

# Towards financing the entrepreneurial SMEs: exploring the innovation drivers of successful crowdfunding via a multi-layer decision-making approach

Innovation  
drivers of  
crowdfunding  
for SMEs

2275

Received 19 November 2021  
Revised 9 March 2022  
18 July 2022  
29 September 2022  
Accepted 15 November 2022

Hannan Amoozad Mahdiraji

*School of Business, University of Leicester, Leicester, UK*

Seyed Hossein Razavi Hajiagha

*Faculty of Management and Finance, Khatam University, Tehran, Iran*

Vahid Jafari-Sadeghi

*Aston Business School, Aston University, Birmingham, UK*

Donatella Busso

*Department of Management, University of Turin, Turin, Italy, and*

Alain Devalle

*Department of Economic-Social and Mathematics-Statistics Science,  
University of Turin, Turin, Italy*

## Abstract

**Purpose** – In this research, extracting the innovation drivers of successful crowdfunding from the literature review, screening them for the entrepreneurial small- and medium-sized enterprises (SMEs), analysing the cause-and-effect relationship amongst them and presenting a basic causal conceptual model and eventually determining the importance/weight of each relevant driver were the primary purposes of this research. As a result, the authors have also designed a score function to measure the future innovative crowdfunding score for SMEs.

**Design/methodology/approach** – A multi-layer multi-criteria decision-making (MCDM) approach has been designed and employed to achieve research objectives. After extracting the initial list of drivers, Fuzzy Delphi was applied to screen the relevant innovation drivers of successful crowdfunding for entrepreneurial SMEs. Decision-making trial and evaluation laboratory (DEMATEL) was used to analyse the cause-and-effect relationship amongst the drivers and illustrate a basic conceptual model. Analytical network process (ANP) and Stepwise Weight Assessment Ratio Analysis (SWARA) were applied to determine the importance of the drivers and by aggregating them to measure the innovative crowdfunding score.

**Findings** – Initially, 28 innovation drivers of successful crowdfunding were extracted from the literature. Then by employing the first-round Delphi fuzzy method amongst 15 international entrepreneurs in SMEs, the relevant drivers, including eleven items, were screened and selected. Then by implementing the DEMATEL method, the relationship amongst these screened drivers was identified, and seven drivers were determined as causes and the rest as effects. Subsequently, a conceptual model based on the causal analysis of the drivers from the DEMATEL method was designed. Eventually, by aggregating the weight of drivers emanated from SWARA, DEMATEL and DANP, the score function for measuring the situation of an SME was designed.

**Practical implications** – According to the crowdfunding scores in this research from entrepreneurs of SMEs, influential factors in developing countries were recognised as two times more prominent in developing countries. This might be rooted in the circumstances of developing countries where many startups and SMEs are emerging in vast areas and different fields due to investment in innovation management. In these countries, the authorities and officials support these companies to empower their capabilities and innovative ideas to (1) deal with the severe competitive market and (2) benefit from them as potential economic engines. Therefore, crowdfunding platforms and public initiatives can be considered one of the most effective government supports, which may involve financial risks.



**Originality/value** – To the best knowledge of the authors, investigating the innovation drivers of successful crowdfunding via quantitative analysis by multi-layer decision-making approaches has not been considered previously. Moreover, the authors have designed a crowdfunding score function to determine the situation of an entrepreneurial SME in this area. A combination of different MCDM methods, including Fuzzy Delphi, SWARA, DEMATEL, ANP and DANP, to investigate the innovation drivers of successful crowdfunding in SMEs has not been considered previously.

**Keywords** Crowdfunding, SMEs, Emerging economy, Multi-layer decision-making approach

**Paper type** Research Paper, Article

## Introduction

There has been a large consensus among scholars and practitioners that entrepreneurship provides employment, enhances innovation and contributes to socioeconomic development (Baumol and Strom, 2007; Braunerhjelm *et al.*, 2010; Shan *et al.*, 2018; Rezaei *et al.*, 2020). However, entrepreneurial ventures and small- and medium-sized enterprises (SMEs) have been found to face deficiencies in the market that not only limit their potential contribution but also their survival in the market (Estrin *et al.*, 2018; Anwar *et al.*, 2020; Block *et al.*, 2021). For instance, one of the significant challenges of entrepreneurial SMEs is the lack of access to the sources of external finance, such as equity capital or bank loans, in their early stages of activities (e.g. Cassar, 2004; Cosh *et al.*, 2009). This may be due to the disparity between the demand for financing and financial suppliers (Eldridge *et al.*, 2021). In such circumstances, entrepreneurs strive to undertake innovative approaches to fulfil their financial needs (Stefani *et al.*, 2019) rather than relying on specialised investors only. In recent years, SME founders have sought financing from the “crowd” by getting them involved in their business, venturing either as a funder or active consumer (Belleflamme *et al.*, 2014). As such, crowdfunding has become a joint entrepreneurial innovation against traditional financing (Bruton *et al.*, 2015; Block *et al.*, 2018).

Crowdfunding has been highly promoted since the recent technological development and transformation of business models, which facilitated the circulation of information and access to the finance pool beyond national boundaries (Harrison, 2013; Belleflamme *et al.*, 2014). Crowdfunding can be undertaken in different forms, such as donation, rewards, debt or equity models (Meyskens and Bird, 2015), and complemented crowdfunding platforms (e.g. Kickstarter) that assist in developing novel financing initiatives. Although the emergence of such platforms facilitates access to the source of crowdfunding for SMEs, they have increasingly intensified competition among fund seekers. Therefore, entrepreneurs need to consider and develop a wide range of capabilities to become successful in their pitch for crowdfunding their ventures. Such drivers include various aspects such as creating an innovative partnership, having previous experience in innovation management or making creative interactions with backers (Martínez-Cháfer *et al.*, 2021).

In this vein, literature has explored crowdfunding from different perspectives. For instance, focussing on financial dimensions, a body of research has tried to explore the extent to which crowdfunding addressed the shortcomings of traditional financing (e.g. Cichy and Gradoń, 2016). Similarly, Belleflamme *et al.* (2014) highlight the financing struggles for business venturing and propose crowdfunding as a proper investment tool. Also, extant research argues the role of innovation management, technology and the digital economy in emerging crowdfunding (e.g. Steigenberger, 2017; Niemand *et al.*, 2018; Shahab *et al.*, 2019). Furthermore, there has been an ongoing endeavour to investigate other dimensions of crowdfunding, such as its relationship with social capital and innovation management drivers (e.g. Agrawal *et al.*, 2015; Onjewu *et al.*, 2022; Vismara, 2016), the life cycle of start-ups (e.g. Hornuf and Schmitt, 2016; Paschen, 2017) and even crowdfunding as a tool for value-creation (e.g. Ahlers *et al.*, 2015; Baumgardner *et al.*, 2017).

However, although the interest in crowdfunding research has increased in recent years (Belleflamme *et al.*, 2014), prior studies are still fragmented and scant (Mochkabadi and Volkmann, 2020; Troise *et al.*, 2020; Troise *et al.*, 2022). For example, there is a gap in the entrepreneurial finance literature to systematically explore and evaluate how entrepreneurs leverage innovation drivers to secure successful crowdfunding for their business venturing. Hence, this research is set to disentangle the success factors of innovation management in crowdfunding by entrepreneurial SMEs. Indeed, we sought three distinct research questions:

- RQ1. What are the innovation drivers of successful crowdfunding for the entrepreneurial SMEs?
- RQ2. What are the causal and effectual relationships (interrelationship) among identified drivers?
- RQ3. What is the importance/weight of each driver?

To address these research questions, we have employed a multi-layer multi-criteria decision-making (MCDM) approach. In this regard, an initial list of drivers is extracted from the crowdfunding literature, which is later filtered to the most relevant innovation drivers of successful crowdfunding for entrepreneurial SMEs via the Fuzzy Delphi method (RQ1). Then, we apply a decision-making trial and evaluation laboratory (DEMATEL) to investigate the causal and effectual relationship between the drivers and illustrate a basic conceptual model (RQ2). Eventually, a combination of the analytical network process (ANP), as well as the stepwise weight assessment ratio analysis (SWARA), is employed to identify the importance of the drivers (RQ3). Therefore, the findings of this paper contribute to crowdfunding research by identifying twenty-eight success drivers, of which fifteen factors are innovation-driven. This has further led to the identification of a construct that highlights how these drivers interact with each other to boost the success rate of the crowdfunding of SMEs. Finally, the weight of drivers emanated from SWARA, DEMATEL and DANP analyses led to the identification of a score function for measuring the drivers, which provides insight for practitioners (entrepreneurs) by highlighting that they need to prioritise and focus on the crowdfunding drivers that have higher importance.

In the remainder, we will synthesise the extant research and explore the most important internal factors of innovation management towards crowdfunding by SMEs. This is followed by the methodology section highlighting the hybrid decision-making-mathematical modelling research design and rigour. After presenting the research findings, we discuss the contributions by detailing the theoretical and practical implications. The last section concludes the paper, addresses the research's limitations and proposes potential areas for further studies.

## Literature review

The term “crowdfunding” has existed since the early 21st century when new platforms were used to generate and raise funds in financial markets (Dushnitsky and Fitza, 2018). According to the view (Dushnitsky and Zunino, 2018; Fleming and Sorenson, 2016), “crowdfunding” is the method of financing a project or investment by collecting small sums of money from a large number of people through the Internet. This innovative approach has been created more to help high-risk and traditional investments that do not comply with new financial mechanisms and, in a way, has had a significant impact on attracting funding and the success of these investments, incredibly entrepreneurial and creative investments (Jafari-Sadeghi, 2021; Martínez-Cháfer *et al.*, 2021). In this regard, researchers believe that innovation management, technological advances and new financing methods are changing how capital is raised (Sukumar *et al.*, 2020; Vismara, 2016). Crowdfunding covers many areas

(Lukkarinen *et al.*, 2016). According to (Massolution, 2015), crowdfunding has two main streams, including financial and non-financial, and these two models also breakdown into five categories of collective investment, including (1) donation-based, (2) reward-based, (3) lending-based, (4) royalty-based and (5) equity-based crowdfunding (Giudici *et al.*, 2020; Straaten and Bieman, 2021).

Success in crowdfunding requires a thorough and accurate knowledge of projects' innovative and effective drivers. The drivers are the factors that force entrepreneurs to choose crowdfunding as a source of funding and lead them to this approach (Mensah *et al.*, 2021; Sadeghi *et al.*, 2019; Straaten and Bieman, 2021). Drivers are also potential determinants of the success of investment campaigns that cover different areas related to project features (Di Pietro, 2021). Some scholars also extracted and presented the factors of equity crowdfunding that impact and match entrepreneurs and investors (Giudici *et al.*, 2020). Researchers have recently addressed the factors and drivers for crowdfunding to succeed in projects. When investing in crowdfunding projects, investors face difficulties choosing the right one as this decision impacts the benefits and losses in the future (Vrontis *et al.*, 2020). It is essential to be careful regarding the criteria that show the value of the project and its specificity. It has been illustrated that the main drivers of success are divided into six main categories, including (1) campaign features, (2) networks, (3) comprehensibility, (4) innovation and quality signals, (5) company ratings and (6) risk. These six categories are divided into several smaller sub-categories, then finally, 24 drivers of success are extracted from the theory of collective financing (Hervás-Oliver *et al.*, 2021).

In the **campaign characteristics** group, campaign duration stimuli, funding target, investment, provision of financials, number of early backers, capital raised and number of investors are identified. In the **networks group**, social media networks and private networks are proposed (Battisti *et al.*, 2021). The **comprehensibility group** encompasses stimuli understandability, information on risk and environmental commitments. Drivers, including updated stimuli, spelling mistakes and videos, are classified in the **innovation and quality signals** (Giudici *et al.*, 2020). The company rating category considers team, market, concept, scalability, terms and stage ratings (Chan *et al.*, 2019). Eventually, in the **risk group**, the risk stimuli associated with the projects, risks of the project initiator, risks of the intermediary, etc., are included (Troise and Tani, 2021). Alongside the factors mentioned above, **independent variables**, including community description, community orientation, communication frequency and structural rewards features, and control variables, including project goal, campaign duration and staff selection, are defined and used (Venslaviene *et al.*, 2021). Images that show the concept of campaign elements and continuous and frequent communication with investors are critical drivers of success for SMEs entrepreneurs (Giudici *et al.*, 2020; Larrea *et al.*, 2019).

