster 6, of the number of investors, continuous dissemination of the campaign information, quality and track record of the platform, and platform strategies and policies were the most frequent mentioned hexagons in the literature. The quality and experience of the platform play a significant role in the success of the campaigns and the development of crowd funding, which is due to the policies and actions taken by the platforms. As shown in Figure 11, based on hexagons with the highest frequency, the platform has certain practical implications for the development of crowd funding as follows:

- Developing appropriate policies and strategies, especially to provide different models of crowd funding and centralization or diversification in technology-related areas such as music and dance;
- Introducing and commercializing the crowd funding method and publishing accurate and complete information about campaigns, their success rate, the amount of capital attracted and the performance of each project after the capital attraction;
- Attracting investors in various ways, such as creating social networks, publishing accurate information and meeting various needs of the audience (by providing different financing models).

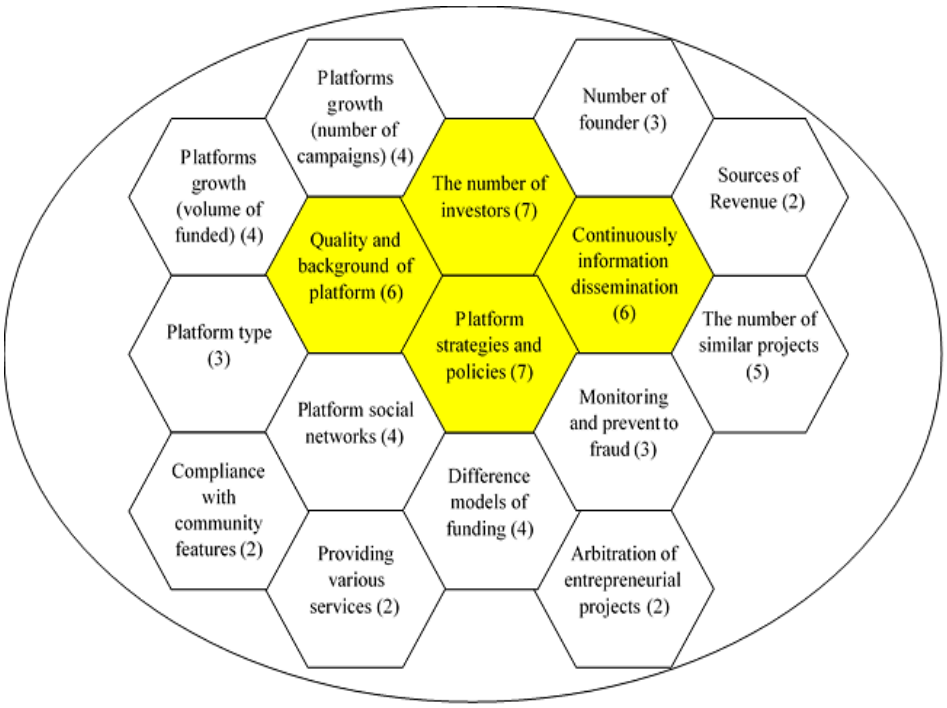

Figure 11. Clustering hexagons associated with platforms

In hexagon cluster 4 belonging to investors (i.e. funders), the possibility of project success, various incentives, the immaterial benefits and the geographical location of investors were the most frequent hexagons mentioned in the literature. Investors in crowd funding can be a combination of professional and ordinary investors with various motivations. They are financially and non-financially motivated in choosing a campaign for investment. Accordingly, as Figure 12 illustrates and based on hexagons with the highest frequency, the following should be taken into consideration:

- Choosing suitable platforms and projects: An investor should choose a platform or a project that is in line with his or her motives and geographic features. For example, if an investor is seeking non-financial motives, he/she should choose donation model platforms;
- Getting information about the campaign success possibly through campaign signals, including the amount of the capital already rose, the duration of the campaign, and the type of presentation by the founder.

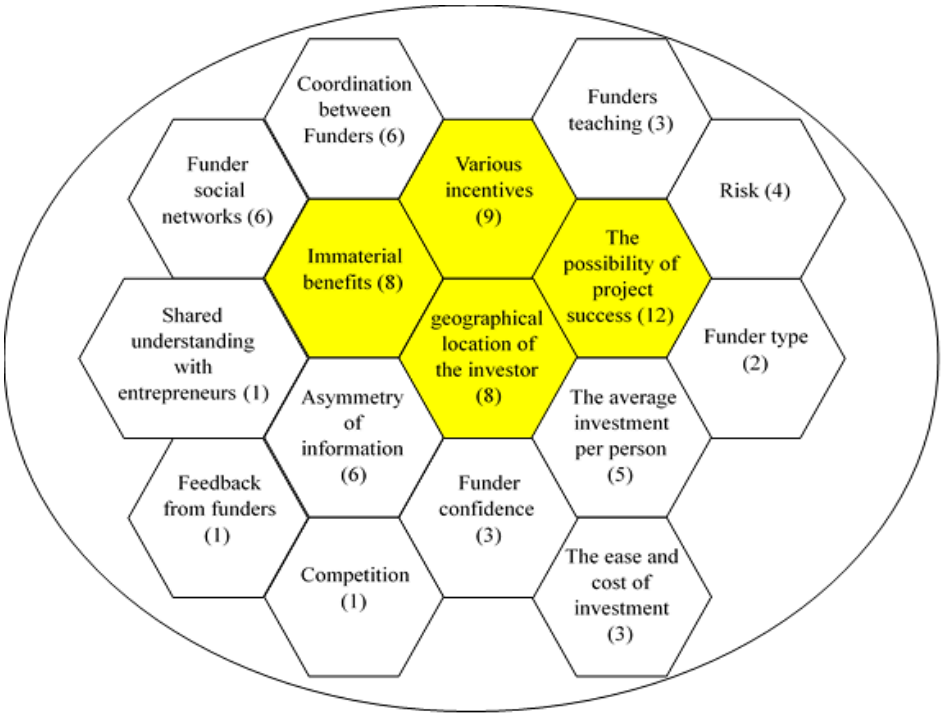

Figure 12. Clustering hexagons associated with funders

For the stakeholders in hexagon cluster 5, the presence and pervasiveness of social networks, legal support, web and Internet technology infrastructures, geographical effects, environmental features, and the effect of business development on society and government were the most frequent hexagons mentioned in the literature.