The success of crowdfunding campaigns depends on the experience of the SME members. In addition, the geographical location variable indicates that the success of collective investment in projects located in a geographical area is more significant than in projects outside that area (Borrero-Domínguez *et al.*, 2020). Fundraising is on the rise as one of the most fundamental and outstanding ways to outsource work to individuals who are available online. One of the critical factors in these campaigns' success is to show others credibility. The index of trust in crowdfunding (i.e. reconstruction, transparency and experience) and the level of monetary compensation can predict the success or failure of such campaigns. Combining money with transparency and integrating money with experience is the best way to show sufficient credit and ultimately achieve success in crowdfunding campaigns (Xu *et al.*, 2021). Drivers such as campaign features, networks and the ability to understand the concept and proposals of the company are discussed in online equity campaigns (Troise and Tani, 2021). The campaign has four main features: funding target, minimum investment, campaign duration and funding (Lukkarinen *et al.*, 2016). Networks in two categories of early funding

from private and social media networks can be the factors of campaign success (Battisti *et al.*, 2021).

The investment decision criteria traditionally used by venture capitals (VCs) or trading angels are not crucial for success in equity crowdfunding (Di Pietro *et al.*, 2021; Battisti *et al.*, 2021; Troise *et al.*, 2022). Instead, success depends on the characteristics of the crowdfunding campaigns and the use of pre-selected private and public networks (Lukkarinen *et al.*, 2016). Entrepreneurs' experience in crowdfunding equity has also influenced other successful drivers, including *raising money, obtaining feedback, publicity, forming relationships/broadening networks, funding speed, lack of funding alternatives and the maximum level of autonomy*. Obtaining feedback and lack of funding are influenced by the previous experience of entrepreneurs (Straaten and Bieman, 2021). Crowdfunding improves access to finance and is also rare and local. The existence of regulations related to crowdfunding as a driver has a positive relationship with the total per capita collective capital. The strong culture of e-services and innovation management are determinants for emerging crowdfunding types (Kukk and Laidroo, 2020; Troise and Tani, 2021).

Accordingly, e-service, innovation management and platforms are valuable tools in determining the influential factors in SMEs using crowdfunding. The number of awards, promoter experience, topic updates from promoters to sponsors, and issues between promoters and sponsors covers various areas related to project features examining these factors (Chan *et al.*, 2019; Troise and Tani, 2021). Factors related to signalling theories, such as participation, previous experience and interaction with sponsors, have a positive and direct relationship with the achievement ratio. At the same time, the number of rewards has no significant effect. The partnership program is very effective in increasing achievement. In this regard, developing a portfolio of partners and designing innovative mechanisms that increase the relationship between project promoters and partners can be very effective (Martínez-Cháfer *et al.*, 2021). Examining operating systems and using cryptocurrency analysis of variance success in some reward-based and donation-based models is effective in raising crowdfunding to achieve successful drivers. Here, the average interest rate in a project is used as a dependent variable in the analysis of lending platforms. Expected effects such as "project category, location, year, and size for each platform" are examined, and finally, different results are extracted.

The innovative factors related to success on one platform are not replicated on other platforms (Dushnitsky and Fitza, 2018). Funded methods can be used to succeed in raising crowdfunding. Raised amount (in the target percentage), number of investors and speed of investment (number of days needed to complete financing) are used. Scholars demonstrated that between 2015 and 2018, the innovative factors that had the most impact on the campaign's success were project innovation and quality, information disclosure and early investments (Correia *et al.*, 2019). Crowdfunding of projects has changed the way innovation and management are performed. In this way, crowdfunding uses "crowd" to create an outsourcing model in developed countries, using their power to raise capital. Previous participants influence the behaviour of potential supporters in the crowdfunding of innovation management, and a herding behaviour is created. Thus, essential mechanisms are information asymmetry, word-of-mouth effect, network effect, logical behaviour (Tian *et al.*, 2021), and narratives and narrator experience in explaining crowdfunding (Cappa *et al.*, 2021). Table 1 summarises research in this area to summarise drivers affecting crowdfunding success.

## Methodology

Considering the research objectives discussed in the introduction section, (1) extract the most relevant crowdfunding drivers from an innovation management perspective, (2) investigate the causal relationship amongst the most important drivers and their cause-and-effect relationships, (3) and evaluate the importance of each crowdfunding driver

amongst SMEs entrepreneurs, a multi-layer hybrid decision-making based framework has been utilised. In this regard, and to achieve the objectives above, different decision-making tools, including Fuzzy Delphi, Decision-making trial and evaluation laboratory (DEMATEL), the stepwise weight assessment ratio analysis (SWARA) and the analytical network process (ANP), have been employed. Figure 1 illustrates the research framework that this article follows.

*Phase 1. Initialisation*

The initial list of crowdfunding drivers is extracted from the literature review at this stage. Based on the literature review employed in this article and after searching relevant keywords (e.g. crowdfunding drivers, crowdfunding success, crowdfunding equity, crowdfunding factors, crowdfunding enablers, etc.) in popular databases (e.g. Google Scholar, ScienceDirect, ProQuest, Web of Science, Scopus, etc.), during 2000–2021, 28 initial drivers of crowdfunding

Author(s)	Research Purpose(s)	Method/Approach	Successful drivers of crowdfunding
Martínez-Cháfer <i>et al.</i> (2021)	Identify critical determinants in the various stages of crowdfunding projects	Determinants of successful crowdfunding initiatives using a sample of 5,251 projects	<ul style="list-style-type: none"> <li>• Innovative Partnership</li> <li>• Having previous experience in innovation management</li> <li>• Creative interaction with backers</li> </ul>
Straaten and Bieman (2021)	Identify the stimuli that influence the previous experiences of entrepreneurs in crowdfunding projects	Abductive reasoning; reasoning logic combining deductive and inductive elements (mixture of theory derived from the literature and theory that emerged from the process of data collection, analysis, and interpretation)	<ul style="list-style-type: none"> <li>• Raising money</li> <li>• Obtaining feedback</li> <li>• Publicity</li> <li>• Forming innovative relationships/broadening network</li> <li>• Funding speed</li> <li>• Funding innovative alternatives</li> <li>• The maximum level of autonomy toward innovation</li> </ul>
Dushnitsky and Fitz (2018)	Achieve what drivers can be generalised across multiple operating systems in crowdfunding	Variance decomposition	<ul style="list-style-type: none"> <li>• Donation</li> <li>• Rewarding innovation</li> <li>• Lending</li> </ul>
Lukkarinen <i>et al.</i> (2016)	Achieving success factors in raising equity crowdfunding increases the number of investors	Multiple linear regression	<ul style="list-style-type: none"> <li>• Early funding collected from private networks</li> <li>• Social media networks</li> <li>• Size of the minimum allowed investment in innovation management</li> <li>• Funding target</li> <li>• Campaign duration</li> <li>• The provision of financial information in the pitch</li> <li>• B2C orientation of the company's offering</li> </ul>
Larrea <i>et al.</i> (2019)	Achieving the success factors of crowdfunding in a campaign with a specific theme	Use a web crawler to analyse and retrieve Kickstarter projects	<ul style="list-style-type: none"> <li>• Innovative reward-based crowdfunding</li> </ul>
Kukk and Laidroo (2020)	Determining the institutional drivers that affect the volume of crowdfunding	Analysis of crowdfunding data for 160 countries across the world during 2015–2016	<ul style="list-style-type: none"> <li>• Innovative crowdfunding-specific regulations</li> </ul>

**Table 1.**  
The summary of studies and their drivers in the literature review

(continued)

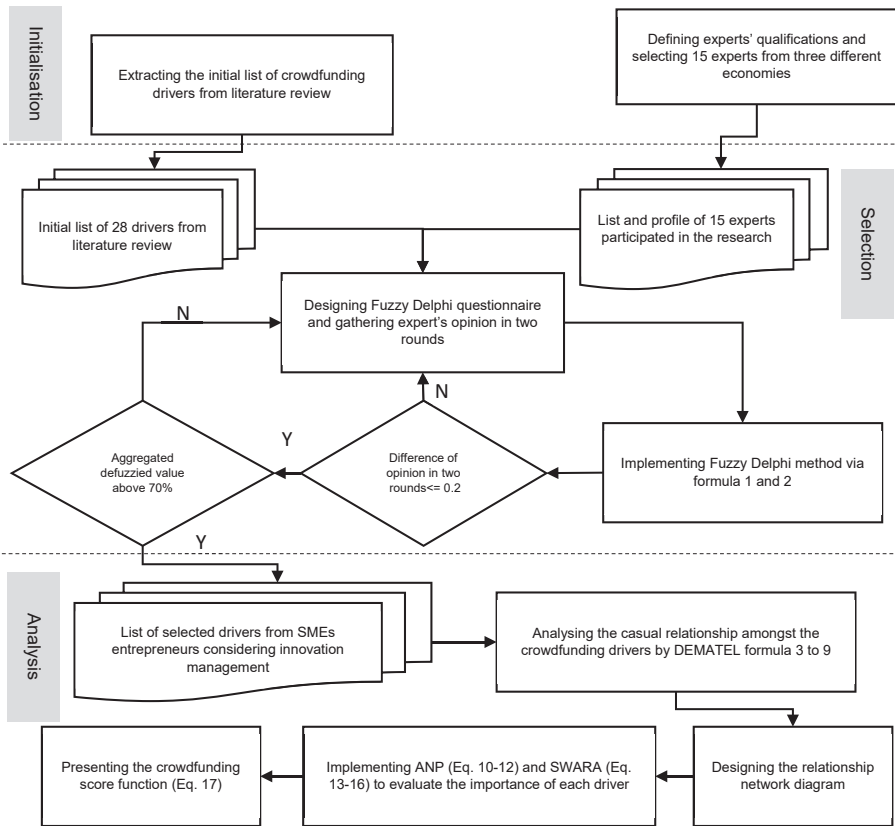
Author(s)	Research Purpose(s)	Method/Approach	Successful drivers of crowdfunding
Venslaviene <i>et al.</i> (2021)	Determine which criteria are essential for investors when choosing different crowdfunding projects for financing	Use of Visual Analogue Scale Matrix for Criteria Weighting Method	<ul style="list-style-type: none"> <li>• Risks associated with a project</li> <li>• Risks associated with project initiator</li> <li>• Risks associated with intermediary</li> <li>• Market rating</li> <li>• Innovation Concept rating</li> <li>• Team rating</li> <li>• Funding target</li> <li>• Grammar mistakes</li> <li>• Innovation Updates</li> <li>• Campaign duration</li> <li>• Minimum investment</li> <li>• Campaign video</li> <li>• Social media and private networks</li> <li>• Environment commitments toward innovation</li> </ul>
Correia <i>et al.</i> (2019)	Achieving the drivers of fundraising success in equity crowdfunding	Use Funded as a measure of success-use a logistic regression To analyse the static drivers of fundraising success	<ul style="list-style-type: none"> <li>• The quality of the project, signalled by equity retention and the presence of a prominent investor</li> <li>• The innovation and information disclosure</li> <li>• Early investments in innovation management</li> </ul>
Borrero-Domínguez <i>et al.</i> (2020)	Investigating the factors affecting the success of crowdfunding	Using the ordinary least squares regression, the negative binomial, the logit, and the Cox proportional hazard models	<ul style="list-style-type: none"> <li>• Experience of the project members</li> <li>• Geographic location</li> <li>• Human capital for innovation management</li> <li>• Gender</li> </ul>
Xu <i>et al.</i> (2021)	Achieving success factors in a crowdfunding campaign according to the relationship between indicators	Using the methods of Structural Equation Modelling and fuzzy set Qualitative Comparative Analysis	<ul style="list-style-type: none"> <li>• Ability to signal credibility towards the potential workers innovation (gamification-based, transparency, and experience)</li> </ul>

Table 1.

were extracted and listed (Table 2). Alongside selecting the most relevant crowdfunding drivers from SMEs entrepreneurs' points of view by considering innovation management, experts were selected from three different countries, including UK and Italy as developed economies and Iran as an emerging economy, to make the results more comparable for prominent benchmarking. According to the access to the SMEs entrepreneurs from these three countries and also having in mind other experts' qualifications such as (1) being familiar with crowdfunding drivers and innovation management, (2) having at least three years experience in SMEs, (3) having at least bachelor in any field of science and business, etc. the following experts were selected and participated in this research (judgemental sampling approach) (Yadav *et al.*, 2019). The expert profile is illustrated in Table 3.

### Phase 2. Selection

After identifying the initial list of the crowdfunding drivers from the literature review (28) and accessing 15 experts in this field from SMEs entrepreneurs', a Fuzzy Delphi questionnaire was designed and completed by the experts in two rounds. In this



**Figure 1.**  
Research  
framework/steps

questionnaire (A), each expert shared their opinion regarding the importance of crowdfunding drivers for SMEs from the innovation management perspective by linguistic terms and then transferred to triangular fuzzy numbers (TFN) according to the following transformation rules in Table 4. This stage took nearly two weeks, and before sending the questionnaire, a group briefing session (30 min) was set via MSTEAMS with each panel in each country to describe the research and how to complete the questionnaire. This research compared two developed countries with one emerging economy as benchmarking. This would provide some insights for any emerging economy to (1) set their policies regarding crowdfunding according to the successful experiences of the developed countries, (2) how to increase the general public motivation and engagement in crowdfunding activities, and (3) how to become familiar with crowdfunding for sustainability ventures and (4) extract guidelines and rewards to increase the engagement of the SMEs entrepreneurs for emerging economies to participate in crowdfunding activities from the experience of developed countries.

Then, the aggregated fuzzy value for each crowdfunding driver is measured via the following formula. Where  $\widetilde{D}_j^k = (a_j^k, m_j^k, b_j^k)$  is the fuzzy importance of the  $j$ th crowdfunding driver ( $j = \{1, 2, \dots, n\}$ ) from the  $k$ th expert opinion ( $k = \{1, 2, \dots, L\}$ ) and  $\widetilde{AFV}_j$  is the aggregated fuzzy value of the  $j$ th driver.



Successful drivers of crowdfunding	Description	References (sample)
Innovative Partnership	Get support from potential investors such as supporting organisations	Martínez-Cháfer <i>et al.</i> (2021), Courtney <i>et al.</i> (2017)
Experience in innovation management and crowdfunding	Existence of other projects on the platform and their analysis	Martínez-Cháfer <i>et al.</i> (2021), Borrero-Domínguez <i>et al.</i> (2020), Dwarakanath <i>et al.</i> (2016), Thuan <i>et al.</i> (2016), Wolf <i>et al.</i> (2020) Arora <i>et al.</i> (2016), Laursen and Salter (2014), Petruzzelli <i>et al.</i> (2019), Shane (2003) Martínez-Cháfer <i>et al.</i> (2021), Löher (2017), Vismara (2016), Wang <i>et al.</i> (2018), Plummer <i>et al.</i> (2016)
Innovative Interaction with partners and stakeholders	Interact with the audience, actively communicate with potential supporters	Straaten and Bieman (2021), Belleflamme <i>et al.</i> (2013), Gerber <i>et al.</i> (2012)
Raising money	It acts as a driver for entrepreneurs to leverage crowdfunding	Straaten and Bieman (2021), Belleflamme <i>et al.</i> (2013), (2014), Brown <i>et al.</i> (2015), Di Pietro <i>et al.</i> (2018), Gerber <i>et al.</i> (2012), Lambert and Schweinbacher (2010), Liu <i>et al.</i> (2016), Macht and Weatherston (2014), Martin (2012), Schwienbacher (2018), Surowiecki (2005), Wald <i>et al.</i> (2019)
Obtaining feedback	Framework for choosing the right crowdfunding type for each stage in start-up life cycle + benefits of crowdfunding related to the crowdfunding type by questionnaire and discussion	Straaten and Bieman (2021), Venslaviene <i>et al.</i> (2021)
Publicity	Advertising for the general public	Lukkarinen <i>et al.</i> (2016), Belleflamme <i>et al.</i> (2013), (2014), Brown <i>et al.</i> (2015), Burtch <i>et al.</i> (2013), Di Pietro <i>et al.</i> (2018), Gerber <i>et al.</i> (2012), Lambert and Schweinbacher (2010), Macht and Weatherston (2014), Martin (2012)
Forming innovative relationships/broadening network	The direct connection to the funders through an innovative and long-term interaction that extends	Mollick (2014), Wald <i>et al.</i> (2019)
Funding speed	The response time and agility in the funding process	Straaten and Bieman (2021), Gerber <i>et al.</i> (2012), Lukkarinen <i>et al.</i> (2016)
Innovative funding alternatives	Other possible and innovative opportunities for funding	Straaten and Bieman (2021), Brown <i>et al.</i> (2015)
The maximum level of autonomy toward innovation	The highest level of independent decision-making power in crowdfunding	Straaten and Bieman (2021), Brown <i>et al.</i> (2015), Hemer <i>et al.</i> (2011), Pierrakis and Collins (2012)
Donation	Duration of the project campaign	Straaten and Bieman (2021), Ahlers <i>et al.</i> (2015), Belleflamme <i>et al.</i> (2014), Brown <i>et al.</i> (2015), Macht and Weatherston (2014), Vismara (2016)
Rewarding innovation	The rewarding policies and guidelines to engage in crowdfunding by innovation management	Dushnitsky and Fitza (2018), Belleflamme <i>et al.</i> (2014), Lukkarinen <i>et al.</i> (2016), Mollick (2014), Agrawal <i>et al.</i> (2015), Belleflamme <i>et al.</i> (2014), Rossi (2014)
Lending	alternative funding channels to that represented by credit intermediaries	Mollick (2014), Dushnitsky and Fitza (2018), Larrea <i>et al.</i> (2019), Belleflamme <i>et al.</i> (2014), Lukkarinen <i>et al.</i> (2016), Vismara (2016), Gierczak <i>et al.</i> (2014), Bento <i>et al.</i> (2019), Cumming <i>et al.</i> (2017), Gamble <i>et al.</i> (2017), Simons <i>et al.</i> (2017)
		Moss <i>et al.</i> (2015), Allison <i>et al.</i> (2015), Gafni <i>et al.</i> (2019), Dushnitsky and Fitza (2018), Belleflamme <i>et al.</i> (2014), Lukkarinen <i>et al.</i> (2016), Mollick (2014), Belleflamme <i>et al.</i> (2014), Lukkarinen <i>et al.</i> (2016), Mollick (2014)

(continued)

**Table 2.**  
The final 28 extracted  
factors and related  
studies

Successful drivers of crowdfunding	Description	References (sample)
Early and innovative funding opportunities	Minimum amount to invest in participating in project campaign via innovative approaches	Straaten and Bieman (2021), Venslaviene <i>et al.</i> (2021), Lukkarinen <i>et al.</i> (2016), Correia <i>et al.</i> (2019)
Funding target	The minimum sum needed to launch the pro	Venslaviene <i>et al.</i> (2021), Belleflamme <i>et al.</i> (2014) Lukkarinen <i>et al.</i> (2016), Cumming <i>et al.</i> (2017)
Crowdfunding-specific regulations toward innovation	The regulations and restrictions relevant to crowdfunding toward innovation management	Venslaviene <i>et al.</i> (2021)
Risks associated with a project	Product risk/funding object risk, Social risk, Psychological risk, Post-funding risk/repayment risk	Venslaviene <i>et al.</i> (2021), Gierczak <i>et al.</i> (2014), Zhang <i>et al.</i> (2018)
Risks associated with project initiator	Project initiator risk/owner risk/seller risk, Time risk/convenience risk, Delivery risk	Venslaviene <i>et al.</i> (2021), Gierczak <i>et al.</i> (2014), Verhagen <i>et al.</i> (2006)
Risks associated with the intermediary	Intermediary risk/privacy risk, Financial risk, Performance risk/operating risk	Venslaviene <i>et al.</i> (2021), Gierczak <i>et al.</i> (2014), Wati <i>et al.</i> (2018), Verhagen <i>et al.</i> (2006)
Market rating	Attainable market that determines the company's growth potential	Venslaviene <i>et al.</i> (2021), Correia <i>et al.</i> (2019), Burtch <i>et al.</i> (2013), Streletzki and Schulte (2013)
Concept rating	How well the product fits the target market, the relevance of the end customer's problem, how well the company addresses the problem compared to other alternatives and the value of the solution to the customer	Venslaviene <i>et al.</i> (2021), Lukkarinen <i>et al.</i> (2016), Block <i>et al.</i> (2018), Streletzki <i>et al.</i> (2013), Lukkarinen <i>et al.</i> (2016)
Team rating	Industry expertise, educational background, experience, balance between team members' skill sets, perceived motivation, drive, passion, commitment and honesty	Venslaviene <i>et al.</i> (2021), Lukkarinen <i>et al.</i> (2016)
Innovation management and updates	How often updates regarding innovation are sent to stakeholders	Venslaviene <i>et al.</i> (2021)
Campaign duration	Duration of the project campaign	Venslaviene <i>et al.</i> (2021), Cumming <i>et al.</i> (2017), Härkönen (2014), Zheng <i>et al.</i> (2014), Buttice <i>et al.</i> (2017), Calic and Mosakowski (2016), Mitra and Gilbert (2014), Lukkarinen <i>et al.</i> (2016), Burtch <i>et al.</i> (2013), Correia <i>et al.</i> (2019), Signori and Vismara (2018)
Environment commitments via innovation management	Whether the crowdfunding campaign is committed to the environment by implementing innovation management	Venslaviene <i>et al.</i> (2021)
geographic location	The location of the SME	Borrero-Domínguez <i>et al.</i> (2020), Agrawal <i>et al.</i> (2015), Lin and Viswanathan (2016), Mollick (2014)
human capital for innovation management	the economic value of a worker's experience and skills in the SME	Josefy <i>et al.</i> (2017), Borrero-Domínguez <i>et al.</i> (2020), Ahlers <i>et al.</i> (2015), Barbi and Mattioli (2019), Courtney <i>et al.</i> (2017), Yao and Zhang (2014), Piva and Rossi-Lamastra (2018), Ahlers <i>et al.</i> (2015)
Ability to signal credibility towards the potential workers innovation	The power to send signals to credit intermediaries for funding opportunities from potential workers	Xu <i>et al.</i> (2021)

Table 2.

Expert code	Country	Experience	Age	Gender	Education	Area*
E01	Iran	29	55	M	BSc	I
E02		5	34	M	MBA	I
E03		3	25	M	BSc	I
E04		15	39	F	BSc	I
E05		15	41	M	PhD	A
E06	Italy	10	44	F	PhD	A
E07		25	54	M	BSc	I
E08		12	36	F	MBA	I
E09		23	55	F	MBA	I
E10		19	48	M	BSc	I
E11	UK	13	34	M	PhD	A
E12		5	33	F	MBA	I
E13		4	32	M	BSc	I
E14		3	28	M	BSc	I
E15		11	36	F	MBA	I

Note(s): I (Industry); A (Academia)

Table 3. Experts profile participated in this research

Linguistic term	Triangular fuzzy numbers (a,m,b)		
	a	M	B
very important	0.9	1	1
Important	0.7	0.9	0.9
nearly important	0.5	0.7	0.7
Moderate	0.3	0.5	0.5
nearly unimportant	0.1	0.3	0.3
Unimportant	0	0.1	0.1
extremely unimportant	0	0	0

Source(s): Amoozad Mahdiraji et al. (2020)

Table 4. Linguistic terms and TFNs for fuzzy Delphi

$$\widetilde{AFV}_j = (a_j, m_j, b_j) = \left( \min D_j^k, \prod_{k=1}^L D_j^k, \max D_j^k \right) \quad (1)$$

After, the defuzzied value of each driver is measured via the following equation (Amoozad Mahdiraji et al., 2020).

$$DF_j = a_j + \frac{(b_j - a_j) + (m_j - a_j)}{3}, \quad \forall j \in n \quad (2)$$

In case the difference of the defuzzied values for each crowdfunding driver in two rounds of Fuzzy Delphi is less than the threshold value (0.2), and also the  $DF_j$  for the driver is above the threshold value (0.7), that driver is selected; otherwise, deleted from the initial list. Accordingly, if the average score of a driver in two rounds of FD is less than 0.2 (20%) (Hashemi et al., 2021), then that driver has met the first condition. Furthermore, the drivers that passed the first condition, those with an average defuzzied score equal to or above 0.7 (70%) (Mahdiraji et al., 2022), are selected for further investigation. This approach was repeated until all innovation-based crowdfunding drivers were selected or deleted from the initial list. As a result, 11 drivers were selected as relevant from SMEs entrepreneurs' perspectives.