Other stakeholders have a vital role in expanding crowd funding. As shown in Figure 13, this role is based on the development of technology infrastructures and legal protections. Based on hexagons with the highest frequency, some practical implications are derived as follows:

- Developing Internet and web technology infrastructures and supporting the expansion of social networks by the government;
- Assisting in the development of small and medium-sized enterprises and crowd funding platforms by the government through people's trust in the platforms;
- Passing corresponding laws to support crowd funding, especially in the equity-based model.

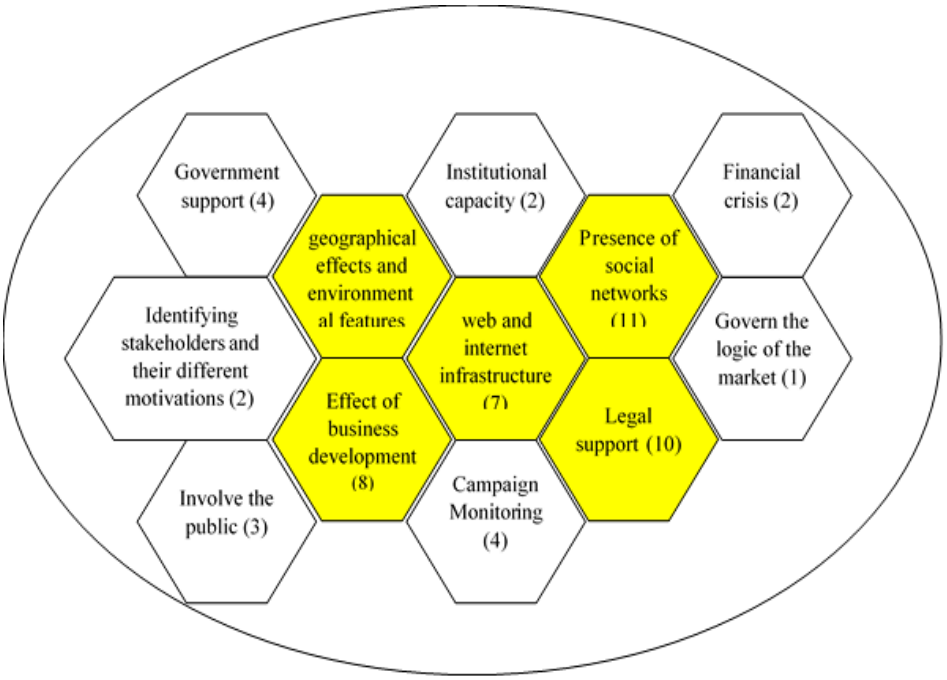

Figure 13. Clustering hexagons associated with other stakeholders

5. Conclusions

Crowd funding has increasingly grown in many ways as a novel method of financing start-up businesses and innovative ideas. Its growth has occurred in such aspects as the number of platform providers, the number of campaigns and their success rate, the quantity of funded capital, and the number of models offered. This has led many researchers to investigate the phenomenon from different points of view and provide stockholders with better insights into it. Yet, only a few studies have comprehensively reviewed the factors affecting this method. Through a systematic review of the literature and qualitative research, we first identified the factors affecting crowd funding. Then, based on stakeholder models, we clustered those factors and patterned them into hexagons. The hexagons extracted from the literature were in 82 clusters, of which 38 were accounted for by capital seekers, 16 by investors and platforms, and 12 by other stakeholders.

In accordance with the stakeholder model and on the basis of each stakeholder, certain practical implications of the hexagons with the highest frequency were presented for the success of financial campaigns and improvement of crowd funding.

In the capital seeker (founder) cluster, there were nine hexagons postulated as the quality of project provision, immaterial benefits, financial goal setting, entrepreneur social network, quality of the project or the idea, upgrading and frequent communication during the campaign, funding level at any time, and the geographical location of the founder. In the platform cluster, there were four hexagons, including the number of investors, continuous dissemination of campaign information, quality and track record of the platform, and the platform strategies and policies. The investor (funder) cluster contained four hexagons, including the possibility of the project success, various incentives, immaterial benefits, and the geographical location of the investor. Finally, the cluster belonging to the other stakeholders involved five hexagons: the presence and pervasiveness of social networks, legal support, web and

Internet technology infrastructures, geographical effects and environmental features, and the effect of business development on society and government. These hexagons are the most frequently mentioned in the literature.

The present research has some shortcomings, such as performing no stakeholder reviews through the survey and conducting no investigation of the exact relationships among the variables involved in campaign success and crowd funding. Therefore, the following issues are recommended to be adopted for future research:

- Investigation of the relationships among the identified variables as well as their relationships with campaign success and crowd funding;
- Dynamic modeling of the relationships among the variables and simulation of the model behavior according to the derived implications;
- Acquisition of stakeholders' feedback through surveys and identification of the variables and their relationships.

6. Declarations

6.1. Author Contributions

All authors have contributed to the compilation of this article in all its parts. All authors have read and agreed to the published version of the manuscript.

6.2. Data Availability Statement

No new data were created or analyzed in this study. Data sharing is not applicable to this article.

6.3. Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

6.4. 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.

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