*Phase 3. Analysis*

A hybrid MCDM approach consisting of DEMATEL, ANP and SWARA has been examined to understand the relationship amongst the selected drivers and measure their importance. The first method was applied to identify the cause-and-effect relationship among the drivers, and the last two were employed to measure the importance of each selected indicator. DEMATEL, ANP and SWARA have been introduced in the following three subsections.

*Phase 3.1. DEMATEL.* To implement DEMATEL, a questionnaire (B), including a square matrix, was sent for the experts to determine the direct relationship among the selected drivers. This stage took nearly four weeks, and before sending the questionnaire, a group briefing session (75 min) was set via MSTEAMS with each panel in each country to describe the research and how to complete the questionnaire. In this research, a seven-scale Likert questionnaire has been used to gather experts' opinions regarding the impact of drivers on each other, including *strongly ineffective, ineffective, nearly ineffective, neither effective nor ineffective, nearly effective, effective and strongly effective*. These linguistic values were then transferred to numerical values as 1, 2, 3, 5, 7, 8, 9, relatively (Jafari-Sadeghi et al., 2022). Then the average value from the expert's opinion was measured via a simple arithmetic mean. The result is a square matrix known as Z, including the direct initial relationship among the drivers. The Z matrix elements present the impact of the driver on row (i) over the driver on column (j), known as  $z_{ij}$ . Subsequently, the normalised direct-relation matrix (N) and the total relation matrix (TRM or T) are resulted from implementing Equations (3) to (5).

$$s = \text{Min} \left\{ \frac{1}{\max_{1 \leq i \leq n} \sum_j z_{ij}}, \frac{1}{\max_{1 \leq j \leq n} \sum_i z_{ij}} \right\}; \forall ij = 1, 2, \dots, n \quad (3)$$

$$N = s \times Z_{ij} \quad (4)$$

$$T = N + N^2 + N^2 + \dots = \sum_{i=1}^{\infty} N^i = N \times (I - N)^{-1} \quad (5)$$

Note that  $t_{ij}$  is the element of the total relationship matrix. In the next step, the direct and indirect effects of each driver ( $R_i$ ) and ( $D_j$ ) has been measured relatively (Equations (6) and (7)). Next, the net effect ( $E_j$ ) and the overall prominence ( $P_j$ ) of each driver is measured via the following equations (Equations (8) and (9)) (Hashemi et al., 2021).

$$R_i = \sum_{j=1}^n t_{ij} \quad (6)$$

$$D_j = \sum_{i=1}^n t_{ij} \quad (7)$$

$$P_j = \{R_i + D_j | i = j\} \quad (8)$$

$$E_j = \{R_i - D_j | i = j\} \quad (9)$$

$E_j$ 's positive and negative values relatively illustrate the cause-and-effect drivers. Besides, the higher values of  $P_j$  present, the more critical the considered driver. According to the net effect ( $E_j$ ) and the overall prominence ( $P_j$ ) the network relationship diagram (NRD) is designable. The causes are above the x-array, and for TRM values above the threshold value (the arithmetic mean of elements of TRM), the arrow from cause to effect is drawn (Hajiagha et al., 2021).

*Phase 3.2. DANP.* This approach combines DEMATEL and ANP, where the TRM matrix is used as the supermatrix and input of the ANP method. The following steps are employed in this method (Jafari-Sadeghi *et al.*, 2022).

- (1) Normalised  $C^H$  matrix is measured by dividing every row in  $G_{ij}$  by the sum of the row ( $S_i$ ) where  $G_{ij}$  shows the DEMATEL total relationship matrix.

$$C^H = \begin{bmatrix} G_{11} & \dots & G_{1m} \\ G_{i1} & \dots & G_{im} \\ G_{m1} & \dots & G_{mm} \end{bmatrix} \begin{matrix} S_1 \\ S_i \\ S_m \end{matrix} \quad (10)$$

Where  $S_i = \sum_{j=1}^m G_{ij}$

- (2) The  $C^H$  is transposed as Equation (11) where  $F^m$  denotes the transposed normalised matrix.

$$F^m = (C^H)' = \begin{bmatrix} H_{11} & \dots & H_{1m} \\ H_{i1} & \dots & H_{im} \\ H_{m1} & \dots & H_{mm} \end{bmatrix} \quad (11)$$

- (3) The weighted supermatrix ( $W^{\text{limit}}$ ) is measured by limiting the supermatrix as follows.

$$W^{\text{limit}} = \lim_{k \rightarrow \infty} (C^{H'})^k \quad (12)$$

*Phase 3.3. SWARA.* This method is a simple weighting approach usually used in voting conditions; however, in this research, the authors have benefited from SWARA to check the results of DANP and provide a more robust weight for each driver. In this approach, the drivers are sorted according to the results of fuzzy Delphi. Then, the setpoint of each driver, known as  $S_j$  is measured as follows. Note that,  $P_j$  illustrates the mean point of each criterion based on the Fuzzy Delphi results (Mahdiraji *et al.*, 2021).

$$S_j = \begin{cases} P_j, & j = 1 \\ |P_j - P_{j-1}|, & j > 1 \end{cases} \quad (13)$$

After, the primary coefficient  $K_j$  results as follows.

$$K_j = \begin{cases} 1, & j = 1 \\ S_j + 1, & j > 1 \end{cases} \quad (14)$$

Then, measure the initial weight, known as  $Q_j$  as follows.

$$Q_j = \begin{cases} 1, & j = 1 \\ \frac{Q_{j-1}}{K_j}, & j > 1 \end{cases} \quad (15)$$

Afterwards, calculate the normalised weights as follows.

$$W_j = \frac{Q_j}{\sum_{j=1}^n Q_j} \quad (16)$$

After obtaining the weights of each driver via ANP, SWARA and DEMATEL, the authors aggregated the weights. They extracted the final importance coefficient for each driver by calculating the average weights resulting from all three methods. In case  $W_j$  determines the coefficient of each crowdfunding driver,  $S_j$  presents the score of each company or organisation regarding that driver on a scale of 0–100. The crowdfunding score function (CSF) is measured as follows.

$$CSF = \sum_{j=1}^n W_j \times S_j \quad (17)$$

## Results

After extracting 28 initial crowdfunding drivers from the literature review and using a questionnaire (A) amongst 15 SMEs entrepreneurs mentioned in Table 3, the expert's opinion was gathered, and the Fuzzy Delphi method (Equations (1) and (2)) was implemented in two rounds. The results are presented in Table 5. The underlined and bold values of the last column distinguish the common drivers and are selected by the experts from the innovation management perspective for further investigation.

For further illustration and to provide more value, the process of Fuzzy Delphi was also considered for each panel and each country separately to check the differences. Table 6 presents the selected crowdfunding drivers from different experts' opinions by considering innovation management in three cases.

Row	Success drivers of crowdfunding	AFV <sub>j</sub>			DF <sub>j</sub>
1	Innovative Partnership	0.5	0.828	1	<i>0.7759</i>
2	Experience in innovation management and crowdfunding	0.7	0.900	1	<i>0.8667</i>
3	Innovative Interaction with partners and stakeholders	0	0.356	1	0.4519
4	Raising money	0.7	0.900	1	<i>0.8667</i>
5	Obtaining feedback	0	0.247	0.5	0.2489
6	Publicity	0.1	0.472	0.7	0.4239
7	Forming innovative relationships/broadening network	0.7	0.900	0.9	<i>0.8333</i>
8	Funding speed	0.1	0.513	1	0.5377
9	Innovative funding alternatives	0.5	0.828	0.9	<i>0.7426</i>
10	The maximum level of autonomy toward innovation	0	0.000	0.9	0.3000
11	Donation	0	0.276	0.7	0.3253
12	Rewarding innovation	0	0.276	0.7	0.3253
13	Lending	0.1	0.513	0.9	0.5043
14	Early and innovative funding opportunities	0.1	0.574	1	0.5580
15	Funding target	0.3	0.626	0.7	0.5419
16	Crowdfunding-specific regulations toward innovation	0.3	0.680	0.9	0.6268
17	Risks associated with a project	0.5	0.828	1	<i>0.7759</i>
18	Risks associated with project initiator	0.5	0.761	0.9	<i>0.7204</i>
19	Risks associated with the intermediary	0.5	0.761	0.9	<i>0.7204</i>
20	Market rating	0	0.433	1	0.4776
21	Concept rating	0	0.208	0.9	0.3693
22	Team rating	0.5	0.761	1	<i>0.7537</i>
23	Innovation management and updates	0.1	0.528	0.7	0.4426
24	Campaign duration	0.1	0.574	0.9	0.5246
25	Environment commitments via innovation management	0.5	0.828	1	<i>0.7759</i>
26	Geographic location	0	0.000	0.9	0.3000
27	Human capital for innovation management	0.5	0.761	1	<i>0.7537</i>
28	Ability to signal credibility towards the potential workers innovation	0.3	0.626	0.7	0.5419

**Table 5.**  
Results of fuzzy Delphi

Success drivers of crowdfunding	Iran	Italy	UK	Aggregated
Innovative Partnership	*	*	*	*
Experience in innovation management and crowdfunding	*	*	*	*
Innovative Interaction with partners and stakeholders		*		
Raising money	*	*	*	*
Obtaining feedback				
Publicity				
Forming innovative relationships/broadening network	*	*	*	*
Funding speed	*			
Innovative funding alternatives	*		*	*
The maximum level of autonomy toward innovation	*			
Donation				
Rewarding innovation				
Lending		*		
Early and innovative funding opportunities	*			
Funding target	*			
Crowdfunding-specific regulations toward innovation	*			
Risks associated with a project	*	*		*
Risks associated with project initiator	*			*
Risks associated with the intermediary	*			*
Market rating	*		*	
Concept rating	*			
Team rating	*			*
Innovation management and updates	*			
Campaign duration		*	*	
Environment commitments via innovation management	*	*	*	*
Geographic location			*	
Human capital for innovation management	*	*	*	*
Ability to signal credibility towards the potential workers innovation	*			

**Table 6.** Comparison of crowdfunding drivers in different circumstances

By selecting 11 crowdfunding drivers from the initial list by the experts and implementing the Fuzzy Delphi method, the DEMATEL approach has been implemented (see Table 7). In this regard, experts have dispersed and completed the relevant questionnaire (B), and the average value for the Z matrix was measured and presented as follows.

Z	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	D <sub>9</sub>	D <sub>10</sub>	D <sub>11</sub>
D <sub>1</sub>	0	3	2	2	5	1	7	7	1	3	3
D <sub>2</sub>	7	0	8	8	2	7	8	9	5	7	2
D <sub>3</sub>	8	7	0	9	3	2	9	9	2	7	1
D <sub>4</sub>	8	8	9	0	8	3	7	9	1	5	3
D <sub>5</sub>	3	1	7	5	0	8	3	7	7	3	3
D <sub>6</sub>	7	3	3	3	3	0	1	7	1	5	7
D <sub>7</sub>	8	2	3	8	7	3	0	8	3	8	5
D <sub>8</sub>	5	5	8	8	3	1	9	0	1	3	3
D <sub>9</sub>	8	7	9	3	7	7	8	5	0	7	5
D <sub>10</sub>	3	7	7	3	3	7	5	5	8	0	9
D <sub>11</sub>	5	8	3	3	3	8	5	5	8	9	0

**Table 7.** DEMATEL initial average matrix

Then by applying Equations (3) to (5), the total relationship matrix emanates as follows (see Table 8). Note that the threshold value for this matrix was measured (arithmetic mean

**Table 8.**  
DEMATEL total  
relationship matrix

T	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	D <sub>9</sub>	D <sub>10</sub>	D <sub>11</sub>
D <sub>1</sub>	0.147	0.159	0.169	0.164	0.175	0.120	0.245	0.261	0.103	0.175	0.139
D <sub>2</sub>	<b>0.362</b>	0.222	<b>0.358</b>	<b>0.344</b>	0.225	0.275	<b>0.383</b>	<b>0.425</b>	0.215	<b>0.333</b>	0.208
D <sub>3</sub>	<b>0.349</b>	0.292	0.236	<b>0.338</b>	0.222	0.196	<b>0.373</b>	<b>0.400</b>	0.166	<b>0.310</b>	0.178
D <sub>4</sub>	<b>0.360</b>	<b>0.312</b>	<b>0.361</b>	0.236	0.288	0.221	<b>0.360</b>	<b>0.415</b>	0.164	0.297	0.207
D <sub>5</sub>	0.247	0.185	0.285	0.245	0.148	0.247	0.250	<b>0.323</b>	0.205	0.224	0.177
D <sub>6</sub>	0.258	0.183	0.200	0.188	0.161	0.122	0.192	0.284	0.116	0.219	0.206
D <sub>7</sub>	<b>0.332</b>	0.221	0.264	<b>0.307</b>	0.262	0.207	0.240	<b>0.369</b>	0.179	<b>0.310</b>	0.223
D <sub>8</sub>	0.274	0.234	0.296	0.291	0.192	0.155	<b>0.330</b>	0.240	0.130	0.228	0.172
D <sub>9</sub>	<b>0.382</b>	<b>0.318</b>	<b>0.377</b>	0.289	0.291	0.292	<b>0.389</b>	<b>0.388</b>	0.165	<b>0.345</b>	0.253
D <sub>10</sub>	0.295	<b>0.302</b>	<b>0.329</b>	0.262	0.221	0.277	<b>0.324</b>	<b>0.353</b>	0.254	0.235	0.285
D <sub>11</sub>	<b>0.314</b>	<b>0.309</b>	0.278	0.256	0.219	0.287	<b>0.319</b>	<b>0.348</b>	0.252	<b>0.343</b>	0.173

of the elements) and resulted in 0.298. Thus, all values equal to or above the threshold are underlined and bolded to illustrate the important cause-and-effect relationships. These values will be the source of designing the NRD in the following sections.

Equations (6) to (9) were employed in the next step to extract and separate the causes from the effects and determine each crowdfunding driver's prominence by considering innovation management. Table 9 presents the results. Note that the negative values of  $E_j$  denote the effects, and the positive values (bold and underlined) demonstrate the causes. Furthermore, the last column presents the normalised weights of each crowdfunding driver according to  $P_j$  values; thus,  $W_D(j) = P_j / \sum P_j$ .

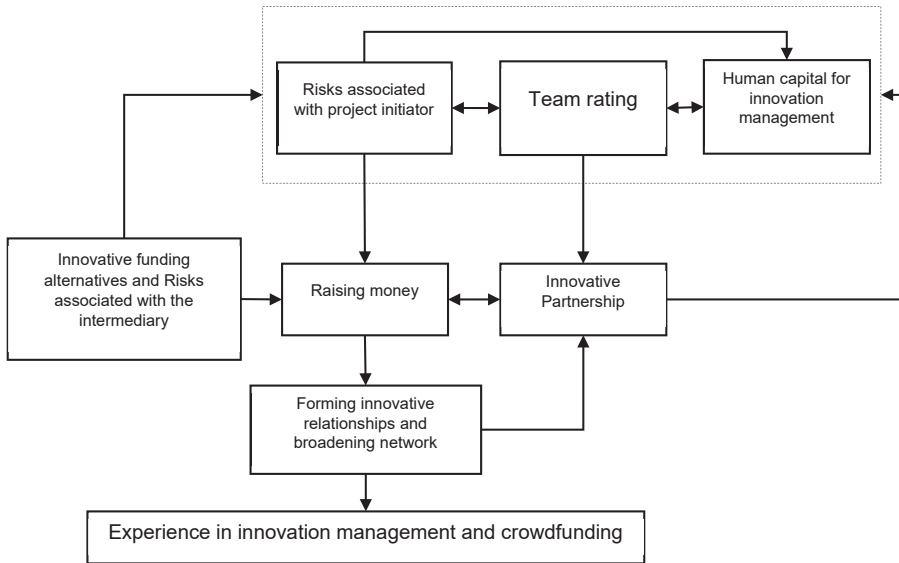
On the basis of the NRD rules mentioned in the methodology section, the causal diagram demonstrating the relationship amongst the crowdfunding drivers by focussing on innovation management has been presented in Figure 2.

According to the above findings, the initial list of crowdfunding drivers from the literature review (28 drivers) has been identified; then, by implementing Fuzzy Delphi, the selected drivers from SMEs entrepreneurs were selected. After implementing the DEMATEL method, the causes, effects and conceptual model illustrating the relationship amongst the crowdfunding drivers have resulted by considering innovation management. In the last stage of this research, the findings of employing the DANP and SWARA methods have been

**Table 9.**  
Results of DEMATEL  
over crowdfunding  
drivers considering  
innovation  
management

Crowdfunding drivers	$E_j$	$P_j$	$W_D(j)$
D <sub>1</sub>	-1.464	5.178	0.0910
D <sub>2</sub>	<b>0.614</b>	6.091	0.1070
D <sub>3</sub>	-0.092	6.214	0.1092
D <sub>4</sub>	<b>0.299</b>	6.142	0.1079
D <sub>5</sub>	<b>0.133</b>	4.942	0.0868
D <sub>6</sub>	-0.271	4.527	0.0795
D <sub>7</sub>	-0.488	6.320	0.1110
D <sub>8</sub>	<b>2.542</b>	2.542	0.0447
D <sub>9</sub>	<b>3.488</b>	3.488	0.0613
D <sub>10</sub>	<b>0.118</b>	6.155	0.1081
D <sub>11</sub>	<b>0.877</b>	5.320	0.0935





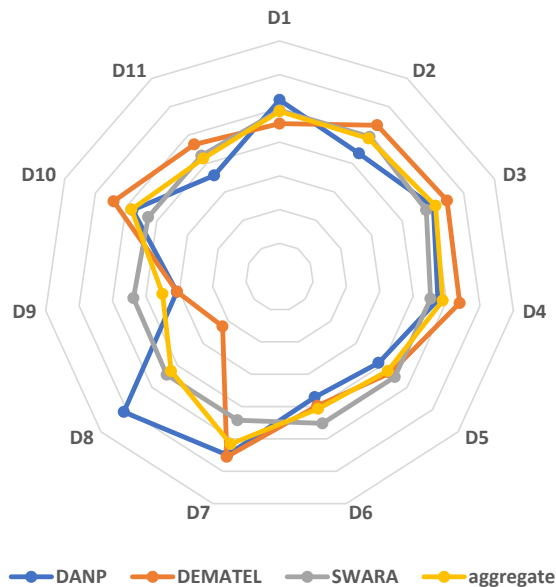
**Figure 2.** The conceptual model resulted from a network relationship diagram

shared. As mentioned in the methodology section, these approaches are appropriate for weighing drivers. To increase the robustness of the results, the authors have aggregated the weights resulting from DEMATEL, ANP and SWARA. Implementing the DANP method (Equations (10) to (12)) on the TRM matrix and the SWARA method (Equations (13) to (16)) on Fuzzy Delphi results has measured the importance of each crowdfunding driver in Table 10.

The aggregated column presents the average weights from three other methods of each driver by simple arithmetic mean. These values are inserted as  $W_j$  in the score function (Equation (17)). The following radar chart is remarkable for visualising the weights' distinctions from different methods (See Figure 3).

Drivers	DANP	DEMATEL	SWARA	Aggregate
D <sub>1</sub>	0.105	0.091	0.099	0.098
D <sub>2</sub>	0.087	0.107	0.099	0.098
D <sub>3</sub>	0.100	0.109	0.096	0.102
D <sub>4</sub>	0.095	0.108	0.090	0.098
D <sub>5</sub>	0.078	0.087	0.090	0.085
D <sub>6</sub>	0.074	0.080	0.090	0.081
D <sub>7</sub>	0.110	0.111	0.088	0.103
D <sub>8</sub>	0.122	0.045	0.088	0.085
D <sub>9</sub>	0.061	0.061	0.087	0.070
D <sub>10</sub>	0.096	0.108	0.086	0.096
D <sub>11</sub>	0.072	0.093	0.086	0.084

**Table 10.** Importance of crowdfunding drivers via different methods



**Figure 3.**  
Weights of  
crowdfunding drivers/  
comparison of methods

## Implications

### *Theoretical implications*

Crowdfunding is crucial for many small and medium-sized enterprises to develop products and improve their competitive advantages. Due to the scarcity of resources, these financial supports should be planned and investigated to prevent undesired consequences such as debt and early-stage bankruptcy for these SMEs instead of ambiguous achievements (Shkiotov, 2022). To this aim, many influential factors must be considered, and their effects can be monitored on SMEs' successful funding. According to the results, "risk associated with project initiator" (D<sub>7</sub>) is essential due to the need for the project owner to be trustworthy, and as shown in Table 6, both developed and developing countries have addressed it (Gierczak *et al.*, 2014; Venslaviene *et al.*, 2021). The second factor, called "raising money" (D<sub>3</sub>), was common in all three countries and was also mentioned in the joint study of Straaten and Bieman (2021). Three innovation-based factors include "Innovative Partnership" (D<sub>1</sub>) (Courtney *et al.*, 2017), "Experience in innovation management and crowdfunding" (D<sub>2</sub>) (Buttice *et al.*, 2017; Straaten and Bieman, 2021), and "Forming innovative relationships and broadening network" (D<sub>4</sub>) (Gerber *et al.*, 2012; Ahsan and Musteen, 2021) were ranked third. After the financial factor, the importance of human characteristics toward innovation was highlighted, which relies on the moral aspect of factors.

According to these days' concern for sustainable development, developed and developing countries try to prevent environmental damage and the long-lasting effects of climate change. In this research, it was emphasised on "Environment commitments via innovation management" (D<sub>10</sub>), which requires them to observe the related rules and considerations (Venslaviene *et al.*, 2021). According to Triple Bottom Line (TBL), by focussing on People, Planet and Profit (3Ps) (Khan *et al.*, 2021), it is required that all crowdfunding activists consider all three pillars of sustainability in their policymaking. Bento *et al.*, 2019 emphasised that sustainability indicators should be considered and balanced during crowdfunding commitments (Bento *et al.*, 2019). Environmental commitments should be considered in crowdfunding, money-gathering ways, innovation management and SME's business operation fields. The results indicated that the

sustainability orientation of entrepreneurs to obtain financial resources through crowdfunding is adequate, and the sustainability orientation of an investment increases the ability to attract capital for that project (Calic and Mosakowski, 2016; Petruzzelli *et al.*, 2019). The “trustable platforms” act as trusted third parties. The “Risk associated with the intermediary” ( $D_9$ ) was directly related to “trust” that can lead to the crowdfunding process to success or failure in developing countries (Amuna, 2019; World Bank, 2013; Lukkarinen *et al.*, 2016; Venslaviene *et al.*, 2021). Similarly, Bento *et al.*, 2019 also presented the idea of crowdfunding for sustainability ventures to manage the relevant risks and support the environmental aspects (Bento *et al.*, 2019). Innovative funding alternatives ( $D_5$ ) are of particular importance for obtaining foreign capital due to reducing the financial gap in the early stages. Developed European countries such as the UK, Germany, Spain, etc., believe that by creating more innovation alternatives, entrepreneurs will be able to network and build investor confidence and, finally, access to several financing alternatives (Hemer *et al.*, 2011; Pierrakis and Collins, 2012; Martínez-Cháfer *et al.*, 2021). This factor has also been observed in Straaten and Bieman’s (2021) results.

In general, “higher” Human capital for innovation management ( $D_{11}$ ) was related to various aspects of entrepreneurial and investment success. The characteristics of human capital and their role as an entrepreneurial team or project promoters in the United States, the United Kingdom and Australia have been examined. In these developing countries, the human capital role in innovation management was a multifaceted concept that was broadly related to the capabilities and skills of individuals (Ahlers *et al.*, 2015; Barbi and Mattioli, 2019). Furthermore, in this regard, Stapylton-Smith 2015, in his book/theory, focused on crowdfunding for social entrepreneurship. He revealed that reward-based crowdfunding provides prominent fundamentals for social entrepreneurs to absorb funding by advertising and signalling their commitment to social or environmental issues (Stapylton-Smith, 2015). Borrero-Dominguez *et al.* (2020) also pointed out the importance of this issue in their study. “The risk associated with the project” ( $D_6$ ) was illustrated as another compelling factor in the crowdfunding process due to its monetary nature and the type of projects or industries that react variously to environmental events (Rossi, 2014). This factor was important from the point of view of experts in both developing and developed countries. The team rating ( $D_8$ ) factor, like human capital, is a concept that encompasses the personality traits of individuals and can be examined in several ways; features such as industry expertise, educational background, experience, team balance, set of member skills, motivation, passion, commitment and honesty (Block *et al.*, 2018; Lukkarinen *et al.*, 2016; Venslaviene *et al.*, 2021).

### *Practical implications*

Regarding the crowdfunding scores assigned by experts from developed and developing countries, different factors affected different SMEs. In this study, the influential factors in developing countries were recognised two times more than in developing countries. This gap may be caused by the circumstances of developing countries where many startups and SMEs are emerging in vast areas and different fields due to investment in innovation management (Jamil *et al.*, 2016). In these countries, the authorities and officials support these companies to empower their capabilities and innovative ideas to (1) deal with the competitive market and (2) benefit from them as potential economic engines. Therefore, crowdfunding platforms and public initiatives can be considered one of the most effective government supports, which may involve financial risks (Kantis *et al.*, 2020). The impact of crowdfunding on innovation management goes beyond the goals of the campaign or call. From a broader perspective, it has pushed the boundaries of innovation in newly established and emerging projects. Large numbers of participants, from idea providers to users, customers, investors, and even brand or campaign sponsors, create unwanted effects on market structure and, willingly or unwillingly, create new challenges and opportunities for innovation management (Le Pendeven and Schwienbacher, 2023).

Furthermore, today, with platforms' evolution and relationship with innovation management or creative entrepreneurs, the acceptance and use of different crowdfunding models have changed. Hence, in some cases, it has been seen that two or several platforms have been employed simultaneously, and the association of these platforms has arisen from the relationship between innovation management and crowdfunding (Tian *et al.*, 2021). In this regard, emerging economies and developing countries should redesign their regulatory structure and processes as an intermediary role to highlight and affect the crowdfunding procedures. To some extent, and according to the findings of this research, "cultural factors" are negatively impacting "trusted third parties" drivers. This indicates that policymakers should invest in and increase the general public's knowledge regarding the role of innovation drivers in successful crowdfunding.

### Conclusions and future recommendations

Extracting the crowdfunding drivers via innovation management perspective from the literature review, screening them for the entrepreneurial SMEs, analysing the cause and effect relationship amongst them and eventually determining the importance/weight of each relevant crowdfunding driver were the main research objectives of this article. Alongside this, the score function for determining the score of crowdfunding for each entrepreneurial SME was recommended in this article for further use in the future. Entrepreneurial SMEs can benefit from the results of this research to (1) focus on relevant drivers, (2) understand the cause-effect relationship between the drivers and (2) have real anticipation of their possible score in crowdfunding in the future. To this aim, a combination of MCDM methods was employed in this article. Scholars have applied (1) Fuzzy Delphi for screening the relevant crowdfunding drivers for entrepreneurial SMEs from an innovation management perspective, (2) the DEMATEL method to analyse the causal relationship amongst the drivers, (3) ANP and SWARA to measure the importance of the selected drivers.

Considering the methods used in this research, scholars can consider the future recommendations in this article for further investigations into crowdfunding drivers. First, all MCDM methods employed in this article benefited from crisp numbers and values under certain conditions. While in today's turbulence environment, using uncertainty approaches, including fuzzy, interval, grey, hesitant fuzzy, intuitionistic fuzzy, Pythagorean fuzzy, Fermatean fuzzy, etc., seems essential for further investigation. This uncertainty approaches use more complicated values to insert and employ the experts' intuition and experience in the analysis. Furthermore, the relationship amongst the crowdfunding drivers was studied via the DEMATEL method in this research; however, interpretive-structural modelling (ISM), Fuzzy Cognitive map modelling (FCM), etc. approaches are also applicable to investigate and benchmark the results. Although the indicators in this manuscript were qualitative (subjective) and access to numerical data was not possible, in the future, while these limitations are solved, and accurate data are accessible, a statistical analysis such as structural equation modelling (SEM) and other multi variates statistical analysis are applicable. As in this manuscript, the ANP approach was applied to evaluate indicators' importance; other different weighing methods could have also been studied (e.g. best-worst method (BWM), simultaneously evaluating criteria and alternatives (SECA), etc.) to compare the results and check the robustness of the suggested score function.

From the data-gathering perspective, three panels of experts from three different countries participated in this study. Countries with different economic levels should also be investigated to generalise the results. These experts and their members were selected based on their qualifications and also accessibility, and eagerness to participate in this research. This is a limitation of this research as other professionals from other countries and regions could have also been capable of participating in this research through enough time and budget. Thus, we recommend other scholars increase the number and the diversity of the participants for more

generalisable results. To strengthen the initial list of crowdfunding drivers, instead of using the literature review methodology in the first stage, other data-gathering approaches and methods, including interviews with experts, action research, grounded theory, or thematic analysis, are also recommendable in the future for other scholars. As this research tried to evolve and employ a novel, uncertain MCDM model in the crowdfunding era, the main focus was on the methodology rather than the extracted factors. Hence, other scholars can focus on the first part of this research and try to identify, explore and extract specific crowdfunding factors instead of using the available literature. Besides, according to the scope of this research and the level of analysis, the results of this research are based on entrepreneurial SMEs; hence, the fundamental factor of innovation resulting in successful crowdfunding might differ for large-scale organisations. As a result, it is recommendable to investigate the same research questions and extract the critical innovation drivers leading to successful crowdfunding in large-scale organisations.

## References

- Agrawal, A., Catalini, C. and Goldfarb, A. (2015), "Crowdfunding: geography, social networks, and the timing of investment decisions", *Journal of Economics and Management Strategy*, Vol. 24 No. 2, pp. 253-274.
- Ahlers, G.K.C., Cumming, D., Günther, C. and Schweizer, D. (2015), "Signaling in equity crowdfunding", *Entrepreneurship, Theory and Practice*, Vol. 39 No. 4, pp. 955-980.
- Ahsan, M. and Musteen, M. (2021), "International opportunity development on crowdfunding platforms: a spatial, temporal, and structural framework", *International Business Review*, Vol. 30 No. 6, 101912.
- Allison, T.H., Davis, B.C., Short, J.C. and Webb, J.W. (2015), "Crowdfunding in a prosocial microlending environment: examining the role of intrinsic versus extrinsic cues", *Entrepreneurship Theory and Practice*, Vol. 39 No. 1, pp. 53-73.
- Amoozad Mahdiraji, H., Hafeez, K., Kord, H. and Abbasi Kamardi, A. (2020), "Analysing the voice of customers by a hybrid fuzzy decision-making approach in a developing country's automotive market", *Management Decision*, Vol. 60 No. 2, pp. 399-425.
- Amuna, Y.A. (2019), "Entrepreneurship, crowdfunding platforms and sponsors interaction", *International Journal of Academic Management Science Research*, Vol. 3 No. 1, pp. 53-60.
- Anwar, M., Tajeddini, K. and Ullah, R. (2020), "Entrepreneurial finance and new venture success-The moderating role of government support", *Business Strategy and Development*, Vol. 3 No. 4, pp. 408-421.
- Arora, A., Athreye, S. and Huang, C. (2016), "The paradox of openness revisited: collaborative innovation and patenting by UK innovators", *Research Policy*, Vol. 45 No. 7, pp. 1352-1361.
- Barbi, M. and Mattioli, S. (2019), "Human capital, investor trust, and equity crowdfunding", *Research in International Business and Finance*, Vol. 49, pp. 1-12.
- Battisti, E., Graziano, E.A. and Christofi, M. (2021), "Equity crowdfunding platforms and social media: a Twitter analysis", *International Journal of Entrepreneurial Behavior and Research*, Vol. 28 No. 5, pp. 1206-1221.
- Baumgardner, T., Neufeld, C., Huang, P.C.T., Sondhi, T., Carlos, F. and Talha, M.A. (2017), "Crowdfunding as a fast-expanding market for the creation of capital and shared value", *Thunderbird International Business Review*, Vol. 59 No. 1, pp. 115-126.
- Baumol, W.J. and Strom, R.J. (2007), "Entrepreneurship and economic growth", *Strategic Entrepreneurship Journal*, Vol. 1 Nos 3-4, pp. 233-237.
- Belleflamme, P., Lambert, T. and Schwienbacher, A. (2013), "Individual crowdfunding practices", *Venture Capital*, Vol. 15 No. 4, pp. 313-333.
- Belleflamme, P., Lambert, T. and Schwienbacher, A. (2014), "Crowdfunding: tapping the right crowd", *Journal of Business Venturing*, Vol. 29 No. 5, pp. 585-609.

- Bento, N., Gianfrate, G. and Thoni, M.H. (2019), "Crowdfunding for sustainability ventures", *Journal of Cleaner Production*, Vol. 237, 117751.
- Block, J., Hornuf, L. and Moritz, A. (2018), "Which updates during an equity crowdfunding campaign increase crowd participation?", *Small Business Economics*, Vol. 50, pp. 3-27.
- Block, J.H., Groh, A., Hornuf, L., Vanacker, T. and Vismara, S. (2021), "The entrepreneurial finance markets of the future: a comparison of crowdfunding and initial coin offerings", *Small Business Economics*, Vol. 57 No. 2, pp. 865-882.
- Borrero-Domínguez, C., Cordon-Lagares, E. and Hernandez-Garrido, R. (2020), "Analysis of success factors in crowdfunding projects based on rewards: a way to obtain financing for socially committed projects", *Helvion*, Vol. 6 No. 4, e03744.
- Braunerhjelm, P., Acs, Z.J., Audretsch, D.B. and Carlsson, B. (2010), "The missing link: knowledge diffusion and entrepreneurship in endogenous growth", *Small Business Economics*, Vol. 43 No. 1, pp. 105-125.
- Brown, R., Mawson, S., Rowe, A. and Mason, C. (2015), "Harnessing the crowd: the demand-side dynamics of equity crowdfunding in nascent entrepreneurial ventures", University of Stirling, Working Paper, available at: <https://www.stir.ac.uk/research/hub/publication/567946> (accessed 22 February 2021).
- Bruton, G., Khavul, S., Siegel, D. and Wright, M. (2015), "New financial alternatives in seeding entrepreneurship: microfinance, crowdfunding, and peer-to-peer innovations", *Entrepreneurship Theory and Practice*, Vol. 39 No. 1, pp. 9-26.
- Burtch, G., Ghose, A. and Wattal, S. (2013), "An empirical examination of the antecedents and consequences of contribution patterns in crowd-funded markets", *Information Systems Research*, Vol. 24 No. 3, pp. 499-519.
- Butticè, V., Colombo, M.G. and Wright, M. (2017), "Serial crowdfunding, social capital, and project success", *Entrepreneurship: Theory and Practice*, Vol. 41 No. 2, pp. 183-207.
- Calic, G. and Mosakowski, E. (2016), "Kicking off social entrepreneurship: how a sustainability orientation influences crowdfunding success", *Journal of Management Studies*, Vol. 53 No. 5, pp. 738-767.
- Cappa, F., Pinelli, M., Maiolini, R. and Leone, M.I. (2021), "'Pledge' me your ears! The role of narratives and narrator experience in explaining crowdfunding success", *Small Business Economics*, Vol. 57 No. 2, pp. 953-973.
- Cassar, G. (2004), "The financing of business start-ups", *Journal of Business Venturing*, Vol. 19 No. 2, pp. 261-283.
- Chan, C.M., Teoh, S.Y., Yeow, A. and Pan, G. (2019), "Agility in responding to disruptive digital innovation: case study of an SME", *Information Systems Journal*, Vol. 29 No. 2, pp. 436-455.
- Cichy, J. and Gradoń, W. (2016), "Crowdfunding as a mechanism for financing small and medium-sized enterprises", *e-Finanse: Financial Internet Quarterly*, Vol. 12 No. 3, pp. 38-48.
- Correia, S., Sousa, M. and Brandao, E. (2019), "Drivers of fundraising success in equity crowdfunding" (March 17, 2019), available at SSRN: <https://ssrn.com/abstract=3354210> or <http://dx.doi.org/10.2139/ssrn.3354210>
- Cosh, A., Cumming, D. and Hughes, A. (2009), "Outside entrepreneurial capital", *The Economic Journal*, Vol. 119 No. 540, pp. 1494-1533.
- Courtney, C., Dutta, S. and Li, Y. (2017), "Resolving information asymmetry: signalling, endorsement, and crowdfunding success", *Entrepreneurship: Theory and Practice*, Vol. 41 No. 2, pp. 265-290.
- Cumming, D.J., Leboeuf, G. and Schwiabacher, A. (2017), "Crowdfunding cleantech", *Energy Economics*, Vol. 65, pp. 292-303.
- Di Pietro, F. (2021), "The rationale for listing on equity crowdfunding: actual and expected benefits for companies", *Journal of Industrial and Business Economics*, Vol. 48 No. 4, pp. 527-549.
- Di Pietro, F., Prencipe, A. and Majchrzak, A. (2018), "Crowd equity investors: an underutilized asset for open innovation in startups", *California Management Review*, Vol. 60 No. 2, pp. 43-70.

- Di Pietro, F., Bogers, M.L. and Prencipe, A. (2021), "Organisational barriers and bridges to crowd openness in equity crowdfunding", *Technological Forecasting and Social Change*, Vol. 162, 120388.
- Dushnitsky, G. and Fitza, M. (2018), "Are we missing the platforms for the crowd? Comparing investment drivers across multiple crowdfunding platforms", *Journal of Business Venturing Insights*, Vol. 10, e00100.
- Dushnitsky, G. and Zunino, D. (2018), "The role of crowdfunding in entrepreneurial finance", in Parhankangas, A., Mason, C. and Landström, H. (Eds), *Handbook of Research on Crowdfunding*.
- Dwarakanath, A., Shrikanth, N.C., Abhinav, K. and Kass, A. (2016), "Trustworthiness in enterprise crowdsourcing: a taxonomy and evidence from data", *Proceedings of the 38th International Conference on Software Engineering Companion*, pp. 41-50.
- Eldridge, D., Nisar, T.M. and Torchia, M. (2021), "What impact does equity crowdfunding have on SME innovation and growth? An empirical study", *Small Business Economics*, Vol. 56 No. 1, pp. 105-120.
- Estrin, S., Gozman, D. and Khavul, S. (2018), "The evolution and adoption of equity crowdfunding: entrepreneur and investor entry into a new market", *Small Business Economics*, Vol. 51 No. 2, pp. 425-439.
- Fleming, L. and Sorenson, O. (2016), "Financing by and for the masses: an introduction to the special issue on crowdfunding", *California Management Review*, Vol. 58 No. 2, pp. 5-19.
- Gafni, H., Marom, D. and Sade, O. (2019), "Are the life and death of an early-stage venture indeed in the power of the tongue? Lessons from online crowdfunding pitches", *Strategic Entrepreneurship Journal*, Vol. 13 No. 1, pp. 3-23.
- Gamble, J.R., Brennan, M. and McAdam, R. (2017), "A rewarding experience? Exploring how crowdfunding is affecting music industry business models", *Journal of Business Research*, Vol. 70, pp. 25-36.
- Gerber, E.M., Hui, J.S. and Kuo, P.Y. (2012), "February). Crowdfunding: Why people are motivated to post and fund projects on crowdfunding platforms", *Proceedings of the international workshop on design, influence, and social technologies: techniques, impacts and ethics*, Vol. 2, No. 11, p. 10.
- Gierczak, M.M., Bretschneider, U. and Leimeister, J.M. (2014), "Is all that glitters gold? Exploring the effects of perceived risk on backing behavior in reward-based crowdfunding", *Proceedings of the 35th International Conference on Information Systems Building a Better World Through Information Systems*, Auckland, ICIS.
- Giudici, G., Guerini, M. and Rossi-Lamastra, C. (2020), "Elective affinities: exploring the matching between entrepreneurs and investors in equity crowdfunding", *Baltic Journal of Management*, Vol. 15 No. 2, pp. 183-198.
- Hajiagha, S.H.R., Alaei, S., Mahdiraji, H.A. and Yaftiyan, F. (2021), "International collaboration formation in entrepreneurial food industry: evidence of an emerging economy", *British Food Journal*, Vol. 124 No. 7, pp. 2012-2038.
- Härkönen, J. (2014), "Crowdfunding and its utilization for startup finance in Finland: factors of a successful campaign", (Master's Thesis) Lappeenranta University of Technology, School of Business, Lappeenranta.
- Harrison, R. (2013), "Crowdfunding and the revitalisation of the early stage risk capital market: catalyst or chimera?", *Venture Capital*, Vol. 15 No. 4, pp. 283-287.
- Hashemi, S.S., Mahdiraji, H.A., Azari, M. and Hajiagha, S.H.R. (2021), "Causal modelling of failure fears for international entrepreneurs in tourism industry: a hybrid Delphi-DEMATEL based approach", *International Journal of Entrepreneurial Behavior and Research*, Vol. 28 No. 3, pp. 602-627.
- Hemer, J., Schneider, U., Dornbusch, F. and Frey, S. (2011), *Crowdfunding Und Andere Formen Informeller Mikrofinanzierung in Der Projekt- Und Innovationsfinanzierung*, Fraunhofer Verlag, Stuttgart.
- Hervás-Oliver, J.L., Parrilli, M.D., Rodríguez-Pose, A. and Sempere-Ripoll, F. (2021), "The drivers of SME innovation in the regions of the EU", *Research Policy*, Vol. 50 No. 9, 104316.

- Hornuf, L. and Schmitt, M. (2016), "Success and failure in equity crowdfunding", *CESifo DICE Report*, Vol. 14 No. 2, pp. 16-22.
- Jafari-Sadeghi, V. (2021), "Internationalisation, risk-taking, and export compliance: a comparative study between economically advanced and developing country", *International Journal of Entrepreneurship and Small Business*, Vol. 43 No. 3, pp. 384-408.
- Jafari-Sadeghi, V., Mahdiraji, H.A., Busso, D. and Yahiaoui, D. (2022), "Towards agility in international high-tech SMEs: exploring key drivers and main outcomes of dynamic capabilities", *Technological Forecasting and Social Change*, Vol. 174, 121272.
- Jamil, F., Ismail, K., Siddique, M., Khan, M.M., Kazi, A.G. and Qureshi, M.I. (2016), "Business incubators in Asian developing countries", *International Review of Management and Marketing*, Vol. 6 No. 4, pp. 291-295.
- Josefy, M., Dean, T.J., Albert, L.S. and Fitzg, M.A. (2017), "The role of community in crowdfunding success: evidence on cultural attributes in funding campaigns to 'save the local theater'", *Entrepreneurship Theory and Practice*, Vol. 41 No. 2, pp. 161-182.
- Kantis, H.D., Federico, J.S. and García, S.I. (2020), "Entrepreneurship policy and systemic conditions: evidence-based implications and recommendations for emerging countries", *Socioeconomic Planning Sciences*, Vol. 72, 100872.
- Khan, I.S., Ahmad, M.O. and Majava, J. (2021), "Industry 4.0 and sustainable development: a systematic mapping of triple bottom line, Circular Economy and Sustainable Business Models perspectives", *Journal of Cleaner Production*, Vol. 297, 126655.
- Kukk, M.L. and Laidroo, L. (2020), "Institutional drivers of crowdfunding volumes", *Journal of Risk and Financial Management*, Vol. 13 No. 12, p. 326.
- Lambert, T. and Schweinbacher, A. (2010), "An empirical analysis of crowdfunding", *Kunnskapsverket.org*, available at: <https://kunnskapsverket.org/litteraturlibrary/publikasjon/empirical-analysis-crowdfunding> (accessed 23 February 2021).
- Larrea, G., Altin, M. and Singh, D. (2019), "Determinants of success of restaurant crowdfunding", *International Journal of Hospitality Management*, Vol. 78, pp. 150-158.
- Laursen, K. and Salter, A.J. (2014), "The paradox of openness: appropriability, external search and collaboration", *Research Policy*, Vol. 43 No. 5, pp. 867-878.
- Le Pendeven, B. and Schwenbacher, A. (2023), "Equity crowdfunding: the influence of perceived innovativeness on campaign success", *British Journal of Management*, Vol. 34, pp. 280-298, doi: 10.1111/1467-8551.12585.
- Lin, M. and Viswanathan, S. (2016), "Home bias in online investments: an empirical study of an online crowdfunding market", *Management Science*, Vol. 62 No. 5, pp. 1393-1414.
- Liu, S., Xia, F., Zhang, J. and Wang, L. (2016), "How crowdsourcing risks affect performance: an exploratory model", *Management Decision*, Vol. 54, pp. 2235-2255.
- Löher, J. (2017), "The interaction of equity crowdfunding platforms and ventures: an analysis of the preselection process", *Venture Capital*, Vol. 19 Nos 1-2, pp. 51-74.
- Lukkarinen, A.E., Teich, J., Wallenius, H. and Wallenius, J. (2016), "Success drivers of online equity crowdfunding campaigns", *Decision Support System*, Vol. 87, pp. 26-38.
- Macht, S.A. and Weatherston, J. (2014), "The benefits of online crowdfunding for fund-seeking business ventures", *Strategic Change*, Vol. 23 Nos 1-2, pp. 1-14.
- Mahdiraji, H.A., Zavadskas, E.K., Arab, A., Turskis, Z. and Sahebi, I.G. (2021), "Formulation of manufacturing strategies based on an extended swara method with intuitionistic fuzzy numbers: an automotive industry application", *Transformations in Business and Economics*, Vol. 20 No. 2, pp. 345-365.
- Mahdiraji, H., Beheshti, M., Razavi Hajiaghah, S.H., Ahmadzadeh Kandi, N. and Boudlaie, H. (2022), "A process-based guide for international entrepreneurs while investing in the agrifood



- sector of an emerging economy: a multi-layer decision-making approach”, *British Food Journal*, Vol. 124 No. 7, pp. 1984-2011.
- Martin, T. (2012), “The JOBS act of 2012: balancing fundamental securities law principles with the demands of the crowd” (April 12, 2012), available at SSRN: <https://ssrn.com/abstract=2040953> or <http://dx.doi.org/10.2139/ssrn.2040953>
- Martinez-Chafer, L., Molna-Morales, F.X. and Peiro-Palomino, J. (2021), “On the drivers of successful crowdfunding: the case of the platform Verkami”, *Business Research Quarterly*. doi: [10.1177/2340944420985862](https://doi.org/10.1177/2340944420985862).
- Massolution (2015), “2015CF. Crowdfunding industry report”, available at: <https://www.smv.gob.pe/Biblioteca/temp/catalogacion/C8789.pdf>
- Mensah, E.K., Asamoah, L.A. and Jafari-Sadeghi, V. (2021), “Entrepreneurial opportunity decisions under uncertainty: recognizing the complementing role of personality traits and cognitive skills”, *Journal of Entrepreneurship, Management, and Innovation*, Vol. 17 No. 1, pp. 25-55.
- Meyskens, M. and Bird, L. (2015), “Crowdfunding and value creation”, *Entrepreneurship Research Journal*, Vol. 5 No. 2, pp. 155-166.
- Mitra, T. and Gilbert, E. (2014), “The language that gets people to give: phrases that predict success on kickstarter”, *Proceedings of the 17th ACM conference on Computer supported cooperative work and social computing*, pp. 49-61.
- Mochkabadi, K. and Volkmann, C.K. (2020), “Equity crowdfunding: a systematic review of the literature”, *Small Business Economics*, Vol. 54 No. 1, pp. 75-118.
- Mollick, E. (2014), “The dynamics of crowdfunding: an exploratory study”, *Journal of Business Venturing*, Vol. 29 No. 1, pp. 1-16.
- Moss, T.W., Neubaum, D.O. and Meyskens, M. (2015), “The effect of virtuous and entrepreneurial orientations on microfinance lending and repayment: a signaling theory perspective”, *Entrepreneurship Theory and Practice*, Vol. 39 No. 1, pp. 27-52.
- Niemand, T., Angerer, M., Thies, F., Kraus, S. and Hebenstreit, R. (2018), “Equity crowdfunding across borders: a conjoint experiment”, *International Journal of Entrepreneurial Behavior and Research*, Vol. 24, pp. 911-932.
- Onjewu, A.-K.E., Jafari-Sadeghi, V. and Hussain, S. (2022), “Revisiting innovation practices in subsistence farming: the net effects of land management, pesticide, herbicide and fungicide practices on expected crop harvest in Ethiopia”, *International Journal Technological Learning, Innovation and Development*, Vol. 14 Nos 1/2, pp. 23-51.
- Paschen, J. (2017), “Choose wisely: crowdfunding through the stages of the startup life cycle”, *Business Horizons*, Vol. 60 No. 2, pp. 179-188.
- Petruzzelli, A.M., Natalicchio, A., Panniello, U. and Roma, P. (2019), “Understanding the crowdfunding phenomenon and its implications for sustainability”, *Technological Forecasting and Social Change*, Vol. 141, pp. 138-148.
- Pierrakis, Y. and Collins, L. (2012), *The Venture Crowd: Crowdfunding Equity Investment into Business*, Nesta, London.
- Piva, E. and Rossi-Lamastra, C. (2018), “Human capital signals and entrepreneurs’ success in equity crowdfunding”, *Small Business Economics*, Vol. 51, pp. 667-686.
- Plummer, L.A., Allison, T.H. and Connelly, B.L. (2016), “Better together? Signalling interactions in new venture pursuit of initial external capital”, *Academy of Management Journal*, Vol. 59 No. 5, pp. 1585-1604.
- Rezaei, M., Jafari-Sadeghi, V. and Bresciani, S. (2020), “What drives the process of knowledge management in a cross-cultural setting: the impact of social capital”, *European Business Review*, Vol. 32 No. 3, pp. 485-511.
- Rossi, M. (2014), “The new ways to raise capital: an exploratory study of crowdfunding”, *International Journal of Financial Research*, Vol. 5 No. 2, pp. 8-18.

- Sadeghi, V.J., Nkongolo-Bakenda, J.-M., Anderson, R.B. and Dana, L.-P. (2019), "An institution-based view of international entrepreneurship: a comparison of context-based and universal determinants in developing and economically advanced countries", *International Business Review*, Vol. 28 No. 6, 101588.
- Schwienbacher, A. (2018), "Entrepreneurial risk-taking in crowdfunding campaigns", *Small Business Economics*, Vol. 51 No. 4, pp. 843-859.
- Shahab, Y., Ye, Z., Riaz, Y. and Ntim, C.G. (2019), "Individual's financial investment decision-making in reward-based crowdfunding: evidence from China", *Applied Economics Letters*, Vol. 26 No. 4, pp. 261-266.
- Shan, S., Jia, Y., Zheng, X. and Xu, X. (2018), "Assessing relationship and contribution of China's technological entrepreneurship to socioeconomic development", *Technological Forecasting and Social Change*, Vol. 135, pp. 83-90.
- Shane, S.A. (2003), *A General Theory of Entrepreneurship: The Individual-Opportunity Nexus*, Edward Elgar Publishing, Cheltenham.
- Shkiotov, S.V. (2022), "Competition for small and medium-sized enterprises financing in Russia: competitive advantages and disadvantages of crowdfunding platforms", *Journal of Regional and International Competitiveness*, Vol. 3 No. 1, pp. 69-74.
- Signori, A. and Vismara, S. (2018), "Does success bring success? The post-offering lives of equity-crowdfunded firms", *Journal of Corporate Finance*, Vol. 50, pp. 575-591.
- Simons, A., Weinmann, M., Tietz, M. and vom Brocke, J. (2017), "Which reward should I choose? Preliminary evidence for the middle-option bias in reward-based crowdfunding", *Proceedings of the 50th Hawaii International Conference on System Sciences*, Hawaii.
- Stapylton-Smith, C. (2015), "Crowdfunding social entrepreneurship", *Examensarbete vid Institutionen för geovetenskaper*, pp. 1-34.
- Stefani, U., Schiavone, F., Laperche, B. and Burger-Helmchen, T. (2019), "New tools and practices for financing novelty: a research agenda", *European Journal of Innovation Management*, Vol. 23 No. 2, pp. 314-328.
- Steigenberger, N. (2017), "Why supporters contribute to reward-based crowdfunding", *International Journal of Entrepreneurial Behavior and Research*, Vol. 23, pp. 336-353.
- Straaten, I. and Bieman, D.T. (2021), *The Influence of Entrepreneurs' Prior Founding Experience on the Drivers to Opt for Equity Crowdfunding as a Source of Funding in Dutch Information Technology Companies*, School of Economics and Management, Lund University, Lund.
- Streletzki, J.G. and Schulte, R. (2013), "Which venture capital selection criteria distinguish high-flyer investments?", *Venture Capital*, Vol. 15 No. 1, pp. 29-52.
- Sukumar, A., Jafari-Sadeghi, V., Garcia-Perez, A. and Dutta, D.K. (2020), "The potential link between corporate innovations and corporate competitiveness: evidence from IT firms in the UK", *Journal of Knowledge Management*, Vol. 24 No. 5, pp. 965-983.
- Surowiecki, J. (2005), *The Wisdom of Crowds*, Knopf Doubleday Publishing Group, New York, NY.
- Thuan, N.H., Antunes, P. and Johnstone, D. (2016), "Factors influencing the decision to crowdsourc: a systematic literature review", *Information Systems Frontiers*, Vol. 18 No. 1, pp. 47-68.
- Tian, X., Song, Y., Luo, C., Zhou, X. and Lev, B. (2021), "Herding behavior in supplier innovation crowdfunding: evidence from Kickstarter", *International Journal of Production Economics*, Vol. 239, 108184.
- Troise, C., Matricano, D., Sorrentino, M. and Candelo, E. (2022), "Investigating investment decisions in equity crowdfunding: the role of projects' intellectual capital", *European Management Journal*, Vol. 40 No. 3, pp. 406-418, doi: [10.1016/j.emj.2021.07.006](https://doi.org/10.1016/j.emj.2021.07.006).
- Troise, C. and Tani, M. (2021), "Exploring entrepreneurial characteristics, motivations and behaviours in equity crowdfunding: some evidence from Italy", *Management Decision*, Vol. 59 No. 5, pp. 995-1024.

- Troise, C., Matricano, D., Candelo, E. and Sorrentino, M. (2020), "Crowdfunded and then? The role of intellectual capital in the growth of equity-crowdfunded companies", *Measuring Business Excellence*, Vol. 24 No. 4, pp. 475-494.
- Troise, C., Matricano, D., Candelo, E. and Sorrentino, M. (2022), "Entrepreneurship and fintech development: comparing reward and equity crowdfunding", *Measuring Business Excellence*, Vol. 26 No. 1, pp. 52-63.
- Venslaviene, S., Stankeviciene, J. and Vaiciukeviciute, A. (2021), "Assessment of successful drivers of crowdfunding projects based on visual analogue scale matrix for criteria weighting method", *Mathematics*, Vol. 9, p. 1950.
- Verhagen, T., Meents, S. and Tan, Y.H. (2006), "Perceived risk and trust associated with purchasing at electronic marketplaces", *European Journal of Information Systems*, Vol. 15, pp. 542-555.
- Vismara, S. (2016), "Equity retention and social network theory in equity crowdfunding", *Small Business Economics*, Vol. 46 No. 4, pp. 579-590.
- Vrontis, D., Christofi, M., Battisti, E. and Graziano, E.A. (2020), "Intellectual capital, knowledge sharing and equity crowdfunding", *Journal of Intellectual Capital*, Vol. 22 No. 1, pp. 95-121.
- Wald, A., Holmesland, M. and Efrat, K. (2019), "It is not all about money: obtaining additional benefits through equity crowdfunding", *The Journal of Entrepreneurship*, Vol. 28 No. 2, pp. 270-294.
- Wang, N., Li, Q., Liang, H., Ye, T. and Ge, S. (2018), "Understanding the importance of interaction between creators and backers in crowdfunding success", *Electronic Commerce Research and Applications*, Vol. 27, pp. 106-117.
- Wati, C.R. and Winarno, A. (2018), "The performance of crowdfunding model as an alternative funding source for micro, small, and medium-scale businesses in various countries", *KnE Social Sciences*, Vol. Apr 2018, pp. 16-33.
- Wolf, T., Weiger, W.H. and Hammerschmidt, M. (2020), "Experiences that matter? The motivational experiences and business outcomes of gamified services", *Journal of Business Research*, Vol. 106, pp. 353-364.
- World Bank (2013), *Crowdfunding's Potential for the Developing World. 2013. infoDev, Finance and Private Sector Development Department*, World Bank, Washington, DC.
- Xu, H., Wu, Y. and Hamari, J. (2021), "What determines the successfulness of a crowdsourcing campaign: a study on the relationships between indicators of trustworthiness, popularity, and success", *Journal of Business Research*, Vol. 139, pp. 484-495.
- Yadav, S.K., Singh, S. and Gupta, R. (2019), "Sampling methods", *Biomedical Statistics*, Springer, Singapore, pp. 71-83.
- Yao, H. and Zhang, Y. (2014), "Research on influence factors of crowdfunding", *International Business and Management*, Vol. 9 No. 2, pp. 27-31.
- Zhang, N., Yang, X., Zhang, M., Sun, Y. and Long, K. (2018), "A genetic algorithm-based task scheduling for cloud resource crowd-funding model", *International Journal of Communication Systems*, Vol. 31 No. 1, e3394.
- Zheng, H., Li, D., Wu, J. and Xu, Y. (2014), "The role of multidimensional social capital in crowdfunding: a comparative study in China and US", *Information and Management*, Vol. 51 No. 4, pp. 488-496.

### Corresponding author

Vahid Jafari-Sadeghi can be contacted at: [v.jafari-sadeghi@aston.ac.uk](mailto:v.jafari-sadeghi@aston.ac.uk)

For instructions on how to order reprints of this article, please visit our website:

[www.emeraldgrouppublishing.com/licensing/reprints.htm](http://www.emeraldgrouppublishing.com/licensing/reprints.htm)

Or contact us for further details: [permissions@emeraldinsight.com](mailto:permissions@emeraldinsight.com